downloaded from: lib.ommolketab.ir

Revised
BESTSELLER
Expanded

VISUAL QUICKSTART GUIDE

JAVASCRIPT & AJAX

SIXTH EDITION

Learn JavaScript and Ajax the Quick and Easy Way!

TOM NEGRINO
DORI SMITH

FOR THE WEB

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Visual QuickStart Guide JavaScript and Ajax for the Web, Sixth Edition

By Tom Negrino, Dori Smith

.....

Publisher: **Peachpit Press**

Pub Date: **August 28, 2006**

Print ISBN-10: **0-321-43032-8**

Print ISBN-13: **978-0-321-43032-8**

Pages: **512**

Table of Contents | Index

Overview

Need to learn JavaScript fast? This best-selling reference's visual format and step-by-step, task-based instructions will have you up and running with JavaScript in no time. In this completely updated edition of our best-selling guide to JavaScript, leading Web and computing experts Tom Negrino and Dori Smith use crystal-clear instructions and friendly prose to introduce you to all of today's JavaScript essentials. Along the way, you'll find extensive coverage of Ajax and XML techniques, current browsers (Opera, Safari, Firefox), and more. Visual QuickStart Guide--the quick and easy way to learn!

- Easy visual approach uses pictures to guide you through JavaScript and show you what to do.
- Concise steps and explanations get you up and running in no time.
- Page for page, the best content and value around.
- Companion Web site at www.javascriptworld.com offers sample scripts, updates, and more!

NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Visual QuickStart Guide JavaScript and Ajax for the Web, Sixth Edition

By Tom Negrino, Dori Smith

.....

Publisher: **Peachpit Press**

Pub Date: **August 28, 2006**

Print ISBN-10: **0-321-43032-8**

Print ISBN-13: **978-0-321-43032-8**

Pages: **512**

Table of Contents | Index

- Copyright
- Special Thanks To
- Introduction
- Chapter 1. Getting Acquainted with JavaScript
  - What JavaScript Is
  - JavaScript Isn't Java
  - Where JavaScript Came From
  - What JavaScript Can Do
  - What JavaScript Can't Do
  - What Is Ajax?
  - The Snap-Together Language
  - Handling Events
  - Values and Variables
  - Assignments and Comparisons
  - Writing JavaScript-Friendly HTML
  - What Tools to Use?
- Chapter 2. Start Me Up!
  - Where to Put Your Scripts
  - About Functions
  - Using External Scripts
  - Putting Comments in Scripts
  - Alerting the User
  - Confirming a User's Choice
  - Prompting the User
  - Redirecting the User with a Link
  - Using JavaScript to Enhance Links

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Chapter 3. Language Essentials
Around and Around with Loops
Passing a Value to a Function
Detecting Objects
Working with Arrays
Working with Functions That Return Values
Updating Arrays
Using Do/While Loops
Calling Scripts Multiple Ways
Using Multi-level Conditionals
Handling Errors
Chapter 4. Working with Images
Creating Rollovers
Creating More Effective Rollovers
Building Three-State Rollovers
Triggering Rollovers from a Link
Making Multiple Links Change a Single Rollover
Working with Multiple Rollovers
Creating Cycling Banners
Adding Links to Cycling Banners
Building Wraparound Slideshows
Displaying a Random Image
Cycling Images with a Random Start
Chapter 5. Frames, Frames, and More Frames
Keeping a Page out of a Frame
Forcing a Page into a Frame
Forcing a Site into a Frame
Setting a Target
Creating and Loading a Dynamic Frame
Sharing Functions between Frames
Storing Information in Frames
Loading Multiple Frames at Once
Working with Iframes
Loading Iframes with JavaScript
Chapter 6. Working with Browser Windows
Opening a New Window

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Opening Multiple Windows
Opening Multiple Windows Simultaneously
Updating One Window from Another
Creating New Pages with JavaScript
Closing a Window
Opening Windows in a Specified Location
Moving Windows to a Specified Location
Chapter 7. Form Handling
Select-and-Go Navigation
Changing Menus Dynamically
Making Fields Required
Checking Fields against Each Other
Identifying Problem Fields
Putting Form Validation into Action
Working with Radio Buttons
Setting One Field with Another
Validating Zip Codes
Validating Email Addresses
Chapter 8. Forms and Regular Expressions
Validating an Email Address with Regular Expressions
Validating a File Name
Extracting Strings
Formatting Strings
Formatting and Sorting Strings
Formatting and Validating Strings
Replacing Elements using Regular Expressions
Chapter 9. Handling Events
Handling Window Events
Mouse Event Handling
Form Event Handling
Key Event Handling
Chapter 10. JavaScript and Cookies
Baking Your First Cookie
Reading a Cookie
Showing Your Cookies
Using Cookies as Counters

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Handling Multiple Cookies
Displaying "New to You" Messages
Chapter 11. Introducing CSS
Saying It with Style
Styles with Class
Changing Fonts with CSS
Checking Your ID
Distinguished Links
Embedding Styles in Styles
Adding Background Images
Positioning Absolutely
Chapter 12. Objects and the DOM
About Node Manipulation
Adding Nodes
Deleting Nodes
Deleting Specific Nodes
Inserting Nodes
Replacing Nodes
Chapter 13. Making Your Pages Dynamic
Putting the Current Date into a Web Page
Working with Days
Customizing a Message for the Time of Day
Displaying Dates by Time Zone
Converting Military Time to A.M./P.M.
Creating a Countdown
Moving an Object in the Document
Date Methods
Chapter 14. Applied JavaScript
Using Sliding Menus
Adding Pull-Down Menus
A Slideshow with Captions
A Silly Name Generator
A Bar Graph Generator
Style Sheet Switcher
Chapter 15. Introducing Ajax
Ajax: Pinning It Down

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Parsing Server Data
Refreshing Server Data
Previewing Links with Ajax
Auto-Completing Form Fields
Chapter 16. Ajax Toolkits
Dragging and Dropping Page Elements
Adding a Calendar to Your Page
Adding a 2-up Calendar to Your Page
Using the Container Utility
Adding Animation Effects
Implementing the Logger Control for Debugging
Chapter 17. Bookmarklets
Your First Bookmarklet
Changing a Page's Background Color
Changing a Page's Styles
Web-safe Colors
Word Lookups
Viewing Images
Displaying ISO Latin Characters
Converting RGB Values to Hex
Converting Values
A Bookmarklet Calculator
Validating Pages
Appendix A. JavaScript Genealogy and Reference
JavaScript Versions
ECMAScript
Browsers and JavaScript
Object Flowchart
The Big Object Table
Appendix B. JavaScript Reserved Words
Appendix C. Cascading Style Sheets Reference
Appendix D. Where to Learn More
Finding Help on the Web
Books
Index

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Copyright

Visual QuickStart Guide

JavaScript and Ajax for the Web, Sixth Edition

Tom Negrino and Dori Smith

Peachpit Press
1249 Eighth Street
Berkeley, CA 94710
(510) 524-2178
(800) 283-9444
(510) 524-2221 (fax)

Find us on the Web at www.peachpit.com

To report errors, send a note to errata@peachpit.com

Peachpit Press is a division of Pearson Education

Copyright © 2007 by Tom Negrino and Dori Smith

Editor: Nancy Davis
Production Coordinator: Tracey Croom
Proofreader: Tiffany Taylor
Compositor: Danielle Foster
Indexer: Ron Strauss
Cover design: Peachpit Press

Notice of Rights

All rights reserved. No part of this book may be reproduced or transmitted in any form by any means, electronic, mechanical, photocopying, recording, or otherwise, without the prior written permission of the publisher. For information on getting permission for reprints and excerpts, contact permissions@peachpit.com

Notice of Liability

The information in this book is distributed on an "As is" basis, without warranty. While every precaution has been taken in the preparation of the book, neither the authors nor Peachpit Press, shall have any liability to any person or entity with respect to any loss or damage caused or alleged to be caused directly or indirectly by the instructions contained in this book or by the computer software and hardware products described in it.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Trademarks

Visual QuickStart Guide is a registered trademark of Peachpit Press, a division of Pearson Education.

Many of the designations used by manufacturers and sellers to distinguish their products are claimed as trademarks. Where those designations appear in this book, and Peachpit Press was aware of a trademark claim, the designations appear as requested by the owner of the trademark. All other product names and services identified throughout this book are used in editorial fashion only and for the benefit of such companies with no intention of infringement of the trademark. No such use, or the use of any trade name, is intended to convey endorsement or other affiliation with this book.

0 9 8 7 6 5 4 3 2 1

Printed in the United States of America

Dedication

To the memory of Bill Horwitz and Dorothy Negrino, because they loved learning.

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Special Thanks To

Big thanks to our editor Nancy Davis; her expert touch, warm compassion, and fierce dedication always make our work better.

Thanks to Tracey Croom for her excellent production work.

Our heartfelt thanks to Danielle Foster, the book's compositor, who laid out the book under incredible time pressure and pulled off the job with grace and aplomb.

We're grateful to Peachpit's Nancy Ruenzel for her support.

Thanks to our son Sean, for understanding when his parents got cranky, and for making himself dinner on too many occasions.

We'd like to express our special thanks to all of the high school, college, and university instructors who chose to use the previous editions of this book as a textbook for their classes.

Dori would like to thank the wonderful ladies in the W&S group for their loving kindness and virtual hugs. And thanks are also due to the Wise-Women's Web Design community (http://www.wise-women.org) for their patience, support, and inspiration as role models.

Music is the fuel for Tom's writing, and this book is no exception. The soundtrack and musical inspiration for this sixth edition was graciously provided by lots of uncool bouncy pop music that will remain unidentified, Wolfgang Mozart, Patty Griffin, Richard Shindell, KT Tunstall, Bruce Springsteen, Rosanne Cash, REM, Antonio Vivaldi, Pandora Radio, and the shuffle feature in iTunes.

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Introduction

Welcome to JavaScript! Using this easy-to-learn programming language, you'll be able to add pizzazz to your Web pages and make them more useful for you and for your site's visitors. We've written this book as a painless introduction to JavaScript, so you don't have to be a geek or a nerd to write a script. Pocket protectors will not be necessary at any time. As a friend of ours says, "We're geeky, so you don't have to be!"

We Wrote this Book for You

We figure that if you're interested in JavaScript, then you've already got some experience in creating HTML pages and Web sites, and you want to take the next step by adding some interactivity to your sites. We don't assume that you know anything about programming or scripting. We also don't assume that you are an HTML expert (though if you are, that's just fine). We do assume that you've got at least the basics of building Web pages down, and that you have some familiarity with common HTML, such as links, images, and forms.

We include some extra explanation of HTML in sidebars called "Just Enough HTML." You won't find these sidebars in every chapter, just the ones where we think you'll need a quick reference. Having this HTML information handy means you won't need two books open just to remember the syntax of a particular HTML attribute. We also think that you should have at least a nodding familiarity with CSS (Cascading Style Sheets), but we've included just about all the information you might need to get going if you haven't worked with CSS before.

If you already know something about programming, you should be aware that we don't take the same approach to JavaScript as you might have seen in other books. We don't delve deeply into JavaScript's syntax and structure, and we don't pretend that this book is a comprehensive language reference (though you'll find some valuable reference material in Appendix A, the color section in the back of the book). There are several other books on the market that do that job admirably, and we list them at the end of this book, in Appendix D. The difference between those books and this one is that instead of getting bogged down in formalism, we concentrate on showing you how to get useful tasks done with JavaScript without a lot of extraneous information.

New in this edition, we've added an introduction to Ajax, a technique that uses JavaScript and other common Web technologies to add extra interactivity to Web pages, and to improve the user experience of your Web sites. We give you Ajax basics and then add practical examples that will allow you to Ajax-ify your sites without getting an advanced degree in Web programming.

How to Use this Book

Throughout the book, we've used some devices that should make it easier for you to work with both the book and with JavaScript itself.

In the step-by-step instructions that make up most of the book, we've used a special type style to denote either HTML or JavaScript code, like this:

```
<div align="center">
```

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

You'll also notice that we show the HTML and the JavaScript in lowercase. We've done that because all of the scripts in this edition are compliant with the XHTML 1.0 Transitional standard from the W3C, the World Wide Web Consortium. Whenever you see a quote mark in a JavaScript, it is always a straight quote (like ' or "), never curly quotes (aka "smart" quotes, like ' or "). Curly quotes will prevent your JavaScript from working, so make sure that you avoid them when you write scripts.

In the illustrations accompanying the step-by-step instructions, we've highlighted the part of the scripts that we're discussing in red, so you can quickly find what we're talking about. We often also highlight parts of the screen shots of Web browser windows in red, to indicate the most important part of the picture.

Because book pages are narrower than computer screens, some of the lines of JavaScript code are too long to fit on the page. When this happens, we've broken the line of code up into one or more segments, inserted this gray arrow ⟶ to indicate that it's a continued line, and indented the rest of the line. Here's an example of how we show long lines in scripts.

```
dtString = "Hey, just what are you doing up so late?";
```

You Say Browser, We Say Kumbaya

We've made a big change in this edition; we have ended our support for browsers that are very old or that don't do a good job of supporting Web standards. Since our last edition, virtually all Web users have upgraded and are enjoying the benefits of modern browsers, ones that do a good-to-excellent job of supporting commonly accepted Web standards like XHTML, CSS2, and the Document Object Model. That covers Internet Explorer 6 or later; Firefox 1.0 or later; Netscape 7 or later; all versions of Safari; and Opera 7 or later.

If you do need to support older browsers, you'll need to use some older techniques. We covered those browser-specific techniques in previous editions, but we decided to make a clean break from the old ways of doing things this time around and took that information out of the printed book. We didn't want to lose that content entirely, so we are making it available as Chapter 18, "Working with Older Browsers," in the form of a downloadable PDF on the book's companion Web site. Just go to www.javascriptworld.com, click the Resources link, and you'll find the Chapter 18 file waiting for you. While you're there at the Web site, take a look around; chances are you'll find lots of other interesting things.

We (along with our crack team of testers) have tested our scripts in a wide variety of browsers, on several different operating systems, including Windows XP, Mac OS X, and Ubuntu Linux. Windows Vista had not arrived in final form as we went to press, and the public beta versions were still too subject to change, so we passed on using Vista for this edition.

We used the 600-pound gorilla of the browser world, Microsoft Internet Explorer 6 for Windows, to test virtually everything in the book, and did extensive testing with public beta versions of IE 7 (we went to press before the final version of IE 7 was released). We also tested the scripts with Firefox 1.5 for Windows, Mac, and Linux. We didn't leave out the Mac users, of course; all of the scripts were tested in Safari 2. That means that they should also work in other browsers derived from the WebKit engine that drives Safari (such as the Omni Group's OmniWeb), and on browsers based on the open-source KHTML rendering engine from which Safari got its start (such as Konqueror for Linux).

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Don't Type that Code!

Some JavaScript books print the scripts, and expect you to type in the examples. We think that's way too retro for this day and age. It was tough enough for us to do all that typing, and there's no reason you should have to repeat that work. So we've prepared a companion Web site for this book, one that includes all of the scripts in the book, ready for you to just copy and paste into your own Web pages. The site also includes additional tips and scripts. If we discover any mistakes in the book that got through the editing process, we'll list the updates on the site, too. You can find our companion site at:

http://www.javascriptworld.com/

If for some reason you do plan to type in some script examples, you might find that the examples don't seem to work, because you don't have the supporting files that we used to create the examples. For example, in a task where an on-screen effect happens to an image, you'll need image files. No problem. We've put all of those files up on the book's Web site, nicely packaged for you to download. You'll find one downloadable file that contains all of the scripts, HTML files, and any media files we used. If you have any questions, please check the FAQ (Frequently Asked Questions) page on the companion Web site. It's clearly marked.

If you've read the FAQ, and your question isn't answered there, you can contact us via email at: js6@javascriptworld.com. We regret that because of the large volume of email that we get, we cannot, and will not, answer email about the book sent to our personal email addresses. We can only guarantee that messages sent to the js6@javascriptworld.com address will be answered.

Time to Get Started

One of the best things about JavaScript is that it's easy to start with a simple script that makes cool things happen on your Web page then add more complicated stuff as you need it. You don't have to learn a whole book's worth of information before you can start improving your Web pages. But by the time you're done with the book, you'll be adding advanced interactivity to your sites with Ajax.

Of course, every journey begins with the first step, and if you've read this far, your journey into JavaScript and Ajax has already begun. Thanks for joining us; please keep your hands and feet inside the moving vehicle. And please, no flash photography.

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Chapter 1. Getting Acquainted with JavaScript

For Web site creators, the evolution of HTML has been a mixed blessing. In the early days of the World Wide Web, HTML was fairly simple, and it was easy to learn most everything you needed to learn about putting together Web pages.

As the Web grew, page designers' aspirations grew as well, and their demand for greater control over the look of the page forced HTML to change and become more complex.

Because the Web is a dynamic medium, page designers also wanted their pages to interact with the user, and it soon became obvious that HTML was insufficient to handle the demand. Netscape invented JavaScript as a way to control the browser and add pizzazz and interactivity to Web pages.

Since its creation, JavaScript has evolved quite a bit (although occasionally in different directions, depending on the browser). Later in this book, we'll discuss JavaScript's evolution in detail.

In this chapter, you'll learn what JavaScript is (and what it isn't); what it can do (and what it can't); and some of the basics of the JavaScript language; and you'll get an introduction to Ajax, the exciting combination of JavaScript and other technologies that is enabling the next wave of interactivity and creativity for Web sites.

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

What JavaScript Is

JavaScript is a programming language that you can use to add interactivity to your Web pages. But if you're not a programmer, don't panic; there are lots of JavaScripts available on the Web that you can copy and modify for your own use with a minimum of effort. In fact, standing on the shoulders of other programmers in this way is a great technique for getting comfortable with JavaScript.

To make it easier for you to get up and running with JavaScript, we have set up a Web site that supplements this book. We've included all the scripts in the book (so you don't have to type them in yourself!), as well as additional notes, addenda, and updates. You can find our site at http://www.javascriptworld.com.

You'll often see JavaScript referred to as a "scripting language," with the implication that it is somehow easier to script than to program. It's a distinction without a difference, in this case. A JavaScript script is a program that either is contained internally in an HTML page (the original method of scripting) or resides in an external file (the now-preferred method). On HTML pages, because it is enclosed in the `<script>` tag, the text of the script doesn't appear on the user's screen, and the Web browser knows to run the JavaScript program. The `<script>` tag is most often found within the `<head>` section of the HTML page, though you can, if you wish, have scripts in the `<body>` section. Internal scripts that write text to the screen or that write HTML are best put in the `<body>` section, as in **Script 1.1**. If you're unfamiliar with these HTML concepts and you need more information about HTML, we suggest that you check out Elizabeth Castro's *HTML, XHTML, and CSS, Sixth Edition: Visual QuickStart Guide*, also available from Peachpit Press.

Script 1.1. This very simple script types "Hello, Cleveland!" into the browser window.

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN">
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
     <title>Barely a script at all</title>
</head>
<body bgcolor="#FFFFFF">
<h1>
     <script language="Javascript" type="text/javascript">
       document.write("Hello, Cleveland!")
     </script>
</h1>
</body>
</html>
```

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

JavaScript Isn't Java

Despite the name, JavaScript and Java have almost nothing to do with one another. Java is a full-featured programming language developed and marketed by Sun Microsystems. With Java, a descendant of the C and C++ programming languages, programmers can create entire applications and control consumer electronic devices. Unlike other languages, Java holds out the promise of cross-platform compatibility; that is, a programmer should be able to write one Java program that can then run on any kind of machine, whether that machine is running Windows, Mac OS X, or any of the different flavors of Unix. In practice, Java hasn't always realized that dream, due in no small part to bickering between Sun and Microsoft as to the direction of the language. Microsoft got involved because it first wanted to integrate Java into Windows in its own way (a way that Sun said would make Java work one way on Windows, and another way on other machines, thereby defeating Java's main purpose); then Microsoft dropped Sun's Java from Windows altogether, after creating its own Java-like language, C#. After a flurry of lawsuits between the two companies (and a big settlement in favor of Sun), Microsoft removed its Java from Windows, and you can now install the latest version of Sun's Java for Windows (or Linux) at http://www.java.com/getjava/. Mac OS X comes with Java installed as part of the operating system.

Besides standalone applications, Java's main use on the *client side*, that is, in the user's browser, is to create *applets*, small programs that download over the Internet and run inside Web browsers. Because of Java's cross-platform nature, these applets should run identically on any Java-enabled browser. In recent years, we've seen many Java applets for browsers replaced by Macromedia Flash animations, which are generally easier to create than Java applets.

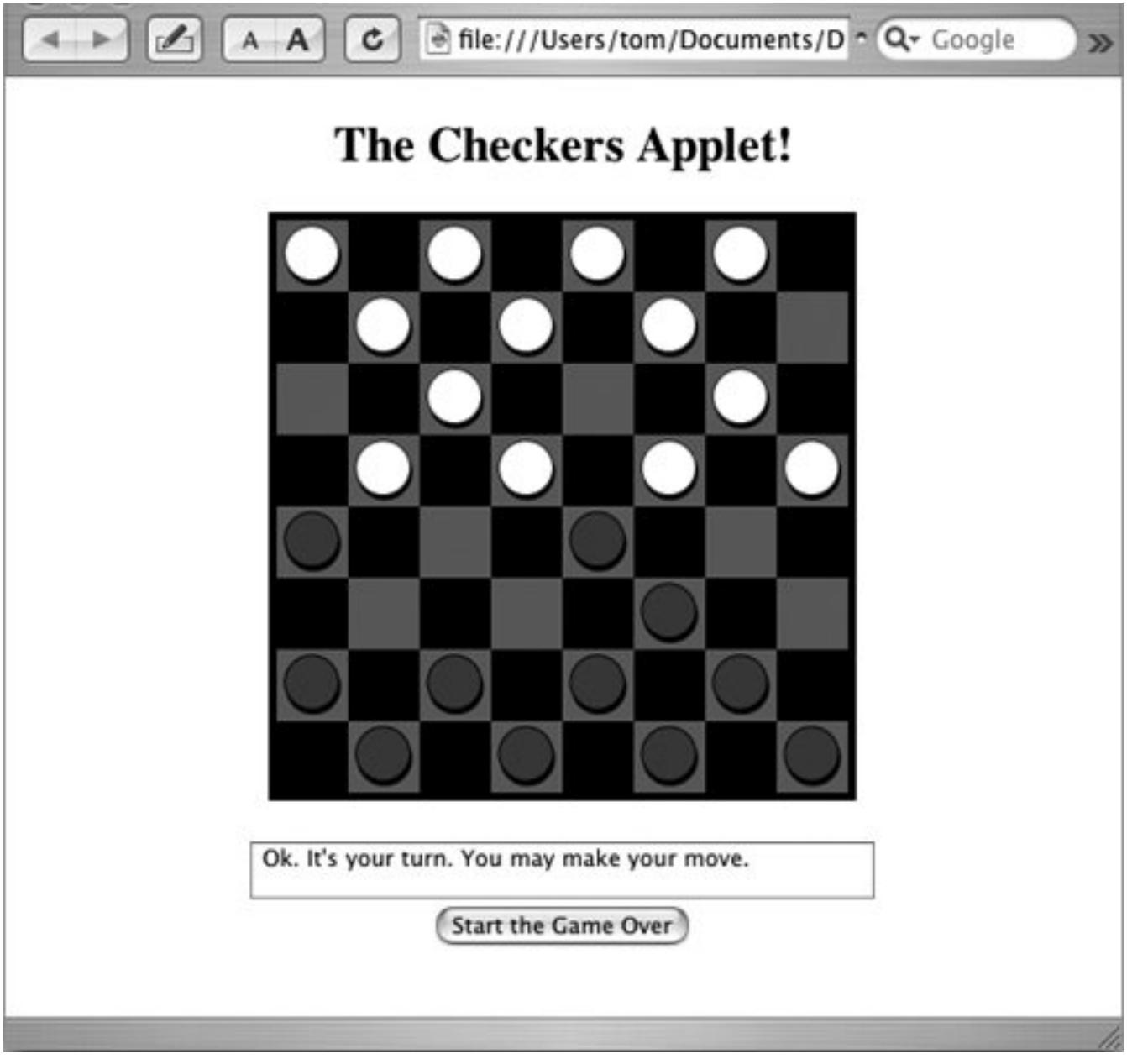
You embed Java applets in your Web pages using the `<object>` HTML tag, with additional information specifying the applet. When the browser sees the `<object>` tag, it downloads the Java applet from the server, and the applet then runs in the area of the screen specified in the tag (**Figure 1.1**).

Figure 1.1. This Java applet plays a mean game of checkers.

[View full size image]

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir



To learn more about Java, we recommend *Java 2 for the World Wide Web: Visual QuickStart Guide* by Dori Smith.

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Where JavaScript Came From

If JavaScript isn't related to Java, then why do they have such similar names? It's another example of one of the computer industry's most annoying traits: the triumph of marketing over substance.

When Netscape added some basic scripting abilities to its Navigator Web browser, it originally called that scripting language LiveScript. Around the same time, Java was getting lots of press as the Next Big Thing In Computing. When Netscape revised Navigator to run Java applets in Navigator 2, it also renamed LiveScript to JavaScript, hoping that some of Java's glitter would rub off. The mere fact that JavaScript and Java were very different programming languages didn't stop Netscape's marketing geniuses, and ever since then, writers like us have made good money explaining that JavaScript and Java are very different things. Come to think of it, maybe we should be thanking those marketeers.

When Microsoft saw that JavaScript was becoming popular among Web developers, it realized that it would have to add some sort of scripting capabilities to Internet Explorer. It could have adopted JavaScript, but as is so often the case, Microsoft instead built its own language that works much like JavaScript but is not exactly the same. This Microsoft version of JavaScript is called JScript.

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

What JavaScript Can Do

There are many things that you can do with JavaScript to make your Web pages more interactive and provide your site's users with a better, more exciting experience. JavaScript lets you create an active user interface, giving the users feedback as they navigate your pages. For example, you've probably seen sites that have buttons that highlight as you move the mouse pointer over them. That's done with JavaScript, using a technique called a *rollover* (**Figure 1.2**).

Figure 1.2. A rollover is an image that changes when you move the mouse pointer over it.

You can use JavaScript to make sure that your users enter valid information in forms, which can save your business time and money. If your forms require calculations, you can do them in JavaScript on the user's machine without any server-side processing. That's a distinction you should know: programs that run on the user's machine are referred to as *client-side* programs; programs running on the server (including things called CGIs; more on them later) are called *server-side* programs.

With JavaScript, you have the ability to create custom HTML pages on the fly, depending on actions that the user takes. Let's say that you are running a travel site, and the user clicks Hawaii as a destination. You can have the latest Hawaii travel deals appear in a new window. JavaScript controls the browser, so you can open up new windows, display alert boxes, and put custom messages in the status bar of the browser window. Because JavaScript has a set of date and time features, you can generate clocks, calendars, and timestamp documents.

You can also deal with forms, set cookies, build HTML pages on the fly, and create Web-based applications.

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

What JavaScript Can't Do

JavaScript is a *client-side* language; that is, it is designed to do its work on your machine, not on the server. Because of this, JavaScript has some limitations built-in, mostly for security reasons:

- JavaScript does not allow the reading or writing of files on client machines. That's a good thing, because you certainly don't want a Web page to be able to read files off of your hard disk, or be able to write viruses onto your disk, or be able to manipulate the files on your computer. The only exception is that JavaScript can write to the browser's cookie file, and even then there are limitations (for more information about cookies, see Chapter 10).
- JavaScript does not allow the writing of files on server machines. There are a number of ways in which this would be handy (such as storing page hit counts or filled-out form data), but JavaScript isn't allowed to do that. Instead, you'll need to have a program on your server to handle and store this data. This can be, for example, a CGI written in a language such as Perl or PHP, or a Java program.
- JavaScript cannot close a window that it hasn't opened. This is to avoid a situation where a site takes over your browser, closing windows from any other sites.
- JavaScript cannot read information from an opened Web page that came from another server. In other words, a Web page can't read any information from other open windows and find out what else a surfer visiting the site is up to.

PREV NEXT

downloaded from: lib.ommolketab.ir

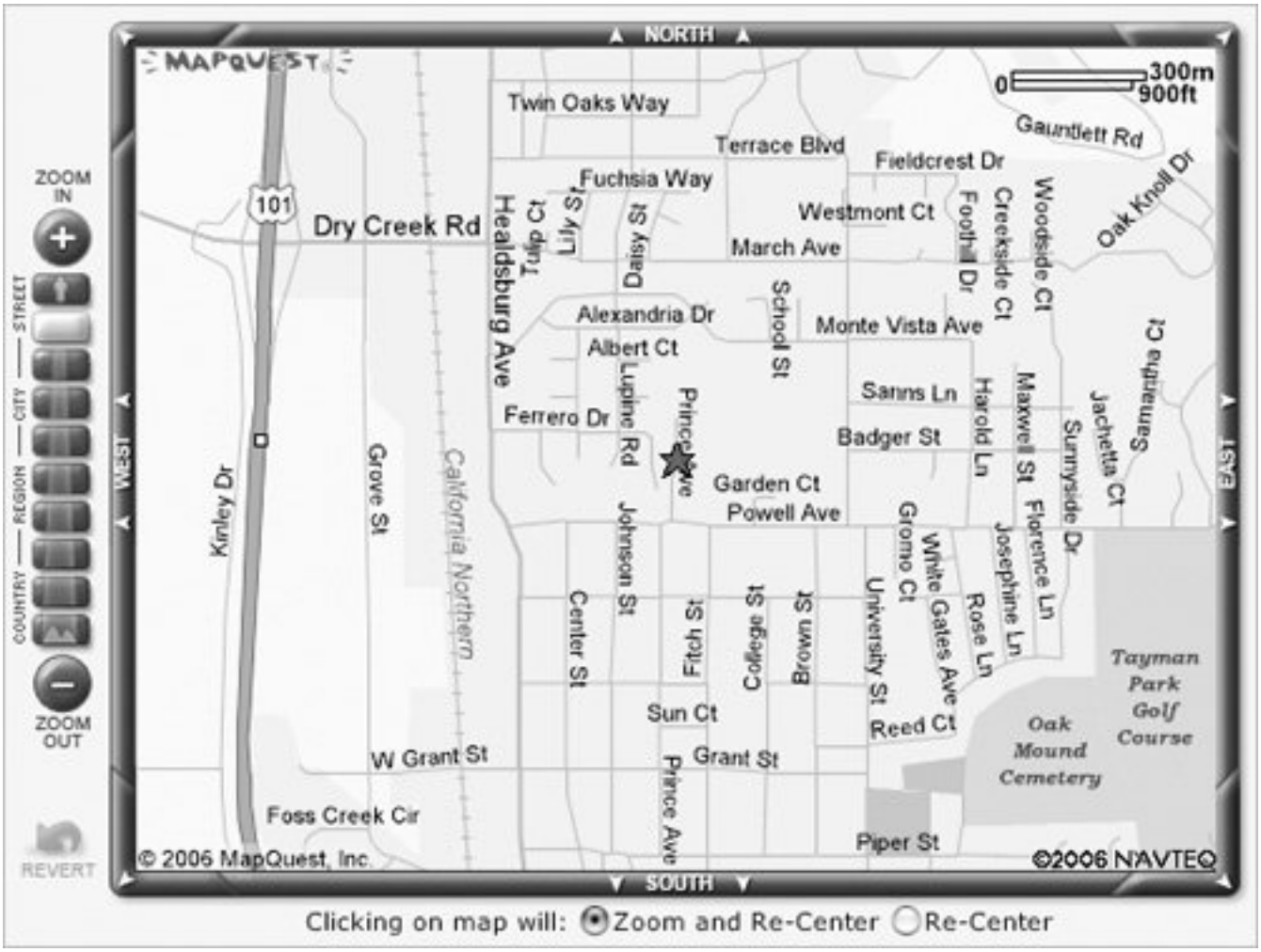
downloaded from: lib.ommolketab.ir

What Is Ajax?

The short answer is that it's a way to create interactive Web applications. All right, now what does *that* mean? Let's think about things that you might want to do with a Web site. For example, you might want to go out to dinner with your spouse. (If you don't have a spouse, feel free to substitute "friend," "relative," or "pet" for "spouse" in the previous sentence. Though most people don't go to dinner with their pets. But we digress.) So you want to know how to get from your place to that fabulous new restaurant downtown that everyone's told you about. You decide to look up directions on a Web site that provides maps. You go to the site, type in the restaurant's address, and the site shows you a map with the restaurant marked. This particular site shows you the map, with a border that you can click if you want to change the map view (**Figure 1.3**). You click a border, wait five to ten seconds or so for the map to redraw, and, if you want to change the view again, repeat. It's a slow process and not very responsive to you. Wouldn't it be better to just click the map and drag it in the direction you want, and the map view moves as you drag?

Figure 1.3. This MapQuest map takes a long time to respond to user clicks, because it needs a lot of refreshing from the server to make changes.

[View full size image]



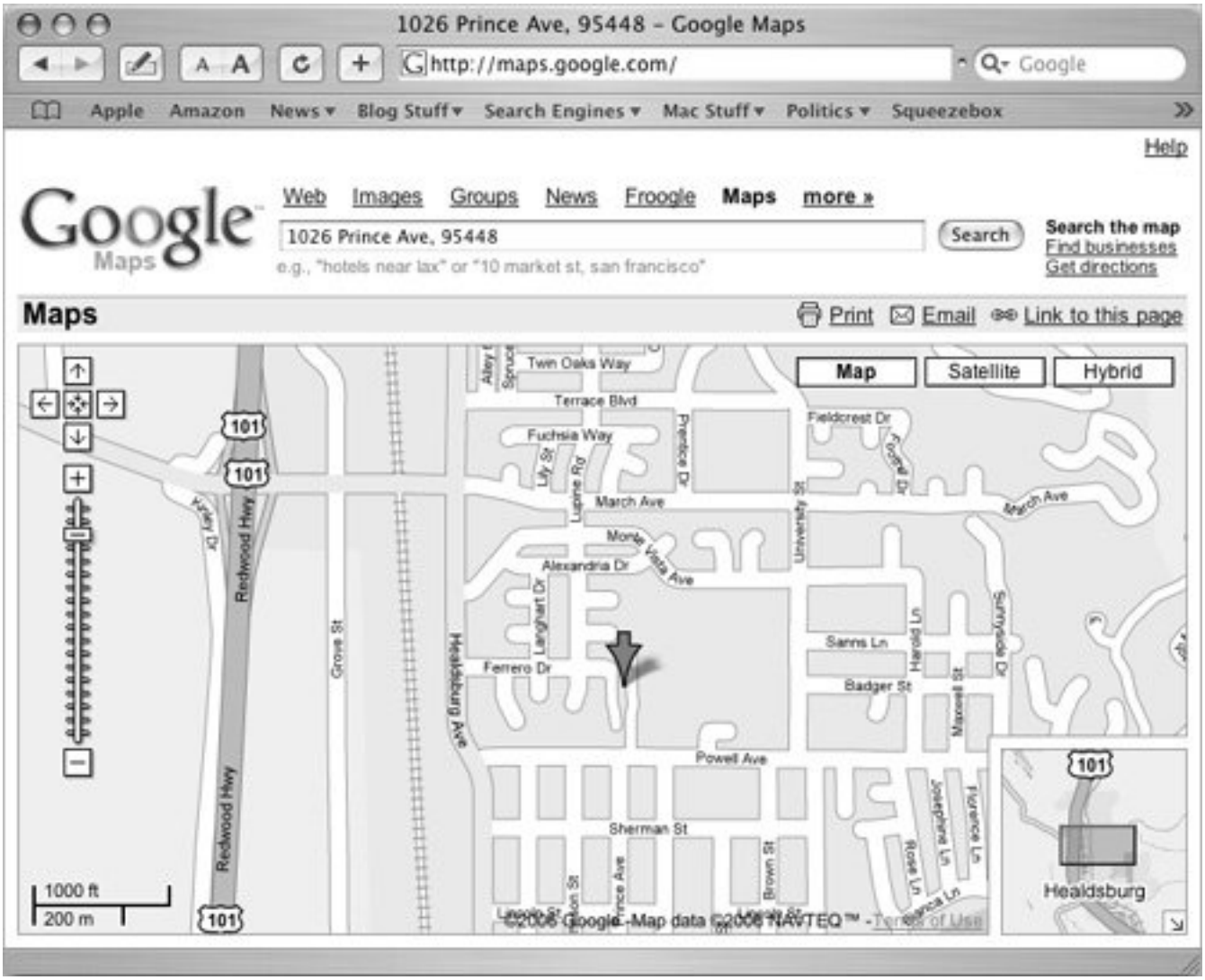
downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

That's the kind of dynamic responsiveness you can provide to your users with a Web application built with Ajax (**Figure 1.4**). There's almost no waiting; the user is in control; and it allows you to create Web-based applications with the kind of user experience found on a traditional desktop application. Plus, it makes it a lot faster and easier to find out how to get from home to that great dinner.

Figure 1.4. The Ajax-ified Google Maps allows a much more fluid and responsive user experience.

[View full size image]



Ajax is shorthand for Asynchronous JavaScript and XML, and it is a term that was first coined in early 2005 by Jesse James Garrett, a Web developer and author. Strictly speaking, Ajax is just a small (although particularly popular) part of JavaScript. As commonly used, though, the term no longer refers to a technology by itself (like, say, Java or JavaScript).

In the larger scheme of things, what's generally referred to as Ajax is the combination of these technologies:

- XHTML
- CSS (Cascading Style Sheets)

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

- XML, the format of the data being transferred between the server and the client
- XMLHttpRequest to retrieve data from the server

Whew. That's quite a list, especially if you don't have much experience with JavaScript or other Web programming. But you shouldn't worry; throughout this book, we'll introduce each of these technologies. By the time you get to the Ajax chapters, the pieces that make it up should be old hat.

The benefit to Ajax is that most of the processing for the application is happening within the user's browser, and requests to the server for data are usually short. So with Ajax, you can give users the kind of rich applications that depend on Web-based data, without the performance penalty of older approaches, which required that the server send back entire pages of HTML in response to user actions.

Some companies have made huge investments in Ajax, notably Google, which has built several major Ajax applications, including Gmail (its Web-based email), Google Calendar, Google Suggest, and Google Maps. Another big supporter of Ajax is Yahoo!, which uses Ajax to enhance its personalized My Yahoo! portal, the Yahoo! front page, Yahoo! Mail, and more. Both companies have made interfaces to their Web applications public, so that people can use them to make interesting new applications. For example, many people have created *mashups* for Google Maps, which take a map and overlay interesting, useful, or just wacky information on the map, such as the location of all Japanese restaurants, or the filming locations for movies in the Los Angeles area.

✓ Tip

- For a nice listing of many Google Maps mashups, see Google Maps Mania (`googlemapsmania.blogspot.com`).

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

The Snap-Together Language

Here's another buzzword that we should get out of the way: JavaScript is an *object-oriented* language. So what does that mean?

Objects

First, let's think about objects. An *object* is some kind of a thing. A cat, a computer, and a bicycle are all objects (**Figure 1.5**) in the physical world. To JavaScript, there are objects it deals with in Web browsers, such as windows and forms, and the elements of the form, such as buttons and check boxes (**Figure 1.6**).

Figure 1.5. The cat object (this one's name is Pixel).

Figure 1.6. The buttons and check box are browser objects, which can be manipulated by JavaScript.

Because you can have more than one cat, or more than one window, it makes sense to give them names. While you could refer to your pets as Cat #1 and Cat #2, it's a bad idea for two reasons: first, it's easier to tell the cats apart if they have unique names, and second, it's just plain impolite. In the same way, all the examples in this book will give objects their own unique names.

✓ **Tip**

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

- Be aware that scripts you might see on the Internet will refer to objects like `window[0]` and `form[1]`. This is poor style for the reasons given above, and you'll find that it's much easier for you to keep track of the different objects in your scripts if you give them names instead of numbers.

Properties

Objects have *properties*. A cat has fur, the computer has a keyboard, and the bicycle has wheels. In the JavaScript world, a window has a title, and a form can have a check box.

Changing a property of an object modifies that object, and the same property name can be a part of completely different objects. Let's say that you have a property called `empty`. It's okay to use `empty` wherever it applies, so you could say that both the cat's tummy is empty and the cat's bowl is empty.

Note that the computer's keyboard and the bicycle's wheels aren't only properties; they are also objects in their own right, which can have their own properties. So objects can have sub-objects.

Methods

The things that objects can do are called *methods*. Cats purr, computers crash, and bicycles roll. JavaScript objects also have methods: buttons `click()`, windows `open()`, and text can be `selected()`. The parentheses signal that we're referring to a method, rather than a property.

✓ Tip

- It might help to think of objects and properties as nouns, and methods as verbs. The former are things, and the latter are actions that those things can do, or have done to them.

Putting the pieces together

You can put together objects, properties, and methods to get a better description of an object, or to describe a process. In JavaScript, these pieces are separated by periods (also known as dots, as in Internet addresses). This is called *dot syntax*. Here are some examples of objects and their properties written in this way:

```
bicycle.wheels

cat.paws.front.left

computer.disk.floppy

document.images.name
```

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

And here are some examples of objects and methods written in dot syntax:

```
cat.purr()

document.write()

forms.elements.radio.click()
```

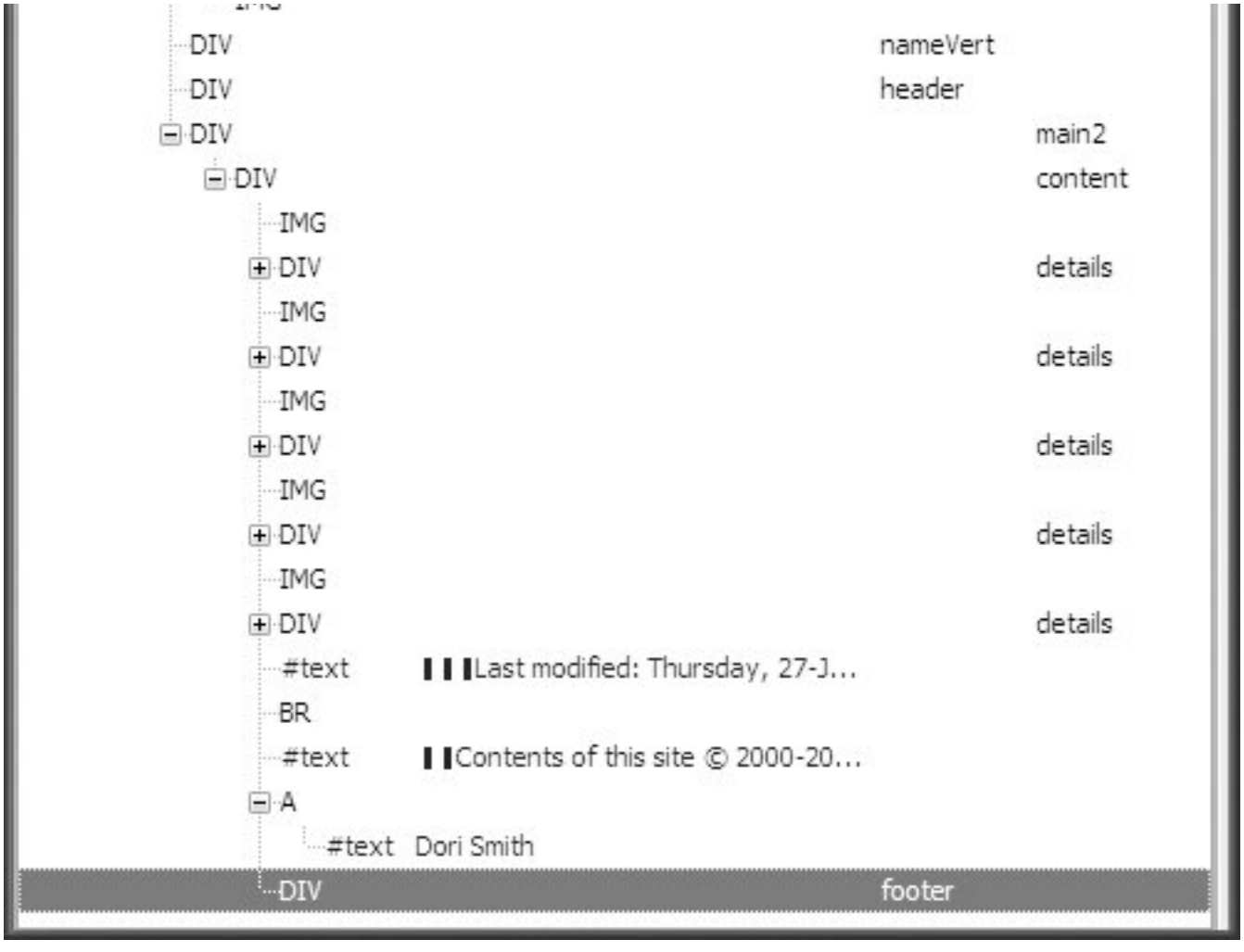
Introducing the Document Object Model

On a Web page, the objects that make up the page (or *document*) are represented in a tree structure. You've seen this sort of thing before when building HTML pages; the top level of the page is contained in the `<html>` tag, and inside that you'll find the `<head>` and `<body>` tags, with other tags within each of those, and so on. Some browsers can show you representations of this tree structure, as in **Figure 1.7**. JavaScript considers each of the items in the document tree to be objects, and you can use JavaScript to manipulate those objects. The representation of the objects within the document is called the *Document Object Model* (DOM).

Figure 1.7. You can see a document's tree structure using the DOM Inspector, which is part of Firefox; there are similar features in Safari and Internet Explorer.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir



Each of the objects on the tree is also called a *node* of the tree. We can use JavaScript to modify any aspect of the tree, including adding, accessing, changing, and deleting nodes on the tree. Each object on the tree is a node. If the node contains an HTML tag, it's referred to as an *element node*. Otherwise, it's referred to as a *text node*. Of course, element nodes can contain text nodes. That's all you need to know about the DOM and nodes for now; you'll see more about them throughout the book, especially in Chapter 12.

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Handling Events

Events are actions that the user performs while visiting your page. Submitting a form and moving a mouse over an image are two examples of events.

JavaScript deals with events using commands called *event handlers*. An action by the user on the page triggers an event handler in your script. The 12 most common JavaScript event handlers are listed in **Table 1.1**. We deal with other, more advanced event handlers in Chapter 9.

Table 1.1. Event Handlers

Event	What It Handles
onabort	The user aborted loading the page
onblur	The user left the object
onchange	The user changed the object
onclick	The user clicked an object
onerror	The script encountered an error
onfocus	The user made an object active
onload	The object finished loading
onmouseover	The cursor moved over an object
onmouseout	The cursor moved off an object
onselect	The user selected the contents of an object
onsubmit	The user submitted a form
onunload	The user left the page

For example, let's say that our cat handles the event `onpetting` by performing the actions `purr` and `stretch`.

In JavaScript, if the user clicks a button, the `onclick` event handler takes note of the action and perform whatever duties it was assigned.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

the ones where you want something special to occur. For instance, your page will load just fine without an `onload` event handler. But you use the `onload` command if you want to trigger a script as soon as the page loads.

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Values and Variables

In JavaScript, a piece of information is a *value*. There are different kinds of values; the kind you're most familiar with are numbers. A *string* value is a word or words enclosed in quotes. Other kinds of JavaScript values are listed in **Table 1.2**.

Table 1.2. Value Types

Type	Description	Example
Number	Any numeric value	3.141592654
String	Characters inside quote marks	"Hello, world!"
Boolean	True or False	true
Null	Empty and meaningless	
Object	Any value associated with the object	
Function	Value returned by a function	

Variables contain values. For example, the variable `myName` is assigned the string "Dori". Another way to write this is `myName="Dori"`. The equals sign can be read as "is set to." In other words, the variable `myName` now contains the value "Dori".

✓ Tips

- JavaScript is case sensitive. This means that `myname` is not the same as `myName`, and neither is the same as `MyName`.
- Variable names cannot contain spaces or other punctuation, or start with a digit. They also can't be one of the JavaScript reserved words. See Appendix B for a list of JavaScript reserved words.

Operators

Operators are the symbols used to work with variables. You're already familiar with operators from simple

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Table 1.3. Operators

Operator	What It Does
x + y (Numeric)	Adds x and y together
x + y (String)	Concatenates x and y together
x - y	Subtracts y from x
x * y	Multiplies x and y together
x / y	Divides x by y
x % y	Modulus of x and y (i.e., the remainder when x is divided by y)
x++, ++ x	Adds one to x (same as x = x + 1)
x--, --x	Subtracts one from x (same as x = x - 1)
-x	Reverses the sign on x

✓ Tips

- While both `x++` and `++x` add one to x, they are not identical; the former increments x after the assignment is complete, and the latter before. For example, if `x` is 5, `y=x++` results in `y` set to 5 and `x` set to 6, while `y=++x` results in both `x` and `y` set to 6. The operator `-` (minus sign) works similarly.
- If you mix numeric and string values when adding two values together, the result is a string. For example, `cat + 5` results in `cat5`.

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Assignments and Comparisons

When you put a value into a variable, you are assigning that value to the variable, and you use an assignment operator to do the job. For example, you use the equals operator to make an assignment, such as `hisName="Tom"`. There are a whole set of assignment operators as listed in **Table 1.4**.

Table 1.4. Assignments

Assignment	What It Does
x = y	Sets x to the value of y
x += y	Same as x = x + y
x -= y	Same as x = x - y
x *= y	Same as x = x * y
x /= y	Same as x = x / y
x %= y	Same as x = x % y

Other than the equals sign, the other assignment operators serve as shortcuts for modifying the value of variables. For example, a shorter way to say `x=x+5` is to say `x+=5`. For the most part, we've used the longer version in this book for clarity's sake.

Comparisons

You'll often want to compare the value of one variable with another, or the value of a variable against a literal value (i.e., a value typed into the expression). For example, you might want to compare the value of the day of the week to "Tuesday", and you can do this by checking if `todaysDate=="Tuesday"`. A complete list of comparisons is in **Table 1.5**.

Table 1.5. Comparisons

Comparison	What It Does

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

x != y	Returns true if x and y are not equal
x > y	Returns true if x is greater than y
x > = y	Returns true if x is greater than or equal to y
x < y	Returns true if x is less than y
x <= y	Returns true if x is less than or equal to y
x && y	Returns true if both x and y are true
x || y	Returns true if either x or y is true
!x	Returns true if x is false

✔ Tip

- If you are comparing strings, be aware that "a" is greater than "A" and that "abracadabra" is less than "be".

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Writing JavaScript-Friendly HTML

Because you'll be using JavaScript to manipulate the objects within a document, you want to write your HTML in a way that can be easily used by your scripts. That basically means writing modern, standards-compliant XHTML and using CSS to separate the document's structure from its presentation.

When we say modern XHTML, we don't just mean documents that pass W3C validation using the Web tool at `validator.w3.org`. We also recommend thinking ahead to what you are likely to do with a page and adding appropriate tags and attributes that will make it easy to access objects with JavaScript. What sort of markup, you wonder? Glad you asked.

Structure, presentation, and behavior

CSS (Cascading Style Sheets) is a standard layout language for the Web that controls typography, colors, and the size and placement of elements and images. Your XHTML documents should have external style sheets defining the styles used within the document. Your JavaScript should also be in an external document, one that contains only JavaScript code.

When split up this way, your sites will contain three types of text files:

- XHTML: contains the content and structure of the page
- CSS: controls the appearance and presentation of the page
- JavaScript: controls the behavior of the page

When you do this, it becomes straightforward to make changes to your siteeven changes with site-wide effects.

Divs and spans

If you're used to the classic style of HTML, where you threw everything into tables and played with spacer GIFs until it all fell into more-or-less the layout you wanted, some of this will be new to youso here's a quick overview to bring you up to date.

XHTML contains two tags that are just starting to get the attention they deserve: `<div>` and `<span>`. They're used to break up your content into *semantic* chunks, that is, chunks that have a similar *meaning*. Things inside a single table cell or paragraph may or may not have anything in common, but the content within each `<div>` and `<span>` should.

Why use one over the other? A `<div>` is a block-level element, that is, there's a physical break between it and the elements above and below it. A `<span>` isn't block-level; instead, it's *inline*, so you can apply it to, for instance, a single phrase within a sentence.

We're not saying that you need to junk everything you've ever learned about HTMLfar from it! But add these two tags to your toolkit of solutions, and you'll be surprised how often you use them.

Classes and ids

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Inside your XHTML document, you'll mark up your content by breaking it down into those meaningful chunks. From there, you'll still need to identify those pieces of content where you want to change their presentation or behavior. For that, you'll primarily use two attributes: `class` and `id`. These attributes can be used by both CSS and JavaScript; a CSS style sheet uses those attributes as part of rules to define the appearance of a page, and the JavaScript file can use those attributes in code that affects the behavior of elements on the page.

✓ Tip

- Is that CSS above a little daunting? Chapter 11 should give you all the CSS help you'll need to know what's going on in this book.

- A *class* identifies an element that you may want to use more than once. For example, let's say that you're doing a page for a movie theater. You can define a class for the movie titles, specifying that the titles should be 14 pixel, bold, and dark blue.

  ```
  .movieTitle {
    font: bold 14px;
    color: #000099;
  }
  ```

  You should then wrap each movie title on your page with a tag specifying the `class` of the title style, like so:

  [View full width]
  ```
  <p>We're currently showing <span class="movieTitle"> The Aviator</span> and <span
  class="movieTitle"> The Outlaw</span>.</p>
  ```

- An *id* identifies an element that is unique to that document. For example, if you only use the name of the movie theater once on your page, you can create a style rule using an `id` to define how the theater's name will look, like this:

  ```
  #theaterName {
    font: bold 28px;
    color: #FF0000;
  }
  ```

  Then, when it's time to show the name of the theater, all you do is add that `id` attribute to the tag to get the effect:

  ```
  <h1 id="theaterName">The Raven Theater Presents:</h1>
  ```

  What goes for CSS in the above examples also applies to JavaScript. Once we've assigned classes and ids to our divs and spans (and to any other elements as well), we can then modify those elements: not just their appearance with CSS, but also their behavior with JavaScript. And that's a topic that will take up the rest of this book.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

What Tools to Use?

Since JavaScript is just plain text, you could use almost any kind of text editor. You could even use a word processor like Microsoft Word, though you would always have to make sure that Word saved the file as Text Only, instead of in its native file format. HTML, JavaScript, and CSS files must always be in plain text format so Web servers can understand them.

You're better off using a program that has plain text as its standard format. On Windows, many people get away with using Notepad (**Figure 1.8**). On the Mac, you can use TextEdit, though a favorite of professionals is BBEdit, by Bare Bones Software (**Figure 1.9**). On Unix machines, Emacs is one of the best text editors available. No matter what program you use, don't forget to save your plain text files with the extension `.html` or `.htm` so that things will go smoothly when you upload the file to a Web server.

Figure 1.8. Notepad on Windows XP.

[View full size image]

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

[View full size image]

BBEdit File Edit Text View Search Tools Markup Window #! CVS Help

06script11.txt

Last Saved: 06/20/06 10:43:55 PM
File Path: ~/Documents/Projects/JavaScript V...ap 06/Chap 06 Scripts/06script11.txt

06script11.txt

```
var newWindow = null;
window.onload = newWinLinks;

function newWinLinks() {
    for (var i=0; i<document.links.length; i++) {
        document.links[i].onclick = chgWindowState;
    }
}

function windowOpen() {
    if (newWindow && !newWindow.closed) {
        return true;
    }
    return false;
}

function chgWindowState() {
    if (this.id == "closeWin") {
        if (windowOpen()) {
            newWindow.close();
        }
        else {
            alert("The window isn't open");
        }
    }
    if (this.id == "openWin") {
        if (windowOpen()) {
            alert("The window is already open!");
        }
        else {
            newWindow =
window.open("","newWin","toolbar,location=yes,width=300,height=200");
        }
    }
    return false;
}
```

You can also use some of the WYSIWYG (What You See Is What You Get) HTML editors available, such as Macromedia Dreamweaver, Adobe GoLive, or Microsoft FrontPage (on the PC; there's no Mac version of FrontPage). Just switch to their HTML Source modes, and script away.

✓ Tip

- If you're a Mac user, try TextWrangler, also from the Bare Bones folks (www.barebones.com). It's not as full-featured as BBEdit, but it has a big point in its favor: it's free.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Chapter 2. Start Me Up!

Enough of the warm up; it's time to get scripting. In this chapter, you'll learn where to put your scripts in your HTML; how you can leave comments in your scripts so that you can more easily understand them at a later time; and how you can use scripts to communicate with the user. You'll also see how to make the page automatically change to another page (called *redirection*). Let's get to it!

Table 2.1. Just Enough HTMLThe Basics

Tag	Attribute	Meaning
`html`		Contains the HTML part of the Web page
`head`		Contains the header part of the Web page
`script`		Contains the Web page's script or a reference to the external script file. Usually JavaScript, but not always.
	`language`	The programming language for the script. This attribute has been deprecated in favor of `type`.
	`type`	The programming language for the script. Required attribute.
	`src`	The location of an external script
`title`		Contains the title of the Web page
`body`		Contains the body part of the Web page
	`bgcolor`	Sets the background color of the page
`h1...h6`		Contents of this tag are emphasized as heading information; h1 is largest heading size, down to `H6` as the smallest heading
	`align`	Describes where the contents of this tag should be placed on the page in terms of horizontal or vertical alignment
`a`		Links to another Web page
	`href`	Specifies where the user should go when the link is clicked
	`id`	The `id` assigned to the link

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Where to Put Your Scripts

Scripts can be put in one of two places on an HTML page: between the `<head>` and `</head>` tags (called a *header script*), or between the `<body>` and `</body>` tags (a *body script*). **Script 2.1** is an example of a body script.

Script 2.1. Scripts always need to be enclosed inside the `<script>` and `</script>` HTML tags.

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN">
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
     <title>My first script</title>
</head>
<body bgcolor="#FFFFFF">
     <h1>
        <script language="Javascript" type="text/javascript">

          document.write("Hello, world!");

       </script>
    </h1>
</body>
</html>
```

There is an HTML container tag that denotes scripts, which, as you would guess, begins with `<script>` and ends with `</script>`.

To write your first script:

1. `<script language="Javascript" type="text/javascript">`

   Here's the opening `script` tag. This tells the browser to expect JavaScript instead of HTML. The `language="Javascript"` attribute identifies to the browser which scripting language is being used, and the `type="text/javascript"` attribute tells the browser that the script is plain text, organized as JavaScript.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Here's the first line of JavaScript: It takes the document window and writes "Hello, world!" into it, as seen in **Figure 2.1**. Note the semicolon at the end of the line; this tells the browser's JavaScript interpreter that the line is ending. With rare exceptions, we'll be using semicolons at the end of each line of JavaScript in this book.

Figure 2.1. The "Hello, world" example is *de rigueur* in code books. We'd probably lose our union card if we left it out.

[View full size image]

3. `</script>`

This ends the JavaScript and tells the browser to start expecting HTML again.

✓ Tips

- There's no need to add `language` or `type` attributes to the closing `script` tag.
- The `language` attribute of the `script` tag has been *deprecated* in XHTML, which means that the W3C, the standards body responsible for XHTML, has marked the attribute as one that will not necessarily be supported in future versions of the standard. We've used it in this book, but you can choose to skip it in your scripts.
- Using a semicolon at the end of a JavaScript line is optional, so long as you only have one statement per line. We've included them in this book for clarity, and we suggest that you get into the habit of including them in your code for the same reason.
- For most of the rest of this book, we've left out the `<script>` tags in our code explanations. As you'll see from the scripts themselves, they're still there and still needed, but we won't be cluttering our explanations with them.
- You can have as many `script` tags (and therefore, multiple scripts) on a page as you'd like.

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

About Functions

Before you get into the next example, you need to learn a bit about functions, which you'll use often when writing JavaScript. A *function* is a set of JavaScript statements that performs a task. Every function must be given a name (with one very rare exception, which we'll discuss much later in this book) and can be invoked, or *called*, by other parts of the script.

Functions can be called as many times as needed during the running of the script. For example, let's say that you've gotten some information that a user typed into a form, and you've saved it using JavaScript (there's more about this sort of thing in Chapter 7, "Form Handling"). If you need to use that information again and again, you could repeat the same code over and over in your script. But it's better to write that code once as a function and then call the function whenever you need it.

A function consists of the word `function` followed by the function name. There are always parentheses after the function name, followed by an opening brace. The statements that make up the function go on the following lines, and then the function is closed by another brace. Here's what a function looks like:

```
function saySomething() {
    alert("Four score and seven years ago");
}
```

Notice that the line with `alert` is indented? That makes it easier to read your code. All of the statements between the first brace and the last one (and you probably noticed that those two lines are not indented) are part of the function. That's all you need to know for now about functions. You'll learn more about them in the next and subsequent chapters.

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Using External Scripts

The problem with using scripts on the HTML page, as in the last example, is that the script is only available to that particular page. That's why those kinds of scripts are sometimes called *internal* scripts. But often, you'll want multiple HTML pages to share a script. You do this by including a reference to an *external* script, that is, a separate file that just contains JavaScript. This external file is called a `.js` file, because whatever it's called, the file name should end with the suffix `.js`. Individual pages call the `.js` file simply by adding a new attribute, `src`, to the `script` tag.

This saves a lot of code on every page and, more important, makes it easier to maintain your site. When you need to make changes to a script, you just change the `.js` file, and all HTML pages that reference that file automatically get the benefit of your changes.

In this first example of an external script, **Script 2.2** contains the HTML with the reference to the external file, and **Script 2.3** is the external JavaScript file.

Script 2.2. The simple HTML puts a reference to the external JavaScript file inside the `script` tag.

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN">
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
     <title>My second script</title>
     <script language="Javascript" type="text/javascript" src="script02.js">
     </script>
</head>
<body bgcolor="#FFFFFF">
     <h1 id="helloMessage">
     </h1>
</body>
</html>
```

Script 2.3. Your first external JavaScript file.

```
window.onload = writeMessage;
function writeMessage() {
     document.getElementById("helloMessage"). innerHTML = "Hello, world!";
}
```

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

To use an external script:

1. `<script language="Javascript" type="text/javascript" src="script02.js">`

   This line is in Script 2.2. Adding the `src` attribute to the `script` tag causes browsers that support JavaScript 1.1 and later to look for that file. The resulting Web pages will look just as though the scripts were in their usual place inside the page's `script` tags, when really the script resides in the external `.js` file.

   By itself, this line is all we need to do to use an external script. Next, let's work through what is in that script.

2. `window.onload = writeMessage;`

   Moving to Script 2.3, the first part of this line, `window.onload`, is an event handler, which we discussed in Chapter 1. After the equals sign there is the name of a function, `writeMessage`. In English, this line can be read as "When the window finishes loading, tell the `writeMessage` function to run."

3. `function writeMessage() {`

   This line creates the `writeMessage()` function.

4. `document.getElementById ("helloMessage").innerHTML = "Hello, world!";`

   If you'll refer back to Script 2.2, you'll see that there is an `<h1>` tag there with an `id` of `helloMessage`. You'll learn more about `id`s later, but for now, suffice it to say that an `id` is a unique identifier on a page for whatever it is attached to. In other words, on a given page, there can be only one element with a particular `id`. That makes it easy for JavaScript to retrieve and operate on the element by using its `getElementById()` method. The `innerHTML` property simply takes the string that is on the right-hand side of the equals sign and drops it directly into the page, just as if we'd written it into the HTML itself. So, reading the JavaScript line from right to left in English, we could say "Take the string "Hello, world!" and put it into the document, inside the element on the page that is named `helloMessage`." The result looks like **Figure 2.2**, which looks an awful lot like Figure 2.1.

Figure 2.2. The result of moving your JavaScript to an external file looks eerily unchanged from the previous example. But it's still a better way of doing things.

[View full size image]

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

✓ Tips

- Browsers that support external JavaScript files include: Microsoft Internet Explorer 4 and later, Netscape 3 and later, and just about every other browser that's shipped since then, including modern browsers like Firefox and Safari.
- Using external JavaScript files is sometimes used to try to hide JavaScript from users. It doesn't work if the user is technically savvy enough to check their browser cache fileseverything that the browser has seen is stored there.
- In Script 2.1 (and previous editions of this book), we used a technique for inserting information into the HTML page called `document.write()`. In this edition, we've mostly replaced that approach with setting `innerHTML`, because it is more versatile. Some people object to the use of the `innerHTML` property because it hasn't been blessed by the W3C. But even those people with issues agree that it's the simplest cross-browser way to work, so that's what we're primarily showing in this book. The "official" way to add or change an HTML page is covered in Chapter 12, "Objects and the DOM."
- If you've seen functions before, you might be expecting the `writeMessage` reference in step 2 to instead be `writeMessage()`. It's not, because the two mean different things: a function shown with parentheses means that the function is being called, right then and there. When it's without parentheses, (as it is here) we're assigning it to the event handler, to be run later when that event happens.

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Putting Comments in Scripts

It's a good idea to get into the habit of adding comments to your scripts. You do this by inserting comments that JavaScript won't interpret as script commands. While your script may seem perfectly clear to you when you write it, if you come back to it a couple of months later it may seem as clear as mud. Comments help to explain why you solved the problem in a particular way. Another reason to comment your script is to help other people who may want to re-use and modify your script.

Script 2.4 shows examples of two kinds of script comments. The first kind is for longer, multi-line comments. The second example shows how to do single-line comments.

Script 2.4. Here's how you can annotate your script with comments, which helps you and others understand your code.

[View full width]

```
/*

    This is an example of a long JavaScript comment. Note the characters at the
beginning
 and ending of the comment.
    This script adds the words "Hello, world!" into the body area of the HTML page.
*/

window.onload = writeMessage;
    // Do this when page finishes loading

function writeMessage() {
    // Here's where the actual work gets done

    document.getElementById("helloMessage"). innerHTML = "Hello, world!";
}
```

Note that we haven't included the HTML for this example, as it is the same as Script 2.2. From now on in the book, when the HTML hasn't changed from a previous example, we won't be printing it again.

To comment your script:

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
/*
This is an example of a long JavaScript comment. Note the characters at the beginning and
 ending of the comment.
This script adds the words "Hello, world!" into the body area of the HTML page.
```

For multi-line comments, the `/*` at the beginning of the line tells JavaScript to ignore everything that follows until the end of the comment.

2. `*/`

This is the end of the comment.

3.
```
window.onload = writeMessage;
  // Do this when page finishes loading
function writeMessage() {
  // Here's where the actual work gets done
  document.getElementById ("helloMessage").innerHTML =  "Hello, world!";
}
```

And here's the script again, as in the previous example, with single-line comments. As you can see here, single-line comments can be on a line by themselves, or they can follow a line of code. You can't have a line of code on the same line after a single-line comment, nor can you have a multi-line comment on the same line as code.

Yes, we're as tired of seeing this one as you are, but it's traditional for all code books to start off with the "Hello, world!" example.

So much for tradition.

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Alerting the User

One of the main uses of JavaScript is to provide feedback to people browsing your site. You can create an alert window that pops up and gives users the vitally important information that they need to know about your page.

In user interface design, less is generally more. For example, you could get the user's attention with loud alarm sirens and big animated banners, but that would be just a bit over the top. Instead, **Scripts 2.5** (HTML, which just calls the external script) and **2.6** (JavaScript) show how to create a nice, tasteful alert window. Now you know why we're writers, not designers.

Script 2.5. The HTML for this example includes `<script>` and `<noscript>` tags.

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN">
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
     <title>My JavaScript page</title>
     <script language="Javascript" type="text/javascript" src="script04.js">
     </script>
</head>
<body bgcolor="#FFFFFF">
<noscript>
     <h2>This page requires JavaScript.</h2>
</noscript>
</body>
</html>
```

Script 2.6. Alert dialog boxes help you communicate with the user.

```
alert("Welcome to my JavaScript page!");
```

To alert a user:

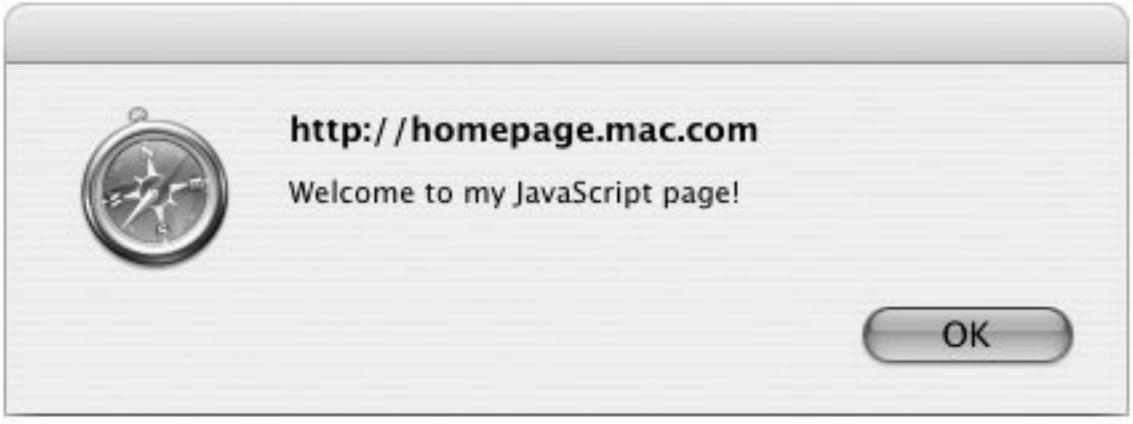
- `alert("Welcome to my JavaScript page!");`

  Yes, that's all there is to it, as shown in **Figure 2.3**. Just put the text that you want to have appear within the `alert()` method in straight quotes.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

examples of how the dialog box looks in, from top to bottom, Safari for Mac OS X; Microsoft Internet Explorer 6; Microsoft Internet Explorer 7; and Firefox 1.5 on Mac OS X.



downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Tips

- In most JavaScript alert boxes, you'll see some indication telling the user that the alert box was put up by a JavaScript command. This is a security feature to keep unscrupulous scripters from fooling hapless users. You can't code around this. On Safari for Mac OS X, for example, it shows the URL of the site that opened the alert, as shown in Figure 2.3. Firefox on both Windows and Mac does the same thing. In Internet Explorer 6, the window title is "Microsoft Internet Explorer." Internet Explorer 7 says "Windows Internet Explorer," an interesting bit of rebranding.
- You'll also see the `<noscript>` tag used here. On non-JavaScript browsers (older browsers and browsers with JavaScript turned off), a message appears saying that this page requires JavaScript.

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Confirming a User's Choice

While it's useful to give information to a user, sometimes you'll want to also get information back in return. **Script 2.7** shows how to find out if the user accepts or rejects your question. This script also introduces the idea of *conditionals*, which is where the script poses a test and performs different actions depending on the results of the test.

Script 2.7. You can alter a reply, depending on how the user reacts to a prompt.

```
if (confirm("Are you sure you want to do that?")) {
     alert("You said yes");
}
else {
     alert("You said no");
}
```

More about conditionals

Conditionals break down into three parts: the *if* section where we do our test; the *then* section, where we put the part of the script we want to do if the result is true; and an optional *else* section, which contains the part of the script we want to have happen if the result of the test is not true. The contents of what we're testing in the *if* section are in parentheses, and the contents of the other two sections are each contained in braces.

To confirm a choice:

1. `if (confirm("Are you sure you want to do that?")) {`

   The `confirm()` method takes one parameter (the question we want to ask the user) and returns either true or false, depending on the user's response.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

As shown in **Figure 2.4**, if the user clicked the OK button, `confirm()` returns true, and an alert displays, saying "You said yes". As you can see, this is the *then* section of the code, even though there's no *then* operator in JavaScript. The braces serve as the delineation of the *then* area.

Figure 2.4. You can capture the result of a user's action and confirm the result in an alert box, as seen here. The top image asks the user a question, and the result of pressing the OK or Cancel button is shown below.

3. `}`

   This brace ends the part that occurs when `confirm()` returned a value of true.

4. `else {`

   Here, we begin the section that only happens when the user hits the Cancel button.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

If the user clicked the Cancel button, `confirm()` returns false, and the message "You said no" is displayed.

6. `}`

This curly brace ends the entire `if`/`else` conditional statement.

✔ Tip

- You can put as many statements as you wish inside the *then* and *else* braces.

There's No One Right Way

There are, literally, a million ways to write any given script and still have it work correctly. For instance, braces are not required on conditionals if (and only if) there is only one command in that code block.

In addition, there's an alternate method of writing a conditional that takes the form:

```
(condition) ? truePart : falsePart;
```

which is the rough equivalent of:

```
if (condition) {
        truePart;
}
else {
        falsePart;
}
```

That same shorthand method can also be used to set variables; for instance:

```
myNewVariable = (condition) ?
trueValue : falseValue;
```

is equivalent to:

```
if (condition) {
        myNewVariable = trueValue;
```

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
else {
        myNewVariable = falseValue;
}
```

There's also no requirement that the braces have to be at the end or beginning of lines, or that the true and false code blocks need to be indented. It's all a matter of style, and the correct style to use is the one you've found to work best for you.

In this book, for the most part and for clarity's sake, we've included the braces in the examples and chosen to use the longer form for conditionals.

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Prompting the User

Sometimes, instead of just asking a Yes/No question, you'll want to get a more specific response. In that case, **Script 2.8** allows you to ask a question (with a default answer) and receive the reply in turn. **Figure 2.5** shows the results.

Script 2.8. You can use a dialog box to query the user and work with the reply.

```
var ans = prompt("Are you sure you want to do that?","");
if (ans) {
     alert("You said " + ans);
}
else {
     alert("You refused to answer");
}
```

Figure 2.5. You can prompt a user for a text string, then act on that string.

To prompt a user for a response:

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Here, we're declaring a variable (as discussed in Chapter 1). We use the `var` keyword to declare variables. In this case, the variable is called `ans` and assigned the result of the `prompt()`, i.e., what the user types into the prompt dialog.

The `prompt()` method is passed two bits of information (officially called *parameters*), separated by a comma: the question for the user and the default answer. It returns either the user's response or null; "null" occurs when the user hits Cancel, when there is no default and the user hits OK, or when the user clears the default answer and hits OK. For those browsers where a prompt shows a close box control, using that also returns a null result.

2.
```
if (ans) {
  alert("You said " + ans);
}
```

This conditional uses the variable that we just set. If `ans` exists (that is, if the user typed in a response), then the script puts up an alert window that says "You said" (and note the extra space at the end of that text string) and concatenates the value of `ans`.

3.
```
else {
  alert("You refused to answer");
}
```

If `ans` is null, because the user didn't enter anything or clicked the Cancel button in the prompt dialog, then the `else` block of the condition is executed, and the alert pops up.

✓ Tips

- Using `var` does two things:
  - It tells JavaScript to create a variable (that is, to set aside some space in memory for this new object).
  - It defines the *scope* of the variable, that is, where JavaScript needs to know about this particular object (see the "What Is Scope?" sidebar). If a variable is created inside a function, other functions don't have access to it, as it's *local* to that function. If it's created outside any function, it's *global*, and everything has access to it. In this script, we're creating the `ans` global variable.
- In some browsers, if you leave off `prompt`'s second parameter (the default response), everything works fine. However, in others, the prompt window will appear, displaying a default of "undefined". The answer is to always include *some* default, even if it's an empty string (as shown in Script 2.8).

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

What Is Scope?

In most of the world, when you talk about "Broadway," people know that you're referring to a street in New York City. While the street itself is in New York, people globally understand your reference. You can think of Broadway as a *global*.

However, if you're in San Diego, California, and you refer to "Broadway," people will think that you're referring to a major street in their downtown area. This is a *local* value. In San Diego, not being clear about whether you're referring to the locally known"Broadway" or the globally known "Broadway" can lead to confusion.

If you're in San Diego, the default is the local version, and you have to explicitly state "New York City's Broadway" in order to refer to the other. Outside of San Diego, people will think of New York's Broadway first, unless they have some other local version of Broadway.

The *scope* of each of these streets is where each is the default, that is, the one that will be automatically thought of if no other identifying information is given. The scope of San Diego's Broadway is localinside the city and a few outlying suburbs. The scope of New York's Broadway is global; that is, people anywhere in the world will know to where you're referring.

With JavaScript code, the easiest way to avoid questions and confusion about a variable's scope is to avoid using two variables with the same name in two different places doing two different things. If you must go down this slippery slope, be clear about your variable's scope!

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Redirecting the User with a Link

You can check for the existence of JavaScript and then seamlessly *redirect*, or send users to another page, depending on if they have JavaScript turned on. This example shows you how to embed the redirection in a link. We'll use two HTML pages and one JavaScript file. The first HTML page, **Script 2.9**, gives the user the link to click. **Script 2.10** is the JavaScript file, and **Script 2.11** is the HTML page the user is redirected to if they have JavaScript enabled. **Figure 2.6** shows the starting point for users. When they click the link, they'll be taken to one of two pages, depending on whether or not they have JavaScript.

Script 2.9. This HTML allows you to redirect the user based on a link.

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN">
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
     <title>Welcome to our site</title>
     <script src="script07.js" type="text/javascript" language="javascript">
     </script>
</head>
<body bgcolor="#FFFFFF">
     <h2 align="center">
         <a href="script04.html" id="redirect"> Welcome to our site... c'mon in!</a>
     </h2>
</body>
</html>
```

Script 2.10. By embedding the redirection inside the code, the user doesn't even know your script intervened in the link.

```
window.onload = initAll;
function initAll() {
     document.getElementById("redirect"). onclick = initRedirect;
}
function initRedirect() {
     window.location = "jswelcome.html";
     return false;
}
```

Script 2.11. This is the HTML for the page the JavaScript-enabled user ends up on.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
     <title>Our site</title>
</head>
<body bgcolor="#FFFFFF">
     <h1>Welcome to our web site, which features lots of cutting-edge JavaScript</h1>
</body>
</html>
```

Figure 2.6. This page has the link that contains the redirection code.

[View full size image]

To redirect a user:

1. `<a href="script04.html" id="redirect"> Welcome to our site... c'mon in!</a>`

   In Script 2.9, this is the link the user clicks. If users don't have JavaScript and they click the link, they'll follow the usual `href` path and end up on a page that looks like **Figure 2.7**. If users have JavaScript and they click the link, the script (down in step 4) takes over and loads a new page.

Figure 2.7. This message gives the user the heave-ho, if you've decided that JavaScript is essential to your site.

[View full size image]

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

2. `window.onload = initAll;`

Now we're in Script 2.10. When the page finishes loading, it triggers the `initAll()` function.

3.
```
function initAll() {
  document.getElementById ("redirect").onclick = initRedirect;
}
```

This function simply tells the element with the `id redirect` that it should call the `initRedirect()` function when it (that is, the link from step 1) is clicked.

4.
```
function initRedirect() {
  window.location = "jswelcome.html";
  return false;
}
```

If this function is called, then it sets `window.location` (the page displayed in the browser) to a new page. The `return false` says to stop processing the user's click, so the `href` page doesn't get loaded.

What's so cool about this is that we've done a redirection without users having any idea that it happened. They're just on one of two different pages, depending on what they came in with. If they have JavaScript, they end up on a page shown in **Figure 2.8**.

Figure 2.8. JavaScript-savvy browsers see this page instead.

[View full size image]

✓ Tip

- On first glance, we might think that we could just set the `onclick` handler globallythat is, as the page is loadingbut we can't. There's a chance, particularly for a large and complex page, that the browser will not yet have come across that `redirect id`, and if that happens, JavaScript won't be able to assign the `onclick` handler. Instead, we have to wait until the page has completed loading, and that's done via `onload`.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Using JavaScript to Enhance Links

Sometimes, you may want to perform some sort of action after the user clicks a link, but before the browser goes to the link's destination. A typical example would be when you want to put up an alert before the user goes to a particular page on your site, or to make it clear when the user leaves your site. In this example, we'll put up an alert dialog before continuing on to the ultimate destination. **Script 2.12** shows the HTML, and **Script 2.13** shows the small amount of changes we need to make to previous scripts.

Script 2.12. The HTML, as usual, contains an `id` in the link tag that JavaScript can use.

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN">
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
      <title>Welcome to our site</title>
      <script src="script08.js" type="text/javascript" language="javascript">
      </script>
</head>
<body bgcolor="#FFFFFF">
      <h2 align="center">
        Hey, check out <a href="http://www.pixel.mu/" id="redirect">my cat's Web site</a>.
      </h2>
</body>
</html>
```

Script 2.13. The link enhancement script.

```
window.onload = initAll;

function initAll() {
     document.getElementById("redirect"). onclick = initRedirect;
}

function initRedirect() {
     alert("We are not responsible for the content of pages outside our site");
     window.location = this;
     return false;
}
```

To enhance links:

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

1. `Hey, check out <a href="http://www.pixel.mu/" id="redirect"> my cat's Web site</a>.`

This line in Script 2.12 shows the link, with the `HRef` for the link's destination, and the `id` for the link, which will be used by Script 2.13. The page is shown in **Figure 2.9**.

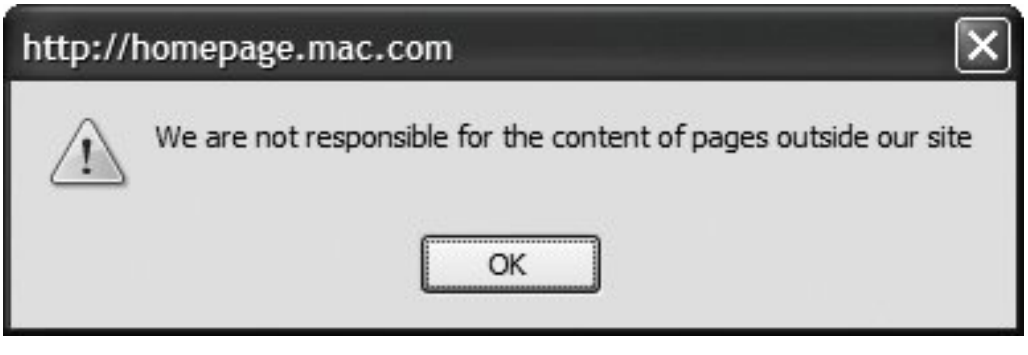
Figure 2.9. Clicking the link will redirect the user to our cat's Web site.

[View full size image]

2. `alert("We are not responsible for the content of pages outside our site");`

This alert appears after the link has been clicked, as shown in **Figure 2.10**.

Figure 2.10. If the user has a JavaScript-capable browser, they'll see this warning message as they leave.



downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

This line allows us to set the browser window to the location specified by the keyword `this`, which contains the link. For now, just think of `this` as a container; we'll be going into it in more detail later in the book. If you want to know more now, see the "What is 'this?'" sidebar in Chapter 4. When the user reaches their final destination, it looks like **Figure 2.11** (at least, using our cat's Web page as the destination).

Figure 2.11. In this case, we'll admit that we actually are responsible for this cat's page (what, you think he does it himself?).

[View full size image]

✓ Tips

- You may have noticed that nowhere in the code does it refer to a particular Web pagethat's part of the power of the `this` keyword. One of the things `this` does for us is grab the URL from the HTML link (that is, the value of the `a` tag's `href` attribute). Because we're using this approach, we don't have to touch Script 2.13 if we someday change Script 2.12 to point to our kid instead of our cat. In fact, we could have links all over our Web site calling this same script, and that one line of code would automatically

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

- If that previous tip wasn't enough, think about it this way: with this approach, your HTML pages can be modified by WYSIWYG editors and people who know nothing about JavaScriptand so long as they only change the HTML pages, they can't screw up your script.
- That wasn't enough for you either? Here's another benefit: if the user's browser doesn't understand JavaScript, it loads in only the HTML page. When they click the link, it loads just as it normally would: no errors, no confusing "you must have some other browser," no problems.
- This kind of coding stylewhere the code is separated out from the HTML, so that both are more flexibleis referred to as *unobtrusive scripting*. If you want to know more about how this fits in with all the other buzzwords you hear about code on the Web, check out the "Just Enough Terminology" sidebar.

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Working with Referrer Pages

A *referrer page* is the page that the user was viewing before the current page, or, in other words, the page the user came from. You may wish to provide a message to the user and mention the referrer page, as shown in **Figure 2.12**. One way to use this technique is when you have set up an affiliate program with another site. You can detect the referring site and bounce the visitor to a special welcoming page. **Script 2.14** has the simple HTML, and you'll find the JavaScript in **Script 2.15**.

Figure 2.12. I'll bet they're glad they're at your site and no longer at that boring site.

Script 2.14. The empty `<h2>` tag has an id for use by the referrer page JavaScript.

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN">
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
     <title>Welcome to our site</title>
     <script src="script09.js" type="text/javascript" language="javascript">
     </script>
</head>
<body bgcolor="#FFFFFF">
     <h2 id="referrerMsg">
     </h2>
</body>
</html>
```

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Script 2.15. The referrer code.

[View full width]

```
window.onload = writeMessage;

function writeMessage() {
     if (document.referrer != "") {
         document.getElementById("referrerMsg"). innerHTML = "I hope you like this
page
better than " + document.referrer;
     }
}
```

To display the referrer page:

1. `<h2 id="referrerMsg"></h2>`

   This is in Script 2.14. As in past examples, it's an empty headline tag with a specified `id`.

2. `if (document.referrer != "") {`

   Script 2.15 is easy to understand. If the referrer page, represented here by `document.referrer`, is not empty, then continue through the script. The `document.referrer` object could be empty if the user hadn't visited any other page before yours, i.e., if they opened their browser directly to your page.

3. [View full width]
   `document.getElementById ("referrerMsg").innerHTML = "I hope you like this page better than " + document.referrer;`

   If the `document.referrer` object isn't empty, then write out a message to the document with a text string, concatenating the `document.referrer` to the end of the string.

✓ Tips

- This technique can also be harnessed to trigger different actions depending on what the referrer page was. You could find out the domain of the referrer page and then serve up something special for users who came from a particular domain.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

and see.

Just Enough Terminology

If you work with JavaScript for any length of time, you may start to feel overwhelmed by the amount of terminology that gets thrown aroundand much of it, at its root, is about what JavaScript is and isn't. Here's a quick rundown of where we stand on these burning issues (and if you don't think they're burning issues, hang out with some scripters for a while!):

- **JavaScript:** While officially this term is owned by AOL (via Netscape), it's commonly used to cover all JavaScript-like scripting technologies such as Microsoft's JScript. We'll continue that trend in this book.
- **DHTML:** This stands for *Dynamic HTML*, but in real life, what *that* actually means depends on who's doing the talking. The DOM Scripting Task Force of the Web Standards Project defines DHTML (`webstandards.org/action/dstf/definitions/`) as "...an outdated scripting technique that is mainly characterized by the changes it makes to the style properties of certain elements, and by the use of the browser-specific DOMs `document.layers` and `document.all`." On the other hand, Myspace.com (in **Figure 2.13**) says that when you're editing your profile, "You may enter HTML/DHTML or CSS in any text field. JavaScript is not allowed," leading their huge user base to believe that DHTML has nothing to do with scripting (and is possibly interchangeable with XHTML).

Figure 2.13. Can (nearly) 100-million myspace.com users who've been told that DHTML isn't scripting all be wrong?

Our opinion is that DHTML is much too confusing and imprecise a term, so we no longer use it. If you come across anyone who does, make sure they define it.

- **DOM scripting:** An approach to scripting Web pages using JavaScript, in which the code only modifies pages via manipulation of the W3C DOM (that is, no use of proprietary, non-standard, or deprecated properties). When Scripts 2.10 and 2.13 refer to `document.`

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

- **Unobtrusive scripting:** An approach to scripting Web pages using JavaScript, in which the behavior of the Web page is kept separate from its contentthat is, the HTML is in one file, and the JavaScript is in another. As a best-practices recommendation, it's comparable to the split between HTML and CSS, where the presentation (CSS) is in one file and the content (HTML) is in another. Additionally, the term "unobtrusive scripting" is used when code is written such that visitors without JavaScript (or with less-capable browsers) get all the functionality of a site, just with a less-rich user experience. Scripts 2.10 and 2.13 are also examples of unobtrusive scripting, in that you don't need JavaScript in order to click the links, but you'll have a richer experience when you do.

Throughout this book, we use a variety of scripting techniques. While we recommend the unobtrusive scripting approach wholeheartedly (and we try to demonstrate it whenever possible), we also know that you, as a budding scripter, will frequently need to be able to understand and support older, less-rigorously written code. And finally, this being the real world, we also know that sometimes the simplest way to hammer in a nail is to grab a rock and pound the nail into the wall. This, for instance, is why we used `innerHTML` back in Script 2.3, even though it's not part of the W3C DOM.

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Chapter 3. Language Essentials

Now that you've gotten your feet wet, let's wade a bit deeper into the JavaScript language. In this chapter, we'll go into more detail about the basic elements of JavaScript and introduce you to other aspects of the JavaScript language, such as loops, arrays, and more about functions (don't let your eyes glaze over; we promise that it'll be easy).

You'll see how you can use JavaScript to write your Web pages for you, learn how JavaScript handles errors that the user makes, and much more.

Table 3.1. Just Enough HTMLThe Basics

Tag	Meaning
`table`	Presents tabular data on a Web page
`tr`	Begins a row inside the table
`th`	Heading cells for the columns in the table
`td`	Contains each cell in the table

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Around and Around with Loops

It's common in programming to test for a particular condition and repeat the test as many times as needed. Let's use an example you probably know well: doing a search and replace in a word processor. You search for one bit of text, change it to a different text string, and then repeat the process for all of the instances of the first string in the document. Now imagine that you got a program to do it for you automatically. The program would execute a *loop*, which lets it repeat an action a specified number of times. In JavaScript, loops become a vital part of your scripting toolbox.

More about loops

The kind of loop that we mostly use in this book is the `for` loop, named after the command that begins the loop. This sort of loop uses a *counter*, which is a variable that begins with one value (usually 0) and ends when a conditional test inside the loop is satisfied.

The command that starts the loop structure is immediately followed by parentheses. Inside the parentheses you'll usually find the counter definition and the way the counter is incremented (i.e., the way the counter's value is increased).

In the next several examples we're going to build a simple yet familiar application, a Bingo card. We'll use each example to show you a new aspect of JavaScript. We'll begin with an HTML page, **Script 3.1**. It contains the table that is the Bingo card's framework (**Figure 3.1**). Take a look at the script, and you'll see that the first row contains the letters at the top of the card, and each subsequent row contains five table cells. Most cells contain just a non-breaking space (using the HTML entity ` `); however, the third row contains the Free space, so one table cell in that row contains the word "Free". Note that each cell has an `id` attribute, which the script uses to manipulate the cell contents. The `id` is in the form of `square0`, `square1`, `square2`, through `square23`, for reasons that we'll explain below. At the bottom of the page, there's a link that generates a new card.

Script 3.1. This HTML page creates the skeleton for the Bingo card.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

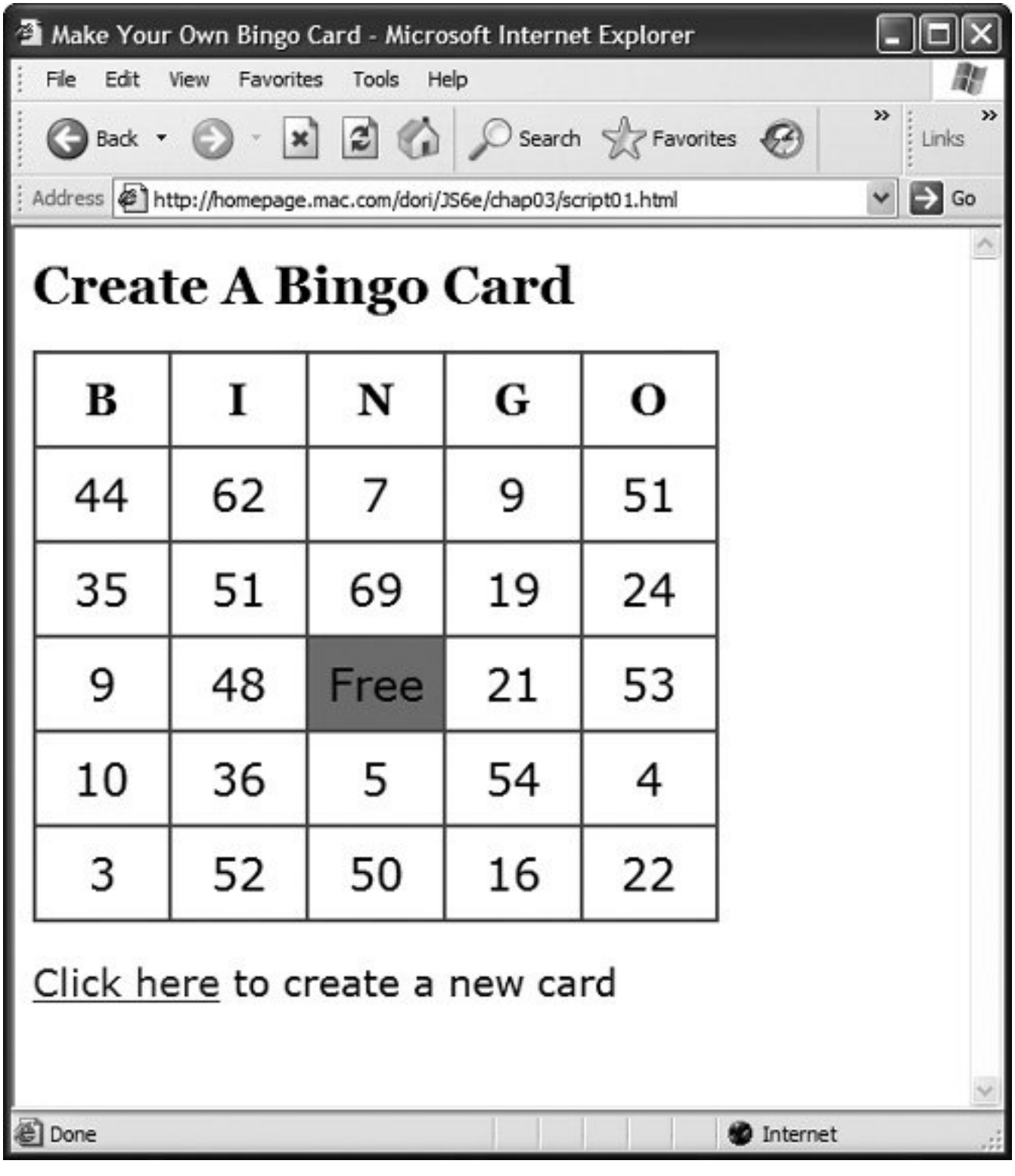
```
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
     <title>Make Your Own Bingo Card</title>
     <link rel="stylesheet" rev="stylesheet" href="script01.css" />
     <script src="script01.js" type="text/javascript" language="javascript"></script>
</head>
<body>
<h1>Create A Bingo Card</h1>
<table>
     <tr>
        <th width="20%">B</th>
        <th width="20%">I</th>
        <th width="20%">N</th>
        <th width="20%">G</th>
        <th width="20%">O</th>
     </tr>
     <tr>
        <td id="square0"> </td>
        <td id="square1"> </td>
        <td id="square2"> </td>
        <td id="square3"> </td>
        <td id="square4"> </td>
     </tr>
     <tr>
        <td id="square5"> </td>
        <td id="square6"> </td>
        <td id="square7"> </td>
        <td id="square8"> </td>
        <td id="square9"> </td>
     </tr>
     <tr>
        <td id="square10"> </td>
        <td id="square11"> </td>
        <td id="free">Free</td>
        <td id="square12"> </td>
        <td id="square13"> </td>
     </tr>
     <tr>
        <td id="square14"> </td>
        <td id="square15"> </td>
        <td id="square16"> </td>
        <td id="square17"> </td>
        <td id="square18"> </td>
     </tr>
     <tr>
        <td id="square19"> </td>
        <td id="square20"> </td>
        <td id="square21"> </td>
        <td id="square22"> </td>
        <td id="square23"> </td>
     </tr>
</table>
<p><a href="script01.html" id="reload"> Click here</a> to create a new card</p>
</body>
</html>
```

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Figure 3.1. This Bingo card has randomly generated numbers, but it isn't a valid Bingo card. Yet.

[View full size image]



downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Script 3.2 is the CSS file that we're using to style the contents of the Bingo card. If you don't know CSS, don't worry about it; we'll explain it in more detail in Chapter 11, and it doesn't matter much here anyway. The HTML and CSS pages won't change for the rest of the Bingo card examples, so we're only going to print them once here.

Script 3.2. This CSS file adds style to the Bingo card.

```
body {
     background-color: white;
     color: black;
     font-size: 20px;
     font-family: "Lucida Grande", Verdana, Arial, Helvetica, sans-serif;
}
h1, th {
     font-family: Georgia, "Times New Roman", Times, serif;
}

h1 {
     font-size: 28px;
}

table {
     border-collapse: collapse;
}

th, td {
     padding: 10px;
     border: 2px #666 solid;
     text-align: center;
     font-size: 24px;
}

#free {
     background-color: #F66;
}
```

This example shows you how to set up and use a loop to populate the contents of the Bingo card with randomly generated numbers. **Script 3.3** contains the JavaScript you need to make it happen. The card that is generated from this script is not a valid Bingo card, because there are constraints on which numbers can be in particular columns. Later examples add to the script until the resulting Bingo card is valid.

Script 3.3. Welcome to your first JavaScript loop.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
function newCard() {
     for (var i=0; i<24; i++) {
        var newNum = Math.floor(Math.random() * 75) + 1;

        document.getElementById("square"  + i).innerHTML = newNum;
     }
}
```

What's in a Bingo Card?

Sure, you've seen them, but maybe you haven't looked carefully at a Bingo card lately. Bingo cards in the United States are 5 x 5 squares, with the columns labeled B-I-N-G-O and with spots containing numbers between 1 and 75. The center square typically is a free spot and often has the word "free" printed on it. Each column has a range of allowable numbers:

- Column B contains numbers 115
- Column I contains numbers 1630
- Column N contains numbers 3145
- Column G contains numbers 4660
- Column O contains numbers 6175

To use a loop to create the table's contents:

1. `window.onload = newCard;`

   This is in Script 3.3. This line calls the `newCard()` function when the window finishes loading. It's common to use an event handler to call a function.

2. `function newCard() {`

   This line begins the function.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

This line begins the loop. Programmers traditionally use the variable `i` to denote a variable used as a counter inside a loop. First `i` is set to 0. A semicolon signals the end of that statement and allows us to put another statement on the same line. The next part is read as "if `i` is less than 24, do the following code inside the braces." The final bit (after the second semicolon) adds 1 to the value of `i`. Because this is new, let's break that down a bit. The `i++` part uses the `++` operator you saw in Chapter 1 to increment the value of `i` by 1. The loop will repeat 24 times, and the code inside the loop will execute 24 times. On the first go-through, `i` will be 0, and on the last go-through `i` will be 23.

4. `var newNum = Math.floor (Math.random() * 75) + 1;`

Inside the loop, we create a new variable, `newNum`, and fill it with the result of the calculation on the right side of the parentheses. The built-in JavaScript command `Math.random()` gives us a number between 0 and 1, such as 0.123456789. Multiplying `Math.random()` by the maximum value (remember, values in Bingo cards can be from 1 to 75) gives us a result between 0 and one less than the max value. The `floor` of that result gives us the integer portion, i.e., an integer between 0 and (max value -1). Add one, and we have a number between 1 and our maximum value.

5. `document.getElementById ("square" + i).innerHTML = newNum;`

This is where we write into the table the value of the random number we just got. We get the element with the `id` named `square` with the current value of `i` concatenated onto it. For example, the first time through the loop, the value of `i` will be zero, so the line gets the element with the `id` of `square0`. Then the line sets the `innerHTML` property of the `square0` object to the current value of `newNum`. Then, because we're still inside the loop, steps 4 and 5 happen again, until the whole Bingo card is filled out.

JavaScript Strings

When does a word like "cat" have a "t" in the second position? When it's a JavaScript string.

In JavaScript, the first character is at position 0. So, using the example of "cat", "c" would be at position 0, "a" would be at position 1, and "t" would be at position 2.

Only when checking the `length` of cat do we actually see a value of 3. All other string methods are zero-based; that is, they start with 0.

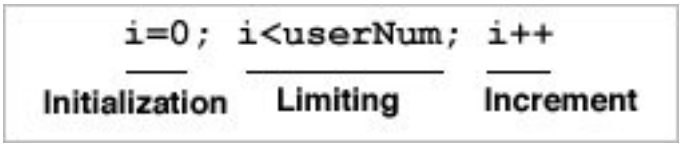
downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Looping the Loop

A `for` loop has three parts, as shown in **Figure 3.2**:

Figure 3.2. The three parts of a loop.



1. **The initialization step**. The first time through the loop, this is what the loop variable (`i`, in this case) is set to.

2. **The limiting step**. This is where we say when to stop looping. While normal people count from one to ten, it's common in programming languages to count from zero to nine. In both cases, the code inside the loop is run ten times, but the latter method works better with languages (like JavaScript) where arrays start with a zeroth position. That's why you'll see loops have a limitation of "less than `userNum`" instead of "less than or equal to `userNum`." Let's say that the variable `userNum` is 10, and you want the loop to run ten times. If you count from 0 to 9 (using the "less than" test), the loop runs ten times. If you count from 0 to 10 (using the "less than or equals to" test), the loop runs 11 times.

3. **The increment step**. This is where we say by how much to increase the loop counter on each pass through the loop. In this case, we add one each time through, using `++` to add one to `i`'s value.

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Passing a Value to a Function

You'll often want to take some information and give it to a function to use. This is called *passing* the information to the function. For example, look at this function definition:

```
function playBall(batterup)
```

The variable `batterup` is a *parameter* of the function. When a function is called, data can be passed into the function. Then, when you're inside the function, that data is in the `batterup` variable. Functions can be passed just about any data you want to use, including text strings, numbers, or even other JavaScript objects. For example, the `batterup` variable could be passed a player's name as a text string (`"Mantle"`), or his number in the lineup (7) (although mixing the two can be a very bad idea until you really know what you're doing). Like all variables, you should give the ones you use as function parameters names that remind you what the variable is being used for.

You can have more than one parameter in a function. Just separate them inside the parentheses with commas, like this:

```
function currentScore(hometeam,visitors)
```

We would like to underscore that parameters are variables, and so they can be passed a variety of different values when the function is called. So these code fragments are all equivalent:

```
currentScore(6,4);

var homeScore = 6;
var visitingScore = 4;
currentScore(homeScore,visitingScore);

currentScore(6,3+1);
```

For all three examples, once we're inside `currentScore()`, the value of `hometeam` is 6, and the value of `visitors` is 4 (which is great news for the home team).

In this example, we'll clean up some of the calculations from Script 3.3 by taking them out of the `newCard()` function, restating them a bit, and putting them into a function with passed values, in order to make it more obvious what's going on. It all happens in **Script 3.4**.

Script 3.4. By passing values to the `setSquare()` function, the script becomes easier to read and understand.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
function newCard() {
     for (var i=0; i<24; i++) {
         setSquare(i);
     }
}

function setSquare(thisSquare) {
     var currSquare = "square" + thisSquare;
     var newNum = Math.floor(Math.random() * 75) + 1;

     document.getElementById(currSquare). innerHTML = newNum;
}
```

To pass a value to a function:

1. `setSquare(i);`

   This is inside the `newCard()` function. We're passing the value of `i` into the `setSquare()` function.

2. `function setSquare(thisSquare) {`

   This defines the `setSquare()` function, and it's being passed the current square number that we want to update. When we pass it in, it's the loop variable `i`. When the function receives it, it's the parameter `thisSquare`. What is a little tricky to understand is that this function is passed `i`, and does stuff with it, but doesn't actually see `i`. Inside the function, all it knows about is `thisSquare`.

3. `var currSquare = "square" + thisSquare;`

   In order to make the `getElementById()` call later in the script clearer, we're creating and setting a new variable: `currSquare`. This is the current square that we're working on. It takes the text string `"square"` and concatenates it with the `thisSquare` variable.

4. `document.getElementById(currSquare). innerHTML = newNum;`

   This line gets the element with the name specified by `currSquare` and changes it to display `newNum`.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Detecting Objects

When you're scripting, you may want to check to see if the browser is smart enough to understand the objects you want to use. There is a way to do this check, which is called *object detection*.

What you do is pose a conditional for the object you're looking for, like this:

```
if (document.getElementById) {
```

If the object exists, the `if` statement is true, and the script continues on its merry way. But if the browser doesn't understand the object, the test returns false, and the `else` portion of the conditional executes. **Script 3.5** gives you the JavaScript you need, and **Figure 3.3** shows you the result in an obsolete browser.

Script 3.5. Object detection is an important tool for scripters.

```
window.onload = newCard;

function newCard() {
    if (document.getElementById) {
       for (var i=0; i<24; i++) {
          setSquare(i);
       }
    }
    else {
        alert("Sorry, your browser doesn't support this script");
    }
}

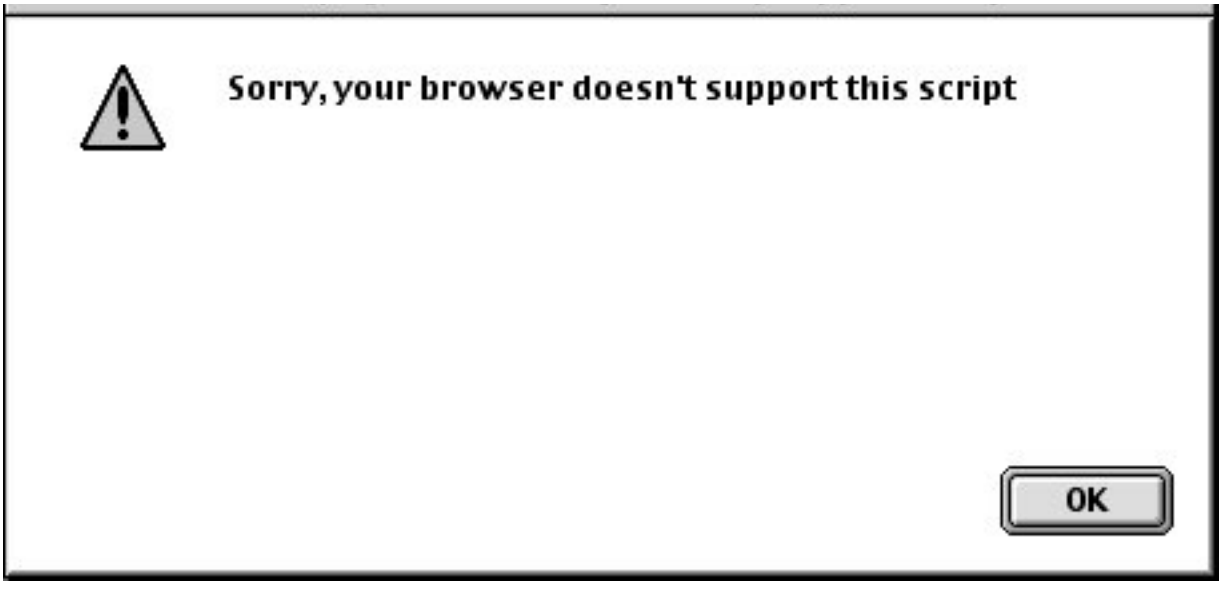
function setSquare(thisSquare) {
     var currSquare = "square" + thisSquare;
     var newNum = Math.floor(Math.random() * 75) + 1;

     document.getElementById(currSquare). innerHTML = newNum;
}
```

Figure 3.3. Object detection rejected this ancient browser (Netscape 4 for Mac) and displayed this error message.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir



To detect an object:

1. ```
   if (document.getElementById) {
   ```

   This line begins the conditional. If the object inside the parentheses exists, the test returns true, and the rest of this block in the `newCard()` function runs.

2. ```
   else {
     alert("Sorry, your browser doesn't support this script");
   }
   ```

   If the test in step 1 returns false, this line pops up an alert, and the script ends.

✓ Tips

- In a production environment, it's better to give users something else to do, or at least some version of the page that doesn't require this capability. Here, though, there's nothing to be done.
- It's important to understand that you won't always check for `document.getElementById`. What objects you check for depends on what objects your script uses. If your scripts use objects with less than 100% support, always check first if the browser can handle itnever assume that it can. We aren't showing object detection throughout this book to save space, but in the real world, it's vital.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Washed-Up Detectives

An alternate way to try to figure which objects a browser supports is to do a *browser detect*, which tries to identify the browser being used to view the page. It gets this by requesting the user agent string from the browser, which reports the browser name and version. The idea is that you would then write your scripts to work one way with particular browsers and another way for other browsers. This is an obsolete approach to scripting, because it doesn't work well.

Browser detection relies on the fact that you know that a particular browser supports the script you're writing, and another browser doesn't. But what about obscure browsers that you've never used? Or browsers that are released after your script is done?

Worse, many browsers try to get around browser detection by intentionally misrepresenting themselves. For example, Apple's Safari browser claims that it is a Mozilla browser, even though it is not. And some browsers, such as Safari and Opera, allow you to set which browser you want it to report itself as.

There's just no way that you can retrofit your script fast enough to keep up with all of the possible browser permutations. It's a losing game.

The same goes for attempting to detect which version of JavaScript a browser supports. We strongly suggest that you do not use these detection methods, and use object detection instead.

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Working with Arrays

In this example, we're introducing another useful JavaScript object, the *array*. An array is a kind of variable that can store a group of information. Like variables, arrays can contain any sort of data: text strings, numbers, other JavaScript objects, whatever. You declare an array with the elements of the array inside parentheses, separated by commas, like so:

```
var newCars = new Array("Toyota", "Honda", "Nissan");
```

After this, the `newCars` array contains the three text strings with the car makes. To access the contents of the array, you use the variable name with the *index number* of the array member you want to use, in square brackets. So `newCars[2]` returns `"Nissan"`, because array numbering, like most other numbering in JavaScript, begins at zero.

In this example, shown in **Script 3.6**, we begin making sure the Bingo card is valid. On a real Bingo card, each column has a different range of numbers: B is 115, I is 1630, N is 3145, G is 4660, and O is 6175. If you look back at Figure 3.1, you'll see that it is not a valid card, because it was generated with a version of the script that simply put a random number between 1 and 75 in each square. This example fixes that, with only two lines of changed or new code. When we're done, the card will look something like **Figure 3.4**. It's still not a valid Bingo card (note how there are duplicate numbers in some of the columns), but we're getting there.

Script 3.6. This script limits the range of values that can go into each column.

```
window.onload = newCard;

function newCard() {
     if (document.getElementById) {
        for (var i=0; i<24; i++) {
           setSquare(i);
        }
     }
     else {
        alert("Sorry, your browser doesn't support this script");
     }
}

function setSquare(thisSquare) {
     var currSquare = "square" + thisSquare;
     var colPlace = new Array(0,1,2,3,4,0,1,2,3, 4,0,1,3,4,0,1,2,3,4,0,1,2,3,4);
     var newNum = (colPlace[thisSquare] * 15) + Math.floor(Math.random() * 15) + 1;

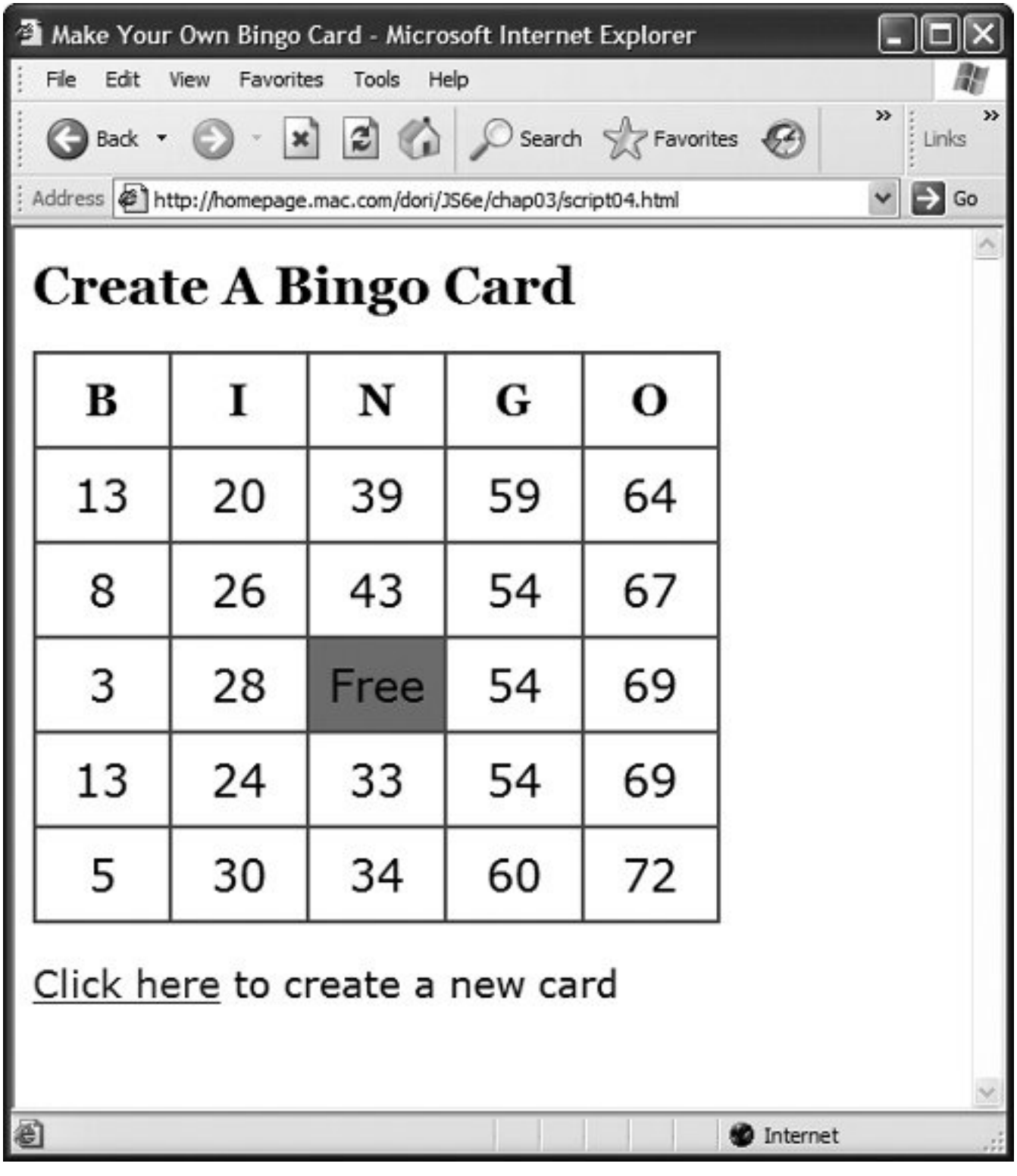
     document.getElementById(currSquare). innerHTML = newNum;
}
```

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Figure 3.4. This Bingo card is improved, but not quite right yet, because there are duplicate numbers in some of the columns.

[View full size image]



To use an array:

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

1. `var colPlace = new Array(0,1,2,3,4, 0,1,2,3,4,0,1,3,4,0,1,2,3,4,0,1, 2,3,4);`

We're concerned with limiting which random numbers go into which columns. The simplest way to keep track of this is to give each column a number (B: 0, I: 1, N: 2, G: 3, O: 4) and then calculate the numbers that can go into each column as (the column number x 15) + (a random number from 115).

However, HTML tables are laid out in row cell order, not column cell order; that is, we're going across the first row, then across the second row, and so on, versus down the first column, then down the second column, and so on. The `colPlace` array keeps track of, for each square, which column it ends up in. It's the numbers 04 repeated five times (minus the free space; notice the sequence in the middle of the array `0,1,3,4` which skips the free space, which would be at position 2).

2. `var newNum = (colPlace[thisSquare] * 15) + Math.floor(Math.random() * 15) + 1;`

The `newNum` variable still generates the random numbers, but instead of coming up with a number from 175, it now calculates a random number from 115, and then adds that to the column number, `colPlace[thisSquare]`, multiplied by 15 so, if our random number is 7, it would be 7 in the B column, 22 in the I column, 37 in the N column, 52 in the G column, and 67 in the O column.

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Working with Functions That Return Values

Up to this point, all the functions that you've seen simply do something and then return. Sometimes, though, you want to return a result of some kind. **Script 3.7** makes the overall script more understandable by breaking out some of the calculations in previous examples into a function which returns the random numbers for the cells on the Bingo card. Another function then uses this result.

Script 3.7. A function can return a value, which can then be checked.

```
window.onload = newCard;

function newCard() {
     if (document.getElementById) {
        for (var i=0; i<24; i++) {
           setSquare(i);
        }
     }
     else {
        alert("Sorry, your browser doesn't support this script");
     }
}

function setSquare(thisSquare) {
     var currSquare = "square" + thisSquare;
     var colPlace = new Array(0,1,2,3,4,0,1,2,3, 4,0,1,3,4,0,1,2,3,4,0,1,2,3,4);
     var colBasis = colPlace[thisSquare] * 15;
     var newNum = colBasis + getNewNum() + 1;

     document.getElementById(currSquare). innerHTML = newNum;
}

function getNewNum() {
     return Math.floor(Math.random() * 15);
}
```

To return a value from a function:

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
var newNum = colBasis + getNewNum() + 1;
```

The first line is just a little bit of cleanup, in that we've calculated it in the last task; now, we're instead assigning it to a variable that we'll use in the second line.

The second line is again just setting the `newNum` variable to our desired number, but here we've moved that random number generator into a function, called `getNewNum()`. By breaking the calculation up, it makes it easier to understand what's going on in the script.

2.
```
function getNewNum() {
  return Math.floor(Math.random() * 15);
}
```

This code calculates a random number between 0 and 14 and returns it. This function can be used anywhere a variable or a number can be used.

✓ Tip

- Any value can be returned. Strings, Booleans, and numbers work just fine.

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Updating Arrays

As you saw in Figure 3.4, the Bingo card script doesn't yet have a way to make sure that duplicate numbers don't appears in a given column. This example fixes that problem, while simultaneously demonstrating that arrays don't have to be just initialized and then readinstead, they can be declared and then set on the fly. This gives you a great deal of flexibility, since you can use calculations or functions to change the values in the array while the script is running. **Script 3.8** shows you how, with only a few new lines of code.

Script 3.8. Changing the contents of arrays during the script is a very powerful technique.

```
window.onload = newCard;
var usedNums = new Array(76);

function newCard() {
     if (document.getElementById) {
        for (var i=0; i<24; i++) {
           setSquare(i);
        }
     }
     else {
        alert("Sorry, your browser doesn't support this script");
     }
}

function setSquare(thisSquare) {
     var currSquare = "square" + thisSquare;
     var colPlace = new Array(0,1,2,3,4,0,1,2,3, 4,0,1,3,4,0,1,2,3,4,0,1,2,3,4);
     var colBasis = colPlace[thisSquare] * 15;
     var newNum = colBasis + getNewNum() + 1;

     if (!usedNums[newNum]) {
         usedNums[newNum] = true;
        document.getElementById(currSquare). innerHTML = newNum;
     }
}

function getNewNum() {
     return Math.floor(Math.random() * 15);
}
```

To update an array on the fly:

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Here is a new way of declaring an array. We're putting into the `usedNums` variable a new array with 76 objects. As mentioned before, those objects can be *anything*. In this case, they're going to be Booleans, that is, true/false values.

2.
```
if (!usedNums[newNum]) {
  usedNums[newNum] = true;
```

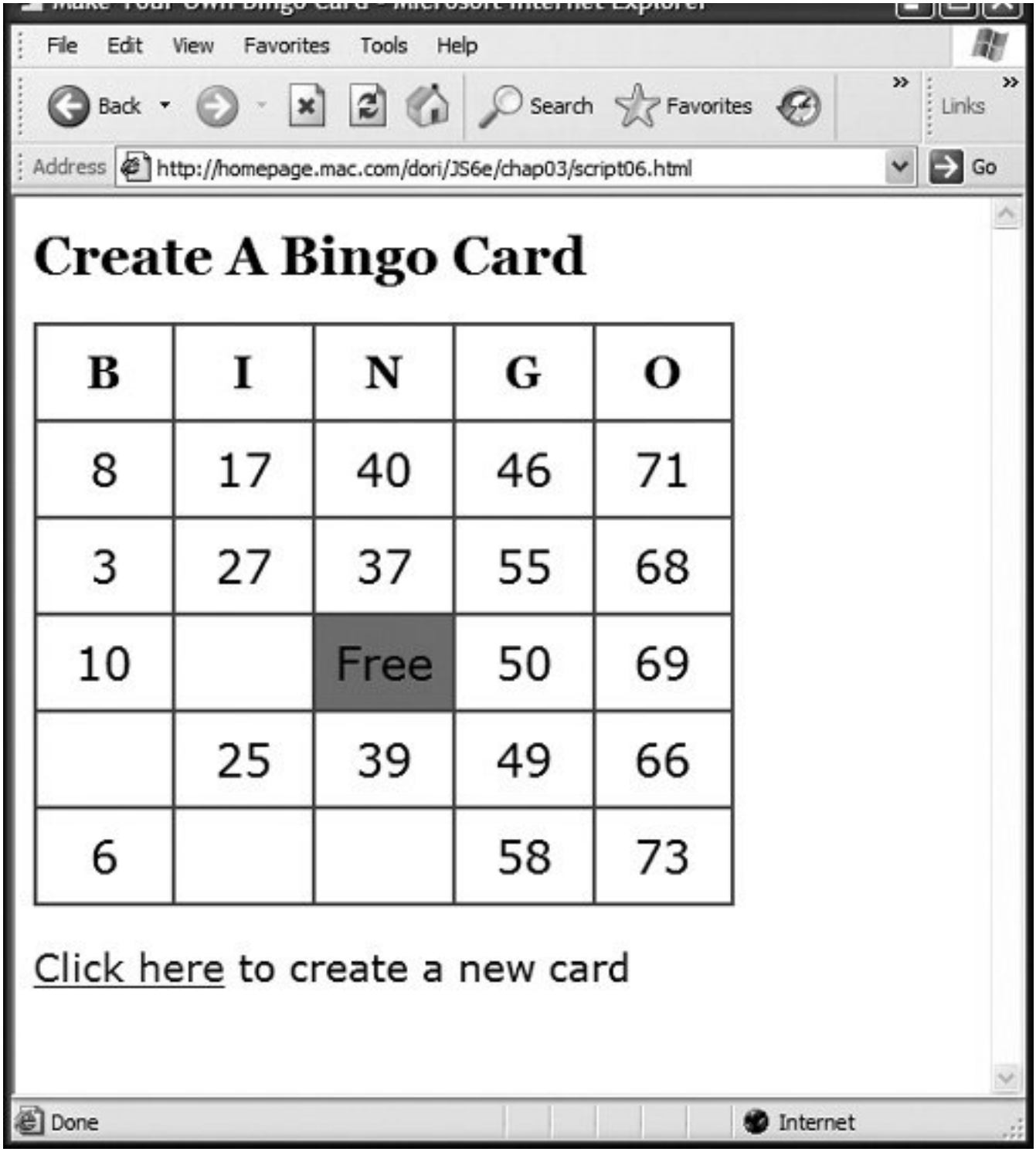
If the `newNum` slot in the `usedNum` array is false (represented by the `!` before the statement, meaning "not"), then we set it to true and write it out to the card. If it's true, we don't do anything at all, leaving us with no duplicates, but possibly blank spaces on our card (**Figure 3.5**). That's not good either, which leads us to the next task.

Figure 3.5. We've gotten rid of the duplicate numbers, but some of the spaces are now blank. Time to go back to the drawing board.

[View full size image]

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir



✓ Tips

- Why is the array defined as containing 76 items? Because we want to use the values 1 to 75. If we initialized it to contain 75 items, the numbering would go from 0 to 74. 76 lets us use 1 through 75, and we'll just ignore item 0.
- If you don't do anything to initialize Booleans, they'll automatically be false.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Using Do/While Loops

Sometimes you'll need to have a loop in your code that loops around a number of times, but there's no way of knowing how many times you'll want to loop. That's when you'll want to use a `do/while` loop: you want to `do` something, `while` some value is true. **Script 3.9** writes out each row of numbers as always, but this time it checks first to see if a number has been used already before putting it in a cell. If it has, the script generates a new random number and repeats the process until it finds one that's unique. **Figure 3.6** shows the working, finally valid Bingo card.

Script 3.9. This script prevents numbers in a given column from being used more than once.

```
window.onload = newCard;
var usedNums = new Array(76);

function newCard() {
     if (document.getElementById) {
        for (var i=0; i<24; i++) {
           setSquare(i);
        }
     }
     else {
        alert("Sorry, your browser doesn't support this script");
     }
}

function setSquare(thisSquare) {
     var currSquare = "square" + thisSquare;
     var colPlace = new Array(0,1,2,3,4,0,1,2,3, 4,0,1,3,4,0,1,2,3,4,0,1,2,3,4);
     var colBasis = colPlace[thisSquare] * 15;
     var newNum;

     do {
        newNum = colBasis + getNewNum() + 1;
     }
     while (usedNums[newNum]);

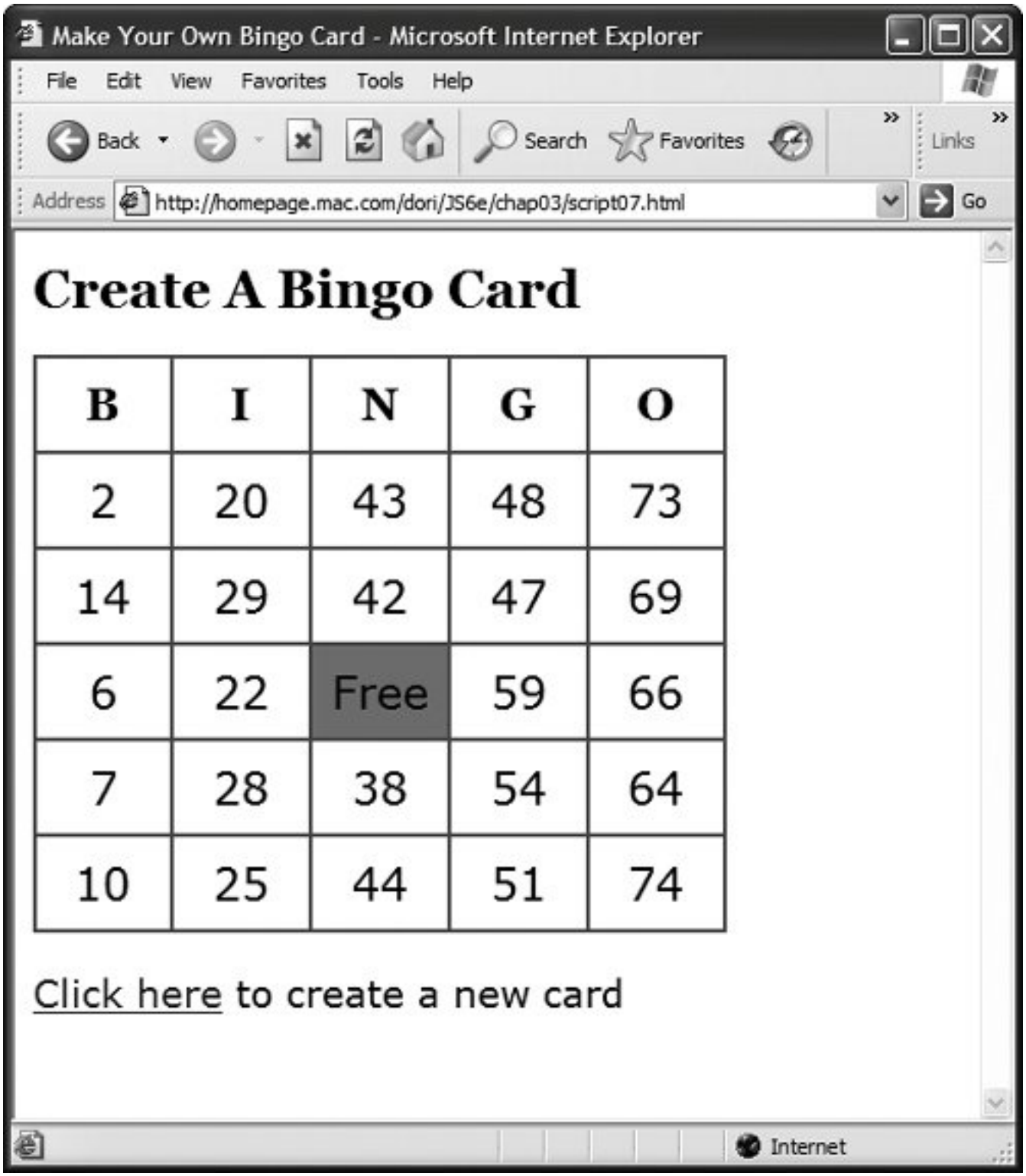
     usedNums[newNum] = true;
     document.getElementById(currSquare). innerHTML = newNum;
}

function getNewNum() {
     return Math.floor(Math.random() * 15);
}
```

Figure 3.6. Finally, we've ended up with a valid Bingo card!

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir



To use a do/while loop:

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

In the previous task, we initialized the `newNum` variable when we created it. Because we're going to be setting it multiple times, we're instead going to create it just the once, before we get into the loop.

2. `do {`

This line starts the `do` block of code. One of the things you have to remember about this type of loop is that the code inside the `do` block will always be executed at least once.

3. `newNum = colBasis + getNewNum() + 1;`

This line inside the loop sets the `newNum` variable to our desired number, as with previous examples.

4. `}`

The closing brace signals the end of the `do` block.

5. `while (usedNums[newNum]);`

The `while` check causes the `do` block of code to repeat until the check evaluates to `false`. In this case, we're checking `newNum` against the `usedNums[]` array, to see if `newNum` has already been used. If it has, control is passed back to the top of the `do` block and the whole process starts again. Eventually, we'll find a number that hasn't been used. When we do, we drop out of the loop, set the `usedNums[]` item to true, and write it out to the card, as in the last task.

✓ Tip

- A common use for a `do/while` loop would be to strip blanks or invalid characters off data entered by a user. But again, remember that the `do` block of code always gets executed, whether the `while` check evaluates to true or false.

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Calling Scripts Multiple Ways

Up to this point in the book, you've seen scripts that usually run automatically when the page loads. But in the real world, you'll often want to give the user more control over your scripts, even allowing them to run a script whenever they want. In this example (**Script 3.10**), the script still runs when the page loads. But we also allow the user to click the link at the bottom of the page to rerun the script that generates the Bingo card entirely in their browser, *without* needing to reload the page from the server. This gives the user fast response with zero server load. This is the last of the Bingo card examples, wrapping up all the techniques we've used in this chapter to this point.

Script 3.10. Give your user the ability to run scripts themselves.

```
window.onload = initAll;
var usedNums = new Array(76);

function initAll() {
     if (document.getElementById) {
        document.getElementById("reload"). onclick = anotherCard;
        newCard();
     }
     else {
        alert("Sorry, your browser doesn't support this script");
     }
}

function newCard() {
     for (var i=0; i<24; i++) {
        setSquare(i);
     }
}

function setSquare(thisSquare) {
     var currSquare = "square" + thisSquare;
     var colPlace = new Array(0,1,2,3,4,0,1,2,3, 4,0,1,3,4,0,1,2,3,4,0,1,2,3,4);
     var colBasis = colPlace[thisSquare] * 15;
     var newNum;

     do {
        newNum = colBasis + getNewNum() + 1;
     }
     while (usedNums[newNum]);

     usedNums[newNum] = true;
     document.getElementById(currSquare). innerHTML = newNum;
}

function getNewNum() {
     return Math.floor(Math.random() * 15);
```

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
function anotherCard() {
     for (var i=1; i<usedNums.length; i++) {
        usedNums[i] = false;
     }

     newCard();
     return false;
}
```

To call a script multiple ways:

1. `window.onload = initAll;`

   In previous examples, we called `newCard()` when `onload` ran. Now, we're calling a new function, `initAll()`, which will handle all the required initialization steps.

2.
```
function initAll() {
  if (document.getElementById) {
     document.getElementById ("reload").onclick = anotherCard;
     newCard();
  }
  else {
     alert("Sorry, your browser doesn't support this script");
  }
}
```

   The `initAll()` function just gathers together several of the initialization steps we've previously seen, plus one new thing. If the browser is capable, all it does that's new (besides the object detection and the call to `newCard()`) is set the link on the HTML page (the one with the `id` of `reload`; refer back to Script 3.1) to call `anotherCard()` when it's clicked. The object detection was moved from `newCard()` to here as it's really part of the initialization routine, and that's what's handled by this function.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
  for (var i=1; i<usedNums.length; i++) {
     usedNums[i] = false;
  }

  newCard();
  return false;
}
```

Here's the `anotherCard()` function that's called when someone clicks the link. It does three things:

- Sets all the items in the `usedNums[]` array to false (so that we can reuse all the numbers again),
- Calls the `newCard()` function (generating another card),
- Returns a value of false so that the browser won't try to load the page in the `href` in the link (this was covered in Chapter 2).

✓ Tip

- If you've gotten this far, you now know how to do something that many people consider to be a fundamental part of Ajaxusing JavaScript to reload a part of a page instead of hitting the server and requesting an entirely new page. We'll be going into Ajax in much more detail in Chapters 15 and 16.

PREV NEXT

downloaded from: lib.ommolketab.ir

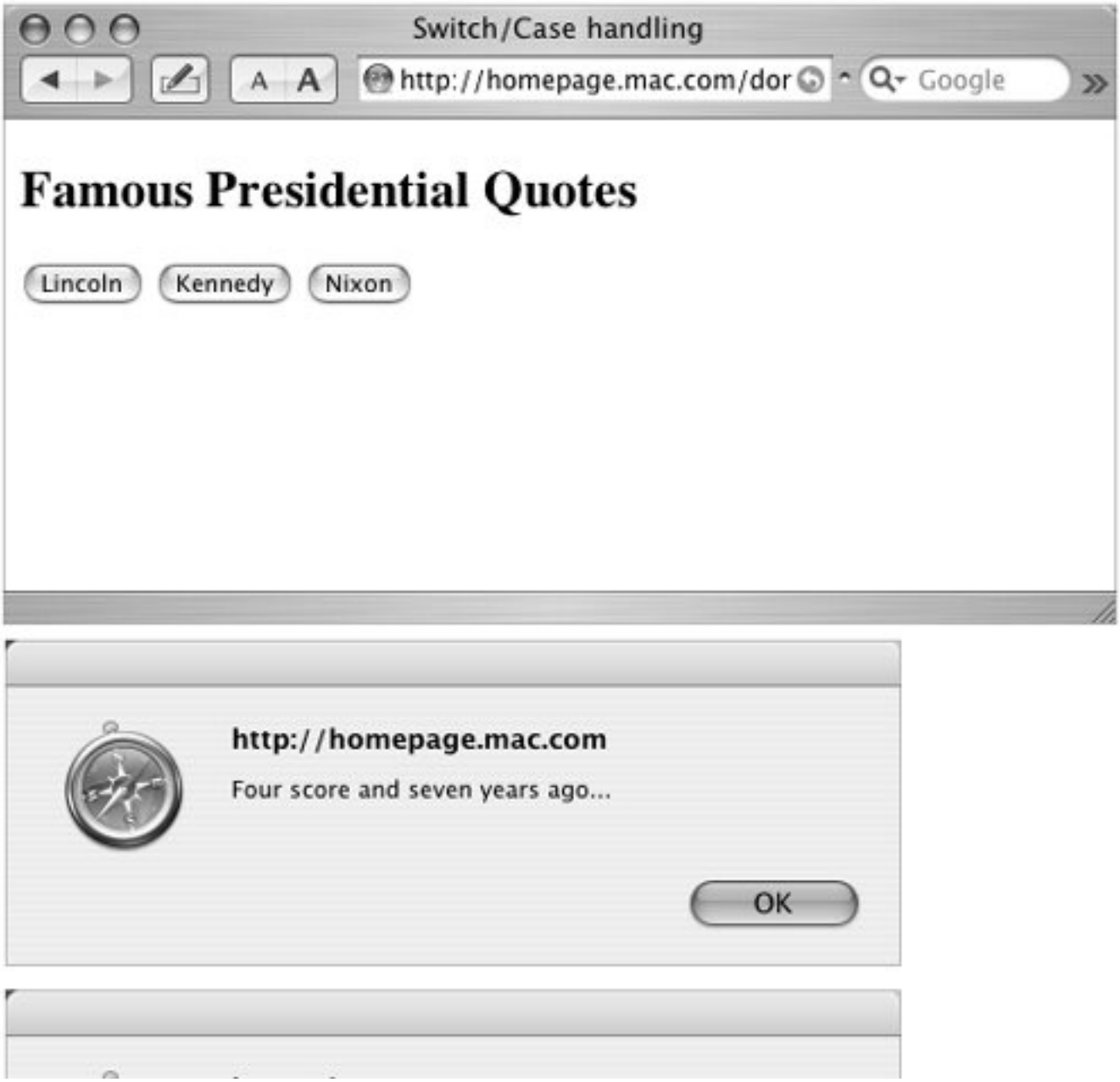
downloaded from: lib.ommolketab.ir

Using Multi-level Conditionals

There are times when you need more than two choices in a conditional test; `then` and `else` sometimes just aren't enough. While you can have nested levels of `if`, it's often simpler to just use a `switch/case` statement instead. The `switch/case` construct allows you to check a variable against multiple values. As you can see in **Figure 3.7**, this script returns one of three different Presidential quotes as alert dialogs, depending on which button the user clicks. **Script 3.11** shows the HTML, which is fairly simple. **Script 3.12**, the JavaScript, uses the `switch/case` construct to differentiate between presidents.

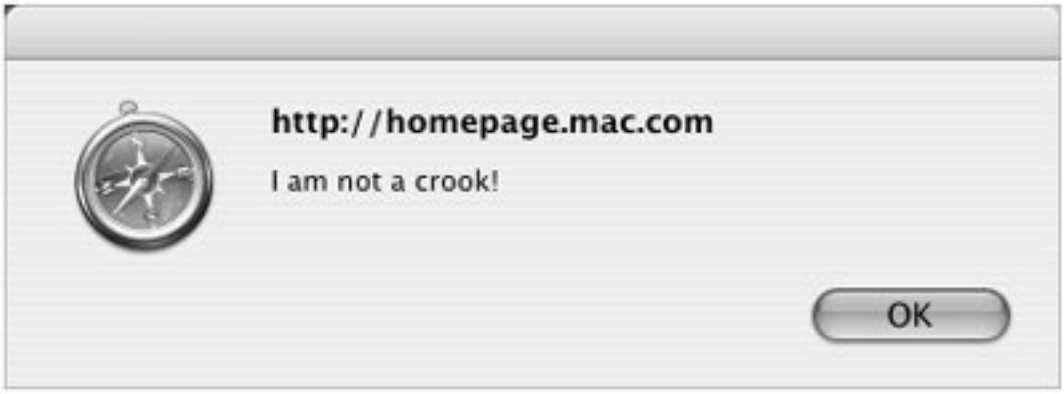
Figure 3.7. Calling the function with each of the three buttons in the top window results in three different responses, as shown in the three dialog boxes.

[View full size image]



downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir



Script 3.11. The HTML sets up the page for multi-level conditionals.

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN">
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
     <title>Switch/Case handling</title>
     <script language="Javascript" type="text/javascript" src="script09.js">
     </script>
</head>
<body bgcolor="#FFFFFF">
<h2>Famous Presidential Quotes</h2>
<form action="#">
     <input type="button" value="Lincoln" />
     <input type="button" value="Kennedy" />
     <input type="button" value="Nixon" />
</form>
</body>
</html>
```

Script 3.12. This type of conditional allows you to check against multiple possibilities.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
function initAll() {
     for (var i=0; i< document.forms[0]. elements.length; i++) {
        var thisElement = document.forms[0]. elements[i];

        if (thisElement.type == "button") {
           thisElement.onclick = saySomething;
        }
     }
}

function saySomething() {
     switch(this.value) {
        case "Lincoln":
           alert("Four score and seven years ago...");
           break;
        case "Kennedy":
           alert("Ask not what your country can do for you...");
           break;
        case "Nixon":
           alert("I am not a crook!");
           break;
        default:
     }
}
```

To use a switch/case statement:

1. `window.onload = initAll;`

   When the page loads, call the `initAll()` function.

2.
```
function initAll() {
  for (var i=0; i< document.forms[0].elements.length; i++) {
     var thisElement = document.forms[0].elements[i];
     if (thisElement.type == "button") {
        thisElement.onclick = saySomething;
     }
```

   In the function, we loop through all the fields in the form on the page. For each field, the loop looks at the type of field. If it's a button, then we add an `onclick` handler to call the `saySomething()` function.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

This begins the `saySomething()` function.

4. `switch(this.value) {`

The value of the `this` object is used as the parameter to `switch()`. Its value will decide which of the below `case` statements gets executed.

5.
```
case "Lincoln":
  alert("Four score and seven years ago...");
  break;
```

If the value of the `this` object is "Lincoln", this alert appears. Regarding `break`, if the user clicked Lincoln, we're in this section of code. However, we've done everything we want to do, and so we want to get out of the `switch`. In order to do that, we need to `break` out. Otherwise, we'll execute all of the code below, too. While that continued execution can be handy in certain circumstances, this isn't one of them.

6.
```
case "Kennedy":
  alert("Ask not what your country can do for you...");
  break;
```

If the user clicked Kennedy, we end up in this `case` block.

7.
```
case "Nixon":
  alert("I am not a crook!");
  break;
```

And finally, if the user clicked Nixon, we end up here, popping up another alert and then breaking out of the `switch`.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

If you were wondering what would happen if the user's entry didn't meet one of the above criteria, you're in the right place. The `default` section is where we end up if our `switch` value didn't match any of the `case` values. The `default` block is optional, but it's always good coding practice to include it, just in case (so to speak). In this script, there's no code here to execute, because we shouldn't ever get here.

9. `}`

This closing brace ends the `switch` statement.

✓ Tip

- A `switch` statement can be passed other values besides strings. You can use it with a numeric value or even have it evaluate a mathematical result. If its result should be numeric, though, be sure that the `case` statements matchyour `case` statements need to be checking for numbers, not strings (e.g., 5, not "5").

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Handling Errors

While you may have years of experience working with computers, it's a good bet that many of your site's visitors won't. Consequently, you'll want to give them meaningful error messages instead of the technobabble that most browsers return if they object to something the user does. **Script 3.13** shows how to use JavaScript's `try/throw/catch` commands to produce a friendly, useful error message. We've built this into a simple square root calculator.

Script 3.13. Use this script to have JavaScript handle errors gracefully.

```
window.onload = initAll;

function initAll() {
     var ans = prompt("Enter a number","");
     try {
        if (!ans || isNaN(ans) || ans<0) {
            throw new Error("Not a valid number");
        }
        alert("The square root of " + ans + " is " + Math.sqrt(ans));
     }
     catch (errMsg) {
        alert(errMsg.message);
     }
}
```

To handle errors gracefully:

1. `var ans = prompt("Enter a number", "");`

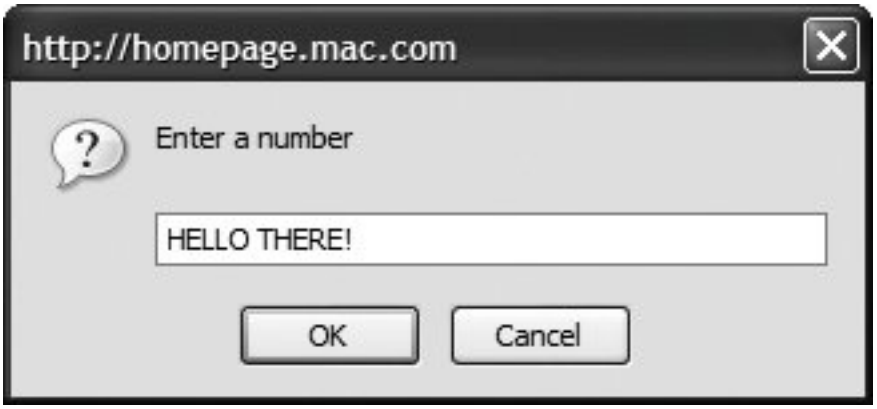
   Here's an ordinary, everyday prompt, which we're storing in the `ans` variable for later use. In this case, we want the user to enter a number. If they do that successfully, JavaScript displays the square root of whatever they entered.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

However, if they didn't enter a number, as in **Figure 3.8**, we want to be able to catch it gracefully and display something meaningful. Yes, we'll be polite about it, even though the user entered words when the alert asked for a number. We start off by using the `try` command. Inside its block of code, we'll check to see if the user's entry was valid.

Figure 3.8. We want a number, but the user could enter anything, like this non-numeric entry.



3.
```
if (!ans || isNaN(ans) || ans<0) {
  throw new Error("Not a valid number");
}
```

There are three things we care about: no entry at all, or if the user entered something but it was non-numeric, or if the entry was numeric but was a negative number (because the square root of a negative number is an imaginary number, and that's beyond this example). If `!ans` is true, that means that the user didn't enter anything. The built-in `isNaN()` method checks to see if the parameter it's passed is "Not a Number." If `isNaN()` returns true, we know that something invalid was entered. And if `ans` is less than 0, it's a negative number. In any of these cases, we want to `throw` an error; in this case, it says "Not a valid number". Once an error is thrown, JavaScript jumps out of the `TRy` block and looks for a corresponding `catch` statement. Everything between here and there is skipped over.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

If something valid was entered, the square root is displayed, as shown in **Figure 3.9**.

Figure 3.9. Here's the result of the script acting on a number.

5. `}`

This closing brace ends the `try` block.

6.
```
catch (errMsg) {
  alert(errMsg.message);
}
```

Here's the promised and looked-for `catch` statement. The `error` is passed in as a parameter, and the `message` part of the error is displayed (**Figure 3.10**). If no error was thrown, the code inside the catch will never be executed.

Figure 3.10. If bad data was entered, let the user know.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

✓ Tip

- There's another, optional part to this: the final `{}` block. That would go after the `catch` and would contain code that should be executed whether the `try` threw an error or not.

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Chapter 4. Working with Images

One of the best uses of JavaScript is to add visual interest to Web pages by animating graphics, and that's what this chapter is all about. Making an image on a Web page change when the user moves the mouse over the image, thereby making the page react to the user, is one of the most commonand effectivetricks you can learn in JavaScript. This *rollover*, as it is called, is easy to implement, yet has many applications, as you'll see.

Rollovers are a great tool, but you can do much more than rollovers with JavaScript, such as automatically change images, create ad banners, build slideshows, and display random images on a page.

In this chapter, you'll learn how to make JavaScript do all of these image tricks. Let's get started.

Table 4.1. Just Enough HTMLImages

Tag	Attribute	Meaning
`img`		Contains the attributes that describe the image to be displayed by the browser
	`src`	Contains the URL of the image, relative to the URL of the Web page
	`width`	Contains the width (in pixels) at which the browser will display the image
	`height`	Contains the height (in pixels) at which the browser will display the image
	`border`	The width of the border to be displayed
	`name`	The name that JavaScript uses to refer to this image; as with other JavaScript objects, no spaces or other punctuation is allowed, and it cannot start with a number
	`alt`	Used for non-visual browsers in place of the image
	`hspace`	A horizontal buffer area around the image
	`vspace`	A vertical buffer area around the image
	`align`	Describes where this image should be placed on the page in terms of horizontal or vertical alignment
	`id`	A unique identifier, which JavaScript will use to manipulate the image

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Creating Rollovers

The idea behind rollovers is simple. You have two images. The first, or *original* image, is loaded and displayed along with the rest of the Web page by the user. When the user moves the mouse over the first image, the browser quickly swaps out the first image for the second, or *replacement* image, giving the illusion of movement or animation.

Script 4.1 gives you the bare-bones rollover; the whole thing is done within a standard image link. First a blue arrow is loaded (**Figure 4.1**), and then it is overwritten by a red arrow when the user moves the mouse over the image (**Figure 4.2**). The blue arrow is redrawn when the user moves the mouse away.

Script 4.1. Here's the simplest way to do a rollover, within a link tag.

[View full width]

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN">
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
     <title>A Simple Rollover</title>
</head>
<body bgcolor="#FFFFFF">
     <a href="next.html" onmouseover= "document.arrow.src='images/ arrow_on.gif'"
 onmouseout= "document.arrow.src='images/ arrow_off.gif'"><img src="images/ arrow_off.
gif"
 width="147" height="82" border="0" name="arrow" alt="arrow" /></a>
</body>
</html>
```

Figure 4.1. The first image, before the user moves the mouse over it.

[View full size image]

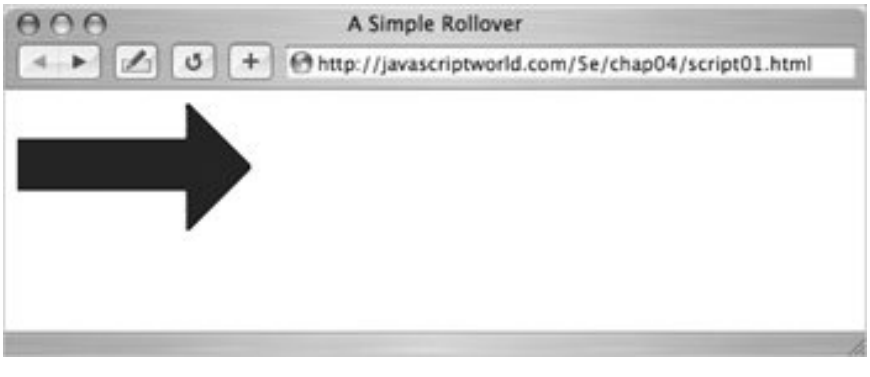


Figure 4.2. When the mouse is over the image, the script replaces the first image with the second image.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

To create a rollover:

1. `<a href="next.html"`

   The link begins by specifying where the browser will go when the user clicks the image, in this case to the page `next.html`.

2. `onmouseover="document.arrow.src= 'images/arrow_on.gif'"`

   When the user moves the mouse over the image, the replacement image `arrow_on.gif`, which is inside the `images` directory, is written to the document window.

3. `onmouseout="document.arrow.src= 'images/arrow_off.gif'">`

   Then, when the mouse moves away, the image `arrow_off.gif` is swapped back in.

4. `<img src="images/arrow_off.gif" width="147" height="82" border="0" name="arrow" alt="arrow" />`

   The image link defines the source of the original image for the page. We have included the `alt` attribute inside the image tag because `alt` attributes (which give non-graphical browsers a name or description of an image) are required if you want your HTML to be compliant with the HTML standard, and because using `alt` attributes helps make your code accessible to disabled users, such as visually impaired users who browse using screen readers.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Disadvantages to This Kind of Rollover

This method of doing rollovers is very simple, but you should be aware that there are several problems and drawbacks with it.

- Because the second image is downloaded from the server at the time the user rolls over the first image, there can be a perceptible delay before the second image replaces the first one, especially for people browsing your site with a modem, rather than broadband.
- Using this method causes an error message in ancient browsers, such as Netscape 2.0 or earlier, Internet Explorer 3.0 or earlier, or the America Online 2.7 browser. Since there are so few of these vintage browsers still in use, it's not much of a problem these days.

Instead of using this method, we suggest that you use the following way to create rollovers, in the "Creating More Effective Rollovers" section, which solves all these problems and more.

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Creating More Effective Rollovers

To make the illusion of animation work, you need to make sure that the replacement image appears immediately, with no delay while it is fetched from the server. To do that, you use JavaScript to preload all the images into the browser's cache (so that they are already on the user's hard disk when they are needed) and place the images into variables used by your script. Then, when the user moves the mouse over an image, the script swaps out one variable containing an image for a second variable containing the replacement image. **Script 4.2** shows how it is done. The visible result is the same as in Figures 4.1 and 4.2, but the apparent animation is smoother.

Script 4.2. The only JavaScript on this HTML page is the pointer to the external `.js` file.

[View full width]

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN">
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
     <title>A More Effective Rollover</title>
     <script src="script02.js" language= "javascript" type="text/javascript"> </script>
</head>
<body bgcolor="#FFFFFF">
     <a href="next1.html"><img src= "images/button1_off.gif" width="113" height="33"
 border="0" alt="button1" id="button1" /></a>  
     <a href="next2.html"><img src= "images/button2_off.gif" width="113" height="33"
 border="0" alt="button2" id="button2" /></a>
</body>
</html>
```

To keep your JavaScript more manageable, we'll extract the JavaScript code from the HTML page and put it in an external `.js` file, as in **Script 4.3** (see Chapter 3 for more about `.js` files).

Script 4.3. This is a better way to do rollovers than in Script 4.1, because it is much more flexible.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
function rolloverInit() {
     for (var i=0; i<document.images.length; i++) {
        if (document.images[i].parentNode. tagName == "A") {
           setupRollover(document.images[i]);
        }
     }
}

function setupRollover(thisImage) {
     thisImage.outImage = new Image();
     thisImage.outImage.src = thisImage.src;
     thisImage.onmouseout = rollOut;

     thisImage.overImage = new Image();
     thisImage.overImage.src = "images/" + thisImage.id +"_on.gif";
     thisImage.onmouseover = rollOver;
}

function rollOver() {
     this.src = this.overImage.src;
}
function rollOut() {
     this.src = this.outImage.src;
}
```

To create a better rollover:

1. `<script src="script02.js" language= "javascript" type="text/javascript"> </script>`

   This tag is in Script 4.2, the HTML page. It uses the `src` attribute to tell the browser where to find the external `.js` file, which is where the JavaScript resides.

2. [View full width]

```
<a href="next1.html"><img src= "images/button1_off.gif" width="113" height="33" border="0"
 alt="button1" id="button1" /></a>  
<a href="next2.html"><img src= "images/button2_off.gif" width="113" height="33" border="0"
 alt="button2" id="button2" /></a>
```

   Still in Script 4.2, these are two typical link tags for the buttons, with image tags embedded in them. The `HRef` attribute describes the destination of the link when the user clicks it. In the `img` tag, the `src` attribute provides the path to the image before the user rolls over it. The rest of the attributes are descriptive and familiar: the image's `width`, `height`, `border`, and `alt` text. Note that each of the two buttons also has an `id` attribute; as described in Chapter 1, the `id` must be unique for each object. The script uses the image's `id` to make the rollover work.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Moving to Script 4.3, the `window.onload` event handler is triggered when the page has finished loading. The handler calls the `rolloverInit()` function.

This handler is used here to make sure that the script doesn't execute before the page is done loading. That's because referring to items on the page before the page has finished loading can cause errors if some of the page's elements haven't yet been loaded.

4.
```
function rolloverInit() {
  for (var i=0; i<document.images.length; i++) {
```

The `rolloverInit()` function scans each image on the page, looking to see if the tag around the image is an `<a>` tag, indicating that it is a link. The first of these two lines begins the function. The second begins a `for...next` loop that goes through all of the images. The loop begins by setting the counter variable `i` to 0. Then, each time the loop goes around, if the value of `i` is less than the number of images in the document, increment `i` by 1.

5.
```
if (document.images[i].parentNode. tagName == "A") {
```

This is where we test to see if the tag surrounding the image is an anchor tag. We do it by looking at an object and seeing if the object's value is A (the name of the anchor tag). Let's break that object apart a bit. The first part of the object, `document.images[i]`, is the current image. Its `parentNode` property is the container tag that surrounds it, and `tagName` then provides the name of that container tag. So in English, you can read the part of the line in the parentheses as "For this particular image, is the tag around it an 'A'?"

6.
```
setupRollover(document.images[i]);
```

If the result of the test in step 5 is true, then the `setupRollover` function is called and passed the current image.

7.
```
function setupRollover(thisImage) {
```

Take a minute to look at the whole function before we go through it line by line. Here's the overview: this function adds two new properties to the image object that's passed in. The new properties are `outImage` (the version of the image when you're not on it) and `overImage` (the version of the image when you are on it), both of which are image objects themselves. Because they're image objects, once they're created, we can add their `src`. The `src` value for `outImage` is the current (off) image `src`. The `src` value for `overImage` is calculated based on the `id` attribute of the original image.

This line starts off the function with the image that was passed to it by the `rolloverInit()` function.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

This line takes the image object that was passed in and adds the new `outImage` property to it. Because you can add a property of any kind to an object, and because properties are just objects themselves, what's happening here is that we're adding an image object to an image. The parentheses for the new image object are optional, but it's a good coding practice; if needed, you can set properties of the new image object by passing certain parameters.

9. `thisImage.outImage.src = thisImage.src;`

Now we set the source for the new `outImage` to be the same as the source of `thisImage`. The default image on the page is always the version you see when the cursor is off the image.

What is "this?"

In the example, you see the word `this` used, but it's not completely clear what `this` is.

The JavaScript keyword `this` allows the script to pass a value to a function, solely based on the context where the keyword is used. In this case, `this` is used inside a function triggered by an event attached to an `img` tag, so `this` is an image object. In later examples, you'll see `this` used elsewhere, and you should be able to tell what `this` is, based on the context where it's being passed to a function.

10. `thisImage.onmouseout = rollOut;`

This line tells the browser to trigger the `rollOut()` function when the user moves the mouse away from the image.

11.
```
thisImage.overImage = new Image();
thisImage.overImage.src = "images/" + thisImage.id + "_on.gif";
```

In the first line, we create a new image object that will contain the `overImage` version of the image. The second line sets the source for `overImage`. It builds the name of the source file on the fly, concatenating `"images/"` with the `id` of the image (remember, in Script 4.2, we saw that those `id`s were `button1` and `button2`) and adding `"_on.gif"`.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

This line tells the browser that when the user moves the cursor over the image, the `rollOver()` function should trigger.

```
13. function rollOver() {
      this.src = this.overImage.src;
    }
```

This function is where the rollover actually happens when the user moves the mouse cursor over the image. It does so by resetting the current image's source to that of the `overImage` version, as seen in **Figures 4.3** and **4.4**.

Figure 4.3. You can also put multiple rollovers on the same page.

[View full size image]

Figure 4.4. Hovering over the second rollover.

[View full size image]

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
  this.src = this.outImage.src;
}
```

When the user moves the mouse cursor away from the image, this function sets the image source back to the beginning source value, that is, the `outImage` version of the image.

✓ Tips

- When you prepare your graphics for rollovers, make sure that all your GIF images are *not* transparent. If they are, you will see the image you are trying to replace beneath the transparent imageand that's not what you want.
- Both the original and the replacement images need to have identical dimensions. Otherwise, some browsers resize the images for you, and you probably won't like the distorted result.
- In the previous example, the rollover happened when you moved the cursor over the link; here, the rollover happens when you move the cursor over the imagethat is, the `onmouseover` and `onmouseout` are now attached to the image, not the link. While these methods usually give the same effect, there's one big difference: some older browsers (Netscape 4 and earlier, IE 3 and earlier) don't support `onmouseover` and `onmouseout` on the `img` tag.
- While you might think that because all of the tags on the HTML page are lowercase (as required by XHTML), `tagName` should be compared to a lowercase "a". That's not the way it works. `tagName` always returns an uppercase value.

This Looks Very Different...

If you're thinking about now that hey, this isn't the way I remember JavaScript code looking beforedon't panic! Things have changed a little on the face of it, which you'll particularly notice if you're familiar with the code in previous editions of this book.

Styles change over the years, and (as mentioned in Chapter 1) the recommended way to write JavaScript has changed. If you're more familiar with the older approach, it won't be that hard to switch, and you'll soon wonder how on earth you ever made do with all that JavaScript and HTML jumbled together.

For example, the scripts on the next page show what the same functionality from "Creating More Effective Rollovers" looked like in the previous edition compared to this edition. In the previous edition, the script was called "Putting Multiple Rollovers On a Page," a task we eliminated from this edition because the "Creating More Effective Rollovers" script is more flexible now.

What you're likely to notice first is that the two are just about the same lengthbut that's a little misleading, because the page (in both cases) has only two buttons. Once you add a third button, while you have to add one line of HTML to both, you also have to add *seven* lines of JavaScript to the old-style code to handle that button. The new version? Zero new lines of code.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

attributes to your link tags when you're using the old method. If not, you'll find that no matter how much JavaScript you add, your rollovers won't roll. With the newer method, your HTML page requires no JavaScript mixed in. This is especially handy if you work in a larger group, where some people do JavaScript and some just do HTML.

And finally, the new style is preferable because you don't have to have all that JavaScript in every single page! If you've got rollovers, you almost definitely have a site with multiple pages. If every page has to load that same JavaScript, your site will load and feel slow. If all your pages reference a single external JavaScript file, however, it only has to load once, and as long as your pages refer to it, it never needs to be downloaded again. That means less bandwidth hits for your site and faster browsing for your visitors. And best of all: if you need to make a change to your JavaScript, you only need to change the one file, and the change is immediately propagated to the entire site.

Previous edition

[View full width]

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN">
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
     <title>A Simple Rollover</title>
     <script language="Javascript" type="text/javascript">
     <!-- Hide script from old browsers

     if (document.images) {
        button1On = new Image
        button1Off = new Image
        button2On = new Image
        button2Off = new Image

        button1On.src = "images/button1_on.gif"
        button1Off.src = "images/button1_off.gif"
        button2On.src = "images/button2_on.gif"
        button2Off.src = "images/button2_off.gif"
     }
     else {
        button1On = ""
        button1Off = ""
        button2On = ""
        button2Off = ""

        document.button1 = ""
        document.button2 = ""
     }

     // End hiding script from old browsers -->
     </script>
</head>
<body bgcolor="#FFFFFF">
     <a href="next1.html" onmouseover= "document.button1.src=button1_off.src"
     onmouseout="document.button1.src= button1_off.src"><img src="images/ button1_off.
```

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
width="113" height="33" border="0" name="button1" alt="button1" /></a>  
     <a href="next2.html" onmouseover="document.button2.src=button2On.src" onmouseout=
  "document.button2.src=button2Off.src"> <img src="images/button2_off.gif" width="113"
 height="33" border="0" name="button2" alt="button2" /></a>
</body>
</html>
```

This edition

[View full width]

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN">
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
     <title>A Simple Rollover</title>
     <script src="script02.js" language="javascript" type="text/javascript"></script>
</head>
<body bgcolor="#FFFFFF">
     <a href="next.html"><img src= "images/button1_off.gif" width="113" height="33"
 border="0" alt="button1" id="button1" /></a>  
     <a href="next2.html"><img src= "images/button2_off.gif" width="113" height="33"
 border="0" alt="button2" id="button2" /></a>
</body>
</html>

window.onload = rolloverInit;
- - - - - - - - - - - - - - - - - - - - - - - - - - - -
function rolloverInit() {
     for (var i=0; i<document.images.length; i++) {
        if (document.images[i].parentNode. tagName == "A") {
           setupRollover(document.images[i]);
        }
     }
}

function setupRollover(thisImage) {
     thisImage.outImage = new Image();
     thisImage.outImage.src = thisImage.src;
     thisImage.onmouseout = rollOut;

     thisImage.overImage = new Image();
     thisImage.overImage.src = "images/" + thisImage.id+ "_on.gif";
     thisImage.onmouseover = rollOver;
}

function rollOver() {
     this.src = this.overImage.src;
}

function rollOut() {
     this.src = this.outImage.src;
}
```

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Building Three-State Rollovers

A three-state rollover is one where the rollover has three versions. Besides the original image and the version that appears when the user places the cursor over the image, there is a third version of the image when the button itself is clicked, as shown in **Figure 4.5**.

Figure 4.5. When the button is clicked, you get a third image (hard to see in this grayscale image; check our companion Web site for the full effect).

[View full size image]

Script 4.4, the HTML file, looks almost exactly the same as Script 4.2 from the previous task. In fact, the only differences are the document's title and the name of the external JavaScript file that is being called. That's it. This is an example of why putting all your JavaScript into an external file is so powerful; you can add functionality to your pages without having to rework your HTML pages.

Script 4.4. By putting your JavaScript in an external file, the HTML for a three-state rollover is virtually identical to a two-state rollover.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN">
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
     <title>Three-state Rollovers</title>
     <script src="script03.js" language= "javascript" type="text/javascript"> </script>
</head>
<body bgcolor="#FFFFFF">
     <a href="next1.html"><img src= "images/button1_off.gif" width="113" height="33"
border="0" alt="button1" id="button1" /></a>  
     <a href="next2.html"><img src="images/button2_off.gif" width="113" height="33"
border="0" alt="button2" id="button2" /></a>
</body>
</html>
```

In **Script 4.5**, the external JavaScript file, there are only a few changes from Script 4.3. Rather than go through the whole script again, we'll just focus on the changes. Remember that parts of the script that we're covering are shown in red.

Script 4.5. This script powers the three-state rollover.

```
window.onload = rolloverInit;

function rolloverInit() {
     for (var i=0; i<document.images.length; i++) {
        if (document.images[i].parentNode. tagName == "A") {
           setupRollover(document.images[i]);
        }
     }
}

function setupRollover(thisImage) {
     thisImage.outImage = new Image();
     thisImage.outImage.src = thisImage.src;
     thisImage.onmouseout = rollOut;

     thisImage.clickImage = new Image();
     thisImage.clickImage.src = "images/" + thisImage.id + "_click.gif";
     thisImage.onclick = rollClick;

     thisImage.overImage = new Image();
     thisImage.overImage.src = "images/" + thisImage.id + "_on.gif";
     thisImage.onmouseover = rollOver;
}

function rollOver() {
     this.src = this.overImage.src;
}
```

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
     this.src = this.outImage.src;
}

function rollClick() {
     this.src = this.clickImage.src;
}
```

To build a three-state rollover:

1. ```
   thisImage.clickImage = new Image();
   thisImage.clickImage.src = "images/" + thisImage.id + "_click.gif";
   ```

   In the `setupRollover()` function, we need to add a third image property, for the click state. In the first line, we create a new image object that will contain the `clickImage` version of the image. The second line sets the source for `clickImage`. It builds the name of the source file on the fly, concatenating `"images/"` with the `id` of the image, and adding `"_click.gif"`.

2. ```
   thisImage.onclick = rollClick;
   ```

   This line tells the browser to trigger the `rollClick()` function when the user clicks the mouse on the image.

3. ```
   function rollClick() {
     this.src = this.clickImage.src;
   }
   ```

   When the user clicks the mouse on the image, this function sets the image source to the `clickImage` version of the image.

PREV NEXT

downloaded from: lib.ommolketab.ir
   ```

downloaded from: lib.ommolketab.ir

Triggering Rollovers from a Link

In earlier examples, the user triggered the rollover by moving the mouse over an image. But you can also make a rollover occur when the user points at a text link, as in **Figures 4.6** and **4.7**. The HTML is an unexciting page with one link and one image, shown in **Script 4.6**. We'll do the rollover by modifying the script used in previous examples, as in **Script 4.7**.

Figure 4.6. The text link is the triggering device for this rollover.

[View full size image]

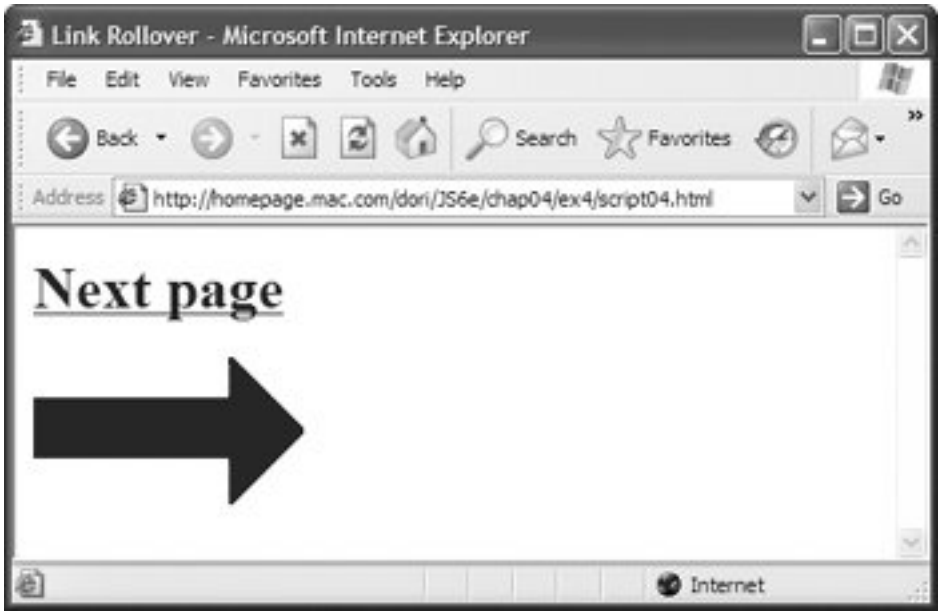
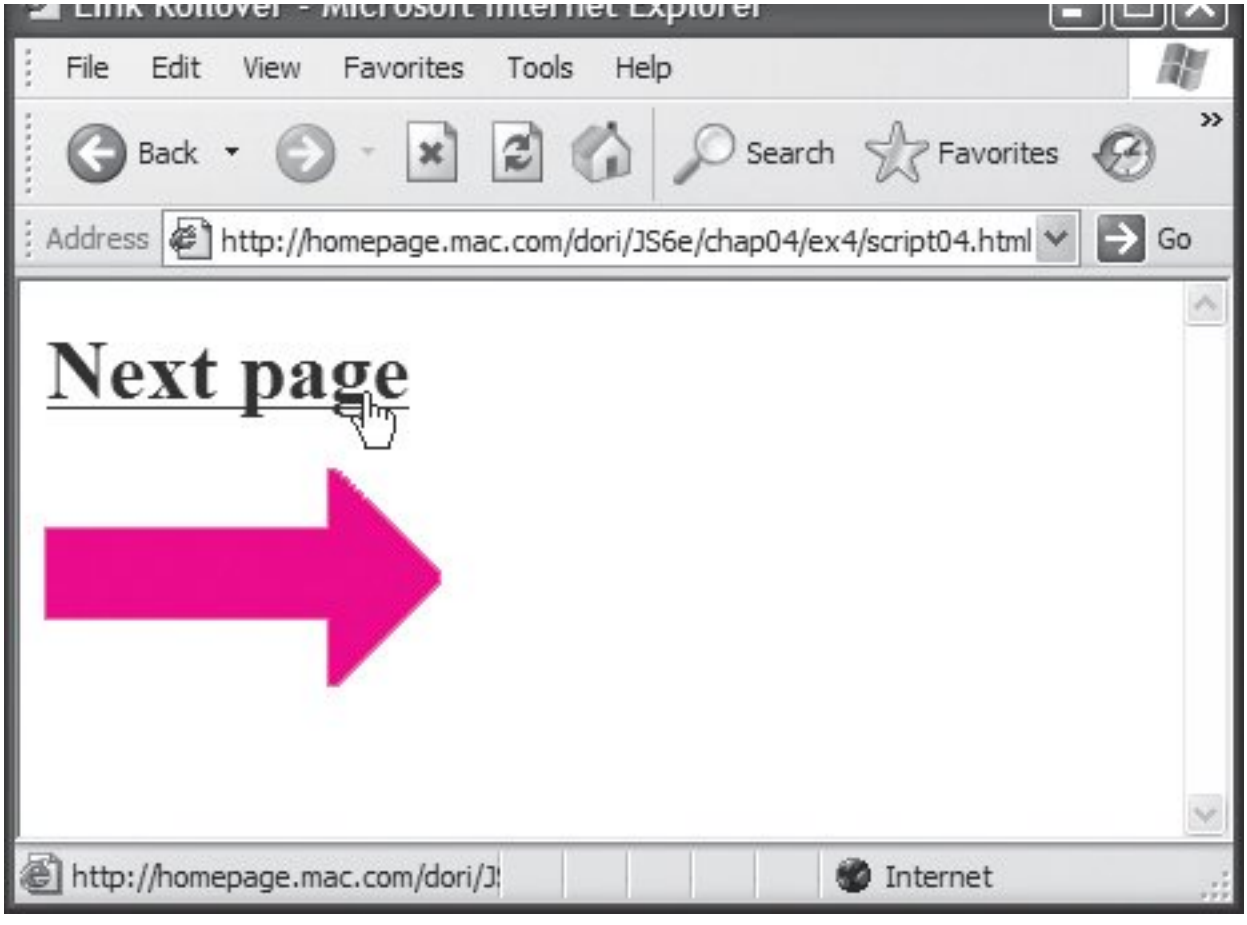


Figure 4.7. When the user points at the link, the graphic below changes.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir



Script 4.6. This script shows the HTML for a rollover from a text link.

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN">
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
     <title>Link Rollover</title>
     <script src="script04.js" language= "javascript" type="text/javascript"></
script>
</head>
<body bgcolor="#FFFFFF">
     <h1><a href="next.html" id="arrow"> Next page</a></h1>
     <img src="images/arrow_off.gif" width="147" height="82" id="arrowImg" alt="arrow" />
</body>
</html>
```

Script 4.7. Here is the JavaScript for a rollover from a text link.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
function rolloverInit() {
     for (var i=0; i<document.links.length; i++)
{
        var linkObj = document.links[i];
        if (linkObj.id) {
           var imgObj = document.getElementById(linkObj.id + "Img");
           if (imgObj) {
              setupRollover(linkObj,imgObj);
           }
        }
     }
}

function setupRollover(thisLink,thisImage) {
     thisLink.imgToChange = thisImage;
     thisLink.onmouseout = rollOut;
     thisLink.onmouseover = rollOver;

     thisLink.outImage = new Image();
     thisLink.outImage.src = thisImage.src;

     thisLink.overImage = new Image();
     thisLink.overImage.src = "images/" + thisLink.id + "_on.gif";
}

function rollOver() {
     this.imgToChange.src = this.overImage.src;
}

function rollOut() {
     this.imgToChange.src = this.outImage.src;
}
```

To trigger a rollover from a link:

1. `function rolloverInit() {`
   `for (var i=0; i<document.links. length; i++) {`

After beginning the `rolloverInit()` function, we start a loop, much like previous examples in this chapter. But there we were looking for images (`document.images.length`), and here we're looking for links (`document.links.length`). The loop begins by setting the counter variable `i` to zero. Every time around, if the value of `i` is less than the number of links in the document, increment `i` by 1.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

We create the `linkObj` variable and set it to the current link.

3.
```
if (linkObj.id) {
  var imgObj = document.getElementById(linkObj.id + "Img");
```

If `linkObj` has an `id`, then we check to see if there's another element on the page that has an `id` that's the same plus `Img`. If so, put that element into the new variable `imgObj`.

4.
```
if (imgObj) {
  setupRollover(linkObj,imgObj);
```

If `imgObj` exists, then call the `setupRollover()` function, passing it the link object and the image object.

5.
```
function setupRollover(thisLink, thisImage) {
  thisLink.imgToChange = thisImage;
  thisLink.onmouseout = rollOut;
  thisLink.onmouseover = rollOver;
```

The `setupRollover()` function begins with the link and image parameters that were passed to it in step 4. Then we add a new property, `imgToChange`, to the link object. JavaScript needs some way of knowing what image is to be changed when the link is moused over, and this is where it's stored. The next two lines have event handlers that call the `rollOut` and `rollOver` functions when they're triggered.

6.
```
function rollOver() {
  this.imgToChange.src = this.overImage.src;
}
function rollOut() {
  this.imgToChange.src = this.outImage.src;
}
```

When `rollOver` and `rollOut` are called, they're slightly different from the previous examples in this chapter: now, `this.imgToChange.src` is being reset instead of `this.src` itself.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

- This technique is useful when you want to provide the user with a preview of what they will see if they click the link at which they are pointing. For example, say you have a travel site describing trips to Scotland, Tahiti, and Cleveland. On the left of the page could be a column of text links for each destination, while on the right could be a preview area where an image appears. As the user points at the name of a destination, a picture of that place appears in the preview area. Clicking the link takes the user to a page detailing their fabulous vacation spot.

PREV NEXT

downloaded from: lib.ommolketab.ir

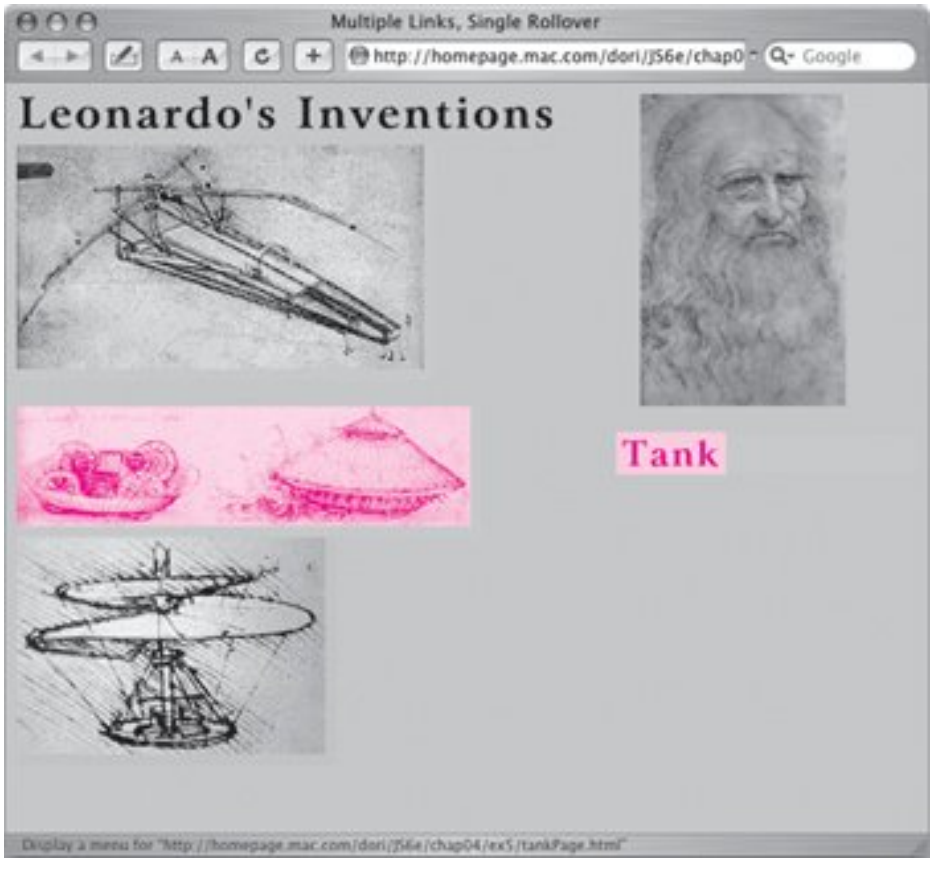
downloaded from: lib.ommolketab.ir

Making Multiple Links Change a Single Rollover

Up to now, you've seen how mousing over a single image (or actually, the link associated with that image) can trigger a rollover effect. But you can also have several different images that trigger a rollover. This can be very useful when you have several images that you want to annotate. Rolling over each of the images makes the description of that image appear. In this example, we've done just this with images of three of Leonardo da Vinci's inventions. As you roll over each image, the description of that image appears in a text box. The description itself is another image. Actually, it's three images, one for each of the three inventions. **Figure 4.8** shows **Script 4.8** (HTML) and **Script 4.9** (JavaScript) in action. As with most of the scripts in this book, it builds on previous examples, so we'll just explain the new concepts. There are just a few lines that are different between Script 4.8 and Script 4.9.

Figure 4.8. This page has three interactive images, a flying machine, a tank, and a helicopter. When you roll over an image, its description appears under Leonardo's face.

[View full size image]



Script 4.8. Note that the links and images on this page all have unique `id`s.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN">
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
     <title>Multiple Links, Single Rollover</title>
     <script src="script05.js"
language="javascript" type="text/javascript"> </script>
</head>
<body bgcolor="#EECC99">
     <img src="images/DaVinci.jpg" width="144" height="219" alt="DaVinci" align="right"
  hspace="50" />
     <img src="images/leoText.gif" width="375" height="26" alt="Leonardo's Inventions" />
     <a href="flyPage.html" class="textField" id="flyer"><img src="images/flyer.gif"
width="293" height="165" border="0" alt="Flying Machine" vspace="10" id="flyerImg" /></
a><br clear="right" />
     <img src="images/bg.gif" width="208" height="27" id="textField" alt="Text Field"
  align="right" vspace="20" />
     <a href="tankPage.html" class="textField" id="tank"><img src="images/tank.gif"
width="325" height="92" border="0" alt="Tank" id="tankImg" /></a><br />
     <a href="heliPage.html" class="textField" id="helicopter"><img src="images/helicopter
.gif" width="224" height="160" border="0" alt="Helicopter" id="helicopterImg"/></a>
</body>
</html>
```

Script 4.9. This script shows you how to use multiple links to trigger a single rollover.

```
window.onload = rolloverInit;

function rolloverInit() {
     for (var i=0; i<document.links.length; i++) {
        var linkObj = document.links[i];
        if (linkObj.className) {
           var imgObj = document.getElementById(linkObj.className);
           if (imgObj) {
              setupRollover(linkObj,imgObj);
           }
        }
     }
}

function setupRollover(thisLink,textImage) {
     thisLink.imgToChange = textImage;
     thisLink.onmouseout = rollOut;
     thisLink.onmouseover = rollOver;

     thisLink.outImage = new Image();
     thisLink.outImage.src = textImage.src;

     thisLink.overImage = new Image();
```

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
}

function rollOver() {
     this.imgToChange.src = this.overImage.src;
}

function rollOut() {
     this.imgToChange.src = this.outImage.src;
}
```

To make multiple links change a single rollover:

1. ```
   if (linkObj.className) {
     var imgObj = document.getElementById(linkObj. className);
   ```

   We can't use the `id` of the rolled-over images to calculate the `id` of the changed imagethat's because an `id` has to be unique, and all of the rolled-over images have to come up with the same value for the changed image destination. Instead, we're using the `class` attribute (because you can have multiple page elements sharing the same `class`). In this line, we're looking for the `className` of the link object.

2. ```
   function setupRollover(thisLink, textImage) {
     thisLink.imgToChange = textImage;
   ```

   The `setupRollover()` function is passed the current link object (`thisLink`) and the image object, which we're calling `textImage`. Note that when we passed these objects (which can also be referred to as variables) in, we called them `linkObj` and `imgObj`, respectively.

   The rest of the script works the same way as the previous examples in this chapter.

PREV NEXT

downloaded from: lib.ommolketab.ir

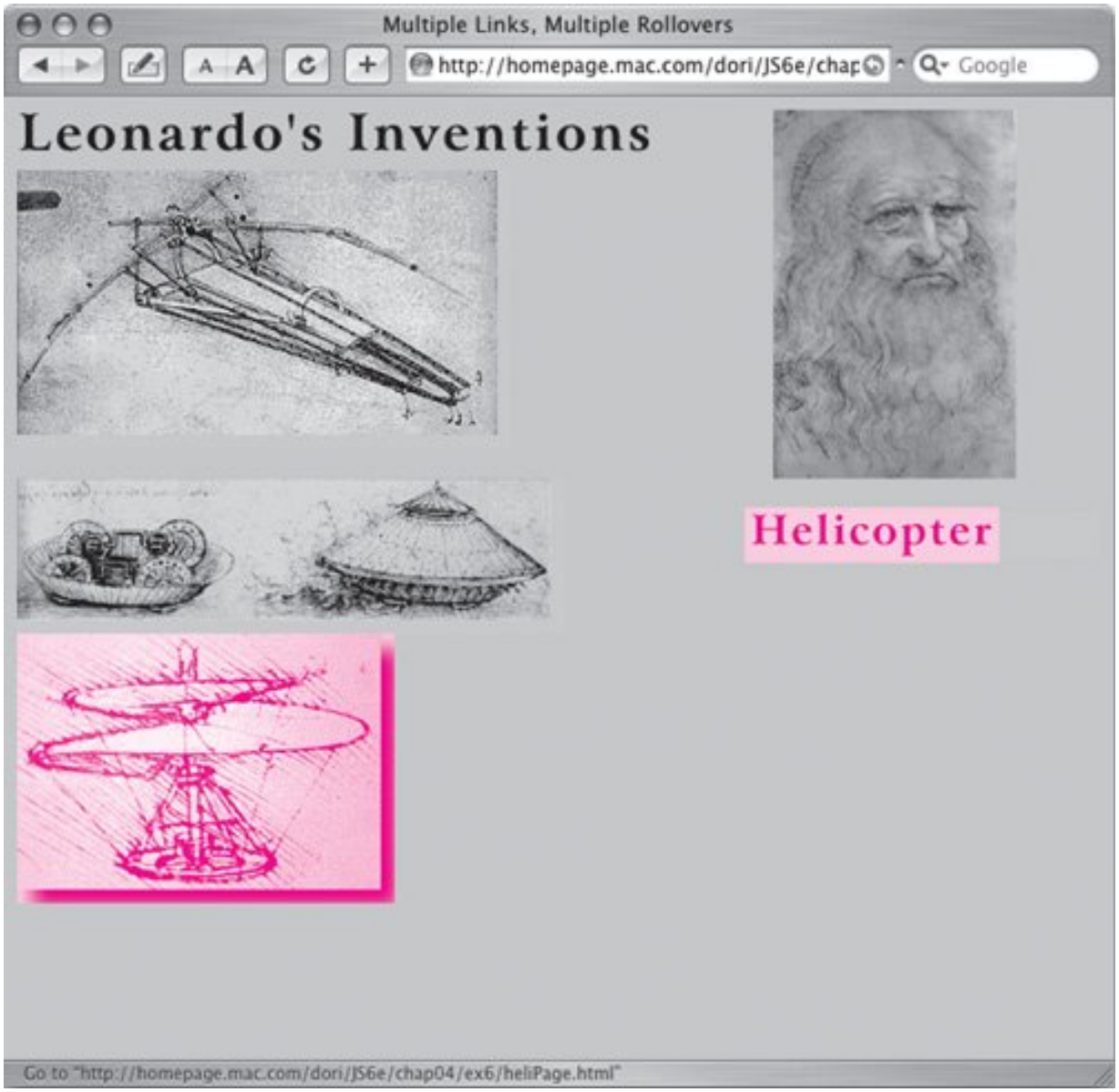
downloaded from: lib.ommolketab.ir

Working with Multiple Rollovers

What if you want the image that triggers the rollover to also be a rollover itself? **Figure 4.9** builds on the last example and shows how we've added this feature. When you roll over one of the invention images, it makes the description image appear, as before, but this time also swaps out the invention image for another image with a drop shadow. This gives the user visual feedback about what they're pointing at (as if the mouse pointer isn't enough!). **Script 4.10** is the HTML page (no changes except for the title and the name of the external JavaScript file being called), and **Script 4.11** shows the additions to the JavaScript from the previous example.

Figure 4.9. When you roll over one of the images, a description appears and a drop shadow appears around the image itself.

[View full size image]



downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

external script.

[View full width]

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN">
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
     <title>Multiple Links, Multiple Rollovers</title>
     <script src="script06.js" language= "javascript" type="text/javascript"> </script>
</head>
<body bgcolor="#EECC99">
     <img src="images/DaVinci.jpg" width="144" height="219" alt="DaVinci" align="right"
  hspace="50" />
     <img src="images/leoText.gif" width="375" height="26" alt="Leonardo's Inventions" />
     <a href="flyPage.html" class="textField" id="flyer"><img src="images/flyer.gif"
 width="293" height="165" border="0" alt="Flying Machine" vspace="10" id="flyerImg" /></
 a><br clear="right" />
     <img src="images/bg.gif" width="208" height="27" id="textField" alt="Text Field"
  align="right" vspace="20" />
     <a href="tankPage.html" class="textField" id="tank"><img src="images/tank.gif"
 width="325" height="92" border="0" alt="Tank" id="tankImg" /></a><br />
     <a href="heliPage.html" class="textField" id="helicopter"><img src="images/
  helicopter.gif" width="224" height="160" border="0" alt="Helicopter" id="helicopterImg" /></a>
</body>
</html>
```

Script 4.11. This script handles the multiple rollovers.

```
window.onload = rolloverInit;

function rolloverInit() {
     for (var i=0; i<document.links.length; i++) {
        var linkObj = document.links[i];
        if (linkObj.className) {
           var imgObj = document.getElementById(linkObj.className);
           if (imgObj) {
              setupRollover(linkObj,imgObj);
           }
        }
     }
}

function setupRollover(thisLink,textImage) {
     thisLink.imgToChange = new Array;
     thisLink.outImage = new Array;
     thisLink.overImage = new Array;

     thisLink.imgToChange[0] = textImage;
     thisLink.onmouseout = rollOut;
     thisLink.onmouseover = rollOver;

     thisLink.outImage[0] = new Image();
     thisLink.outImage[0].src = textImage.src;
```

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
     var rolloverObj = document.getElementById(thisLink.id + "Img");
     if (rolloverObj) {
        thisLink.imgToChange[1] = rolloverObj;

        thisLink.outImage[1] = new Image();
        thisLink.outImage[1].src = rolloverObj.src;
        thisLink.overImage[1] = new Image();
        thisLink.overImage[1].src = "images/" + thisLink.id + "_on.gif";
     }
}

function rollOver() {
     for (var i=0;i<this.imgToChange.length; i++) {
        this.imgToChange[i].src = this.overImage[i].src;
     }
}

function rollOut() {
     for (var i=0;i<this.imgToChange.length; i++) {
        this.imgToChange[i].src = this.outImage[i].src;
     }
}
```

To work with multiple rollovers:

1. `thisLink.imgToChange = new Array;`
   `thisLink.outImage = new Array;`
   `thisLink.overImage = new Array;`

   These lines were added because the script has more images to work with (two for each rollover). In each line, we're creating a new property of `thisLink`, each of which is a new kind of object, called an *array*. An array is an object that contains a set of related information. One way to access the contents of an array is numerically inside square brackets. For example, `thisLink.imgToChange[0]` is the first member of the array. Most numbering of objects in JavaScript begins with 0, rather than 1. See the "JavaScript Strings" sidebar in Chapter 3.

2. `thisLink.imgToChange[0] = textImage;`

   In the previous task, `imgToChange` was an image, but in this task, it's an array that will contain images. Here, `textImage` is stored in the first element of `imgToChange`.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
thisLink.outImage[0].src = textImage.src;
```

As previously, we need to store the out (off) version of the image, but this time it's stored in the first element of the `outImage` array.

4.
```
thisLink.overImage[0] = new Image();
thisLink.overImage[0].src = "images/" + thisLink.id + "Text.gif";
```

Similarly, the over (on) version of the image is calculated and stored in the first element of `overImage`.

5.
```
var rolloverObj = document.getElementById(thisLink.id + "Img");
if (rolloverObj) {
```

Now we need to figure out if this rollover will trigger multiple images, not just an individual image. If that's the case, there will be an element on the HTML page whose `id` is the same as this one, but with `Img` appended. That is, if we're working on `flyer`, we'll be checking to see if there's a `flyerImg` element on the page. If there is, it's saved in `rolloverObj`, and we should do the next three steps.

6.
```
thisLink.imgToChange[1] = rolloverObj;
```

In the same way that we set `imgToChange[0]` above, we now set `imgToChange[1]` (the second element in the array) to the new `rolloverObj`. When the `onmouseout` and `onmouseover` event handlers are triggered, both images swap to their alternate versions, as we'll see later.

7.
```
thisLink.outImage[1] = new Image();
thisLink.outImage[1].src = rolloverObj.src;
```

This sets the second array element of `outImage` to the out (off) version of the image.

8.
```
thisLink.overImage[1] = new Image();
thisLink.overImage[1].src = "images/" + thisLink.id + "_on.gif";
```

And here, the over (on) version of the image is calculated and stored in the second element of `overImage`.

If, for some reason, we wanted a third image to also change during this same rollover, we'd repeat steps 68 with the third image object.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
    this.imgToChange[i].src = this.overImage[i].src;
}
```

Here inside the `rollOver()` function is where the images get swapped. Because one or more images can be changed, we need to start by asking how many images we have storedthat's the value of `this.imgToChange.length`. Here, the value is 2, because we want two images to change. We then loop through two times, setting the source of `imgToChange[0]` and then `imgToChange[1]` to their respective over values.

10.

```
function rollOut() {
  for (var i=0; i<this. imgToChange.length; i++) {
     this.imgToChange[i].src = this.outImage[i].src;
  }
```

This code in the `rollOut()` function is virtually the same as that in the previous step; the only difference is that we're now resetting those images to their out source values.

✓ Tips

- It's important to remember that every image that ever gets rolled over must have a unique `id`.
- What if you want some of the links on your page to trigger multiple rollovers, but others to be individual rollovers? No problem you don't even need to change a line of JavaScript. So long as the check in step 5 doesn't find the alternate `id` on the page, no second element is stored, and the `rollOver()` and `rollOut()` loops only animate the initial image.

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Creating Cycling Banners

When you surf the Web, it's common to see advertising banners that periodically switch between images. Some of these are animated GIF files, which are GIF files that contain a number of frames that play in succession; others are Flash animations. If you want to have a page that cycles through a number of GIFs (either animated or not), you can use JavaScript to do the job, as in **Script 4.13**. This example uses three GIFs and cycles repeatedly through them, as shown in **Figures 4.10**, **4.11**, and **4.12**. The simple HTML page is shown in **Script 4.12**.

Script 4.12. The HTML loads the first image in the cycling banner; the JavaScript handles the rest.

[View full width]

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN">
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
     <title>Rotating Banner</title>
     <script src="script07.js" language= "javascript" type="text/javascript"> </script>
</head>
<body bgcolor="#FFFFFF">
     <div align="center">
        <img src="images/reading1.gif"  width="400" height="75" id="adBanner"  alt="Ad
 Banner" />
     </div>
</body>
</html>
```

Script 4.13. You can use JavaScript to cycle between images in a banner.

```
window.onload = rotate;

var adImages = new Array("images/reading1.gif", "images/reading2.gif","images/reading3.gif");
var thisAd = 0;

function rotate() {
     thisAd++;
     if (thisAd == adImages.length) {
        thisAd = 0;
     }
     document.getElementById("adBanner").src = adImages[thisAd];

     setTimeout("rotate()", 3 * 1000);
}
```

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

[View full size image]

Figure 4.11. ...the second image...

[View full size image]

Figure 4.12. ...the final image. Once the page loads and the banner begins cycling, the animation continues with no user intervention required.

[View full size image]

To create cycling banners:

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
var thisAd = 0;
```

This code lays the foundation for the script by creating two variables. The first line creates a new variable called `adImages` and sets it to an array. In this case, the array contains the names of the three GIF files that make up the cycling banner. The other variable, `thisAd`, is given its beginning value in this code.

2.
```
function rotate() {
```

This line sets up a new function called `rotate()`.

3.
```
thisAd++;
```

Take the value of `thisAd`, and add one to it.

4.
```
if (thisAd == adImages.length) {
  thisAd = 0;
```

This code sets up a counter that says if the value of `thisAd` is equal to the number of items in the `adImages` array, then set the value of `thisAd` back to zero.

5.
```
document.getElementById("adBanner"). src = adImages[thisAd];
```

The image on the Web that is being cycled has the `id adBanner`; you define the name as part of the `img` tag, as shown in Script 4.12. This line of code says that the source of the image `adBanner` is in the array `adImages`, and the value of the variable `thisAd` defines which of the three GIFs the browser should use at this moment.

6.
```
setTimeout("rotate()", 3 * 1000);
```

This line tells the script how often to change GIFs in the banner. The built-in JavaScript command `setTimeout` lets you specify that an action should occur on a particular schedule, always measured in milliseconds. In this case, the function `rotate()` is called every 3,000 milliseconds, or every 3 seconds, so the GIFs will cycle in the banner every three seconds.

✓ Tips

- You might be wondering why you would want to use JavaScript for a cycling banner, rather than just create an animated GIF. One good reason is that it lets you use JPEGs or PNGs in the banner, which gives you higher quality images. With these higher-quality images, you can use photographs in your banners.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

cached. Each downloads from the server the first time that it's displayed. This is because you might have any number of images in your ad array, and it's not polite to force users to download, for example, 100 images if they're only going to see 2 or 3 of them.

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Adding Links to Cycling Banners

Banners are often used in advertising, and you'll want to know how to make a banner into a link that will take a visitor somewhere when the visitor clicks the banner. **Script 4.14** shows the HTML page, which differs from the last example only in that it adds a link around the `img` tag. **Script 4.15** shows a variation of the previous script. In this script, we'll add a new array. This new array contains destinations that users will be sent to when they click the banner. In this case, the "Eat at Joe's" banner takes you to negrino.com, "Drink more Java" goes to sun.com, and "Heartburn" goes to microsoft.com, as shown in **Figure 4.13**. No editorial comments implied, of course.

Script 4.14. The HTML needed for an ad banner.

[View full width]

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN">
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
     <title>Rotating Banner with Links</title>
     <script src="script08.js"
language="javascript" type="text/javascript"> </script>
</head>
<body bgcolor="#FFFFFF">
     <div align="center">
        <a href="linkPage.html"><img src= "images/banner1.gif" width="400"
height="75"
 id="adBanner" border="0" alt="ad banner" /></a>
     </div>
</body>
</html>
```

Script 4.15. This script shows how you can turn cycling banners into real, clickable ad banners.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
var adImages = new Array("images/banner1.gif", "images/banner2.gif","images/banner3.gif");
var adURL = new Array("negrino.com","sun.com", "microsoft.com");
var thisAd = 0;

function rotate() {
     thisAd++;
     if (thisAd == adImages.length) {
        thisAd = 0;
     }
     document.getElementById("adBanner").src = adImages[thisAd];

     setTimeout("rotate()", 3 * 1000);
}

function newLocation() {
     document.location.href = "http://www." + adURL[thisAd];
     return false;
}

function initBannerLink() {
     if (document.getElementById("adBanner"). parentNode.tagName == "A") {
        document.getElementById("adBanner"). parentNode.onclick = newLocation;
     }

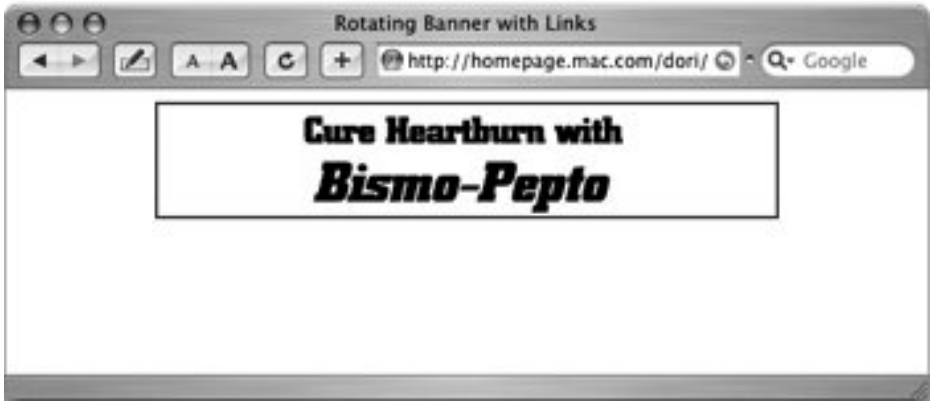
     rotate();
}
```

Figure 4.13. Each of these three images is a link, and clicking each image takes you to one of three different Web sites.

[View full size image]

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir



To add links to cycling banners:

1. `window.onload = initBannerLink;`

   When the window finishes loading, trigger the `initBannerLink()` function.

   ✓ **Tip**

   - The `adURL` array needs to have the same number of array items as the `adImages` array for this script to work correctly.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

The `adURL` variable gets assigned the three constituents of a new array. Just the domain names need to go in here, because we'll complete the URLs next.

3.
```
function newLocation() {
  document.location.href = "http://www." + adURL[thisAd];
  return false;
```

The new function `newLocation` sets the `document.location.href` object (in other words, the current document window) to the value of the text string `http://www.` (notice the period), plus the value of `adURL`. Since `adURL` is an array, you need to specify which member of the array. That's stored in `thisAd`, and the resulting string can be any of the three links, depending on when the user clicks. Last, it returns false, which tells the browser that it should *not* also load in the `href`. Otherwise, the browser would do both. We've handled everything within JavaScript, so the `HRef` doesn't need to be loaded.

4.
```
if (document.getElementById ("adBanner").parentNode.tagName == "A") {
   document.getElementById ("adBanner").parentNode.onclick = newLocation;
}

rotate();
```

This code, inside the `initBannerLink()` function, first checks to see if the `adBanner` object is surrounded by a link tag. If so, when the link is clicked, the `newLocation()` function will be called. Finally, the `rotate()` function is called.

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Building Wraparound Slideshows

Slideshows on Web sites present the user with an image and let the user control the progression (either forward or backward) of the images. JavaScript gives the user the interactive control needed. **Script 4.16** shows the HTML needed, and the JavaScript in **Script 4.17** has what you need to add slideshows to your pages.

Script 4.16. This HTML page creates a slideshow.

[View full width]

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN">
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
     <title>Image Slideshow</title>
     <script type="text/javascript" language="Javascript" src="script09.js"> </script>
</head>
<body bgcolor="#FFFFFF">
     <div align="center">
        <h1>US Missions to Mars</h1>
        <img src="images/pathfinder.gif" id="myPicture" width="201" height="155"
 alt="Slideshow" />
        <h2><a href="previous.html" id="prevLink">&lt;&lt; Previous</a>  <a
 href= "next.html" id="nextLink"> Next &gt;&gt;</a></h2>
     </div>
</body>
</html>
```

Script 4.17. This script builds a slideshow that the user can click through using links to control movement forward and back.

```
window.onload = initLinks;

var myPix = new Array("images/pathfinder.gif", "images/surveyor.gif","images/surveyor98.gif");
var thisPic = 0;

function initLinks() {
     document.getElementById("prevLink"). onclick = processPrevious;
     document.getElementById("nextLink"). onclick = processNext;
}
function processPrevious() {
     if (thisPic == 0) {
        thisPic = myPix.length;
     }
     thisPic--;
     document.getElementById("myPicture").src = myPix[thisPic];
     return false;
}
```

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
    thisPic++;
    if (thisPic == myPix.length) {
       thisPic = 0;
    }
    document.getElementById("myPicture").src = myPix[thisPic];
    return false;
}
```

This script builds a slideshow that wraps aroundthat is, if you go past the end of the list you go back to the beginning and vice versa. **Figure 4.14** shows the new slideshow.

Figure 4.14. Clicking the Previous or Next link calls the `processPrevious()` or `processNext()` function, respectively.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

To build a wraparound slideshow:

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

When the window finishes loading, trigger the `initLinks()` function.

2.
```
function initLinks() {
  document.getElementById ("prevLink").onclick = processPrevious;
  document.getElementById ("nextLink").onclick = processNext;
}
```

This function sets up the `onclick` event handlers for the Previous and Next links.

3.
```
function processPrevious() {
  if (thisPic == 0) {
     thisPic = myPix.length;
```

This function makes the slideshow run in the Previous direction. This first part checks to see if `thisPic` is equal to 0. If it is, the function gets the number of pictures in the `myPix` array.

4.
```
thisPic--;
document.getElementById ("myPicture").src = myPix[thisPic];
```

The first line reduces the value of `thisPic` by 1. The next line sets the `src` of `myPicture` to the element of the `myPix` array represented by the current value of `thisPic`.

5.
```
thisPic++;
if (thisPic == myPix.length) {
  thisPic = 0;
}
document.getElementById ("myPicture").src = myPix[thisPic];
```

This code, inside the `processNext()` function, makes the slideshow run in the Next direction and is much like the `processPrevious()` function. The first thing it does is increment the value of `thisPic` by 1. Then it checks to see if the value of `thisPic` is the same as the number of items in the `myPix` array. If so, it sets `thisPic` back to 0. The next line sets the `src` of `myPicture`.

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Displaying a Random Image

If your site is rich with graphics, or if you are displaying digital artwork, then you may want to have a random image from your collection appear when the user enters your site. Once again, JavaScript to the rescue! The extremely simple **Script 4.18** shows the required HTML, and **Script 4.19** provides the JavaScript. **Figure 4.15** shows the result of the script, in this case images of a stuffed lion, tiger, and bear (oh, my!).

Script 4.18. This simple HTML creates the page for a random image.

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN">
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
     <title>Random Image</title>
     <script language="Javascript" type="text/javascript" src="script10.js"></script>
</head>
<body bgcolor="#FFFFFF">
     <img src="images/spacer.gif" width="305" height="312" id="myPicture" alt="some image" />
</body>
</html>
```

Script 4.19. You can display random images on your page with this script, which uses JavaScript's `Math.random` method to generate a random number.

```
window.onload = choosePic;

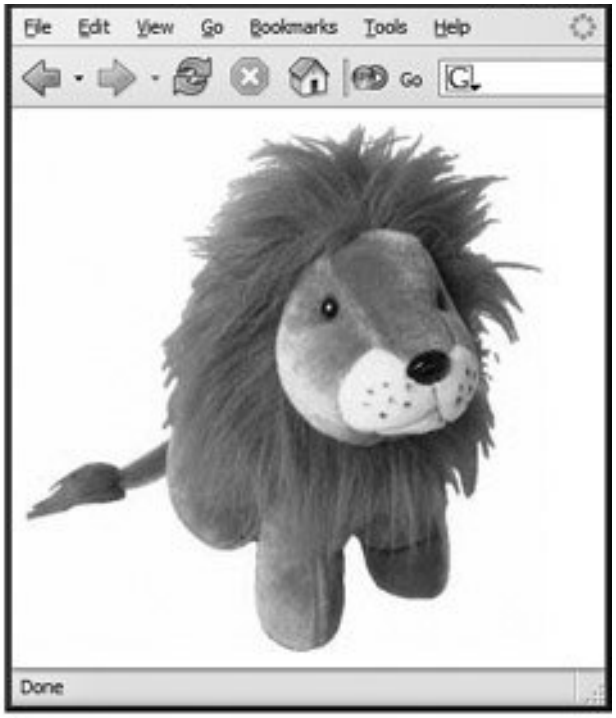
var myPix = new Array("images/lion.jpg", "images/tiger.jpg","images/bear.jpg");
function choosePic() {
      randomNum = Math.floor((Math.random() * myPix.length));
      document.getElementById("myPicture").src = myPix[randomNum];
}
```

Figure 4.15. Depending on the value of the random number generated by the script, the user is presented with the lion, the tiger, or the bear.

[View full size image]

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir



To display a random image:

1. `var myPix = new Array ("images/lion.jpg", "images/tiger.jpg", "images/bear.jpg");`

   As is now familiar, build an array of three images, and stuff it into the variable `myPix`.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Define the function `choosePic()`.

3. `randomNum = Math.floor ((Math.random() * myPix.length));`

The variable called `randomNum` gets the value of a math expression that's best read from the inside outwards. `Math.random` generates a random number between 0 and 1, which is then multiplied by `myPix.length`, which is the number of items in the array (in this case, it's 3). `Math.floor` rounds the result down to an integer, which means that the number must be between 0 and 2.

4. `document.getElementById ("myPicture").src = myPix[randomNum];`

This says that the source of the image `myPicture` is set based on the array `myPix`, and the value at this moment is dependent on the value of `randomNum`.

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Cycling Images with a Random Start

If you have a number of images that you want to display, you may not want to display them beginning with the same image each time the page is loaded. **Script 4.20** has the HTML, and **Script 4.21** combines the code used earlier for the cycling ad banners with the random image code.

Script 4.20. There's a spacer GIF in the HTML file, which is a placeholder until the ad banner appears.

[View full width]

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN">
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
     <title>Rotating Random Banner</title>
     <script src="script11.js"  language="javascript"  type="text/javascript"></script>
</head>
<body bgcolor="#FFFFFF">
     <div align="center">
        <img src="images/spacer.gif"  width="400" height="75" id="adBanner"  alt="Ad
  Banner" />
     </div>
</body>
</html>
```

Script 4.21. This script allows you to start your cycling image show with a random image.

```
window.onload = choosePic;

var adImages = new Array("images/reading1.gif","images/reading2.gif","images/reading3.gif");

function rotate() {
      thisAd++;
      if (thisAd == adImages.length) {
         thisAd = 0;
      }
      document.getElementById("adBanner").src = adImages[thisAd];

      setTimeout("rotate()", 3 * 1000);

}

function choosePic() {
      thisAd = Math.floor((Math.random() * adImages.length));
      document.getElementById("adBanner").src = adImages[thisAd];
```

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
}
```

To start images cycling from a random start:

1. [View full width]
```
var adImages = new Array ("images/reading1.gif", "images/reading2.gif", "images/reading3
.gif");
```

   As in previous examples, set up the array and the variable that contains the number of items in the array.

2. `function rotate() {`

   This function is the same as the `rotate()` function in Script 4.13. See that explanation for the details of how it works.

3. `function choosePic() {`

   This function is the same as the `choosePic()` function in Script 4.19. See that explanation for the details of how it works.

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Chapter 5. Frames, Frames, and More Frames

Frames are a useful feature of HTML, though they have fallen somewhat out of favor over the past few years. In this chapter, we'll demonstrate how to harness the power of JavaScript to make frames even more useful.

A frame consists of at least three pages of HTML. The first, called the *frameset*, sets up the dimensions of each of the child frames. The frameset is referred to in JavaScript as *top* or *parent*. The remainder of the pages fit into the panes that the frameset has created and are the *child* pages. These can be named anything you choose. **Figure 5.1** shows a frameset that creates two child frames, "left" and "content".

Figure 5.1. Layout of a frameset that contains two frames, "left" and "content".

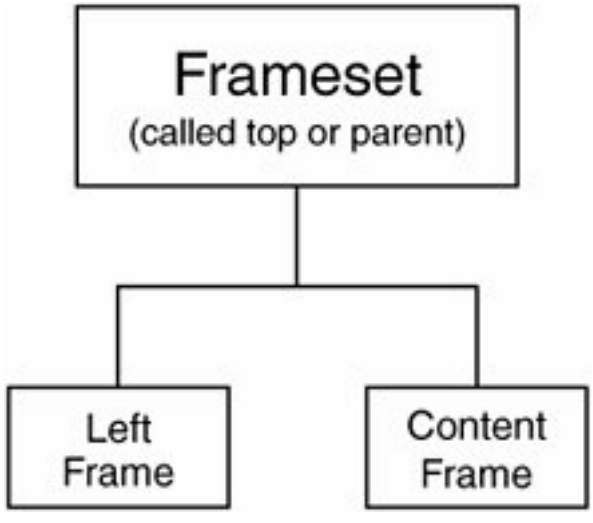


Table 5.1. Just Enough HTMLFrames

Tag	Attribute	Meaning
`frameset`		Specifies that the page consists of two or more framed pages; contains the `frame` tags that specify the particular pages.
	`cols`	The column dimensions (proportional or fixed), in pixels, of each frame.
`frame`		The location and attributes of each framed page.
	`id`	Used by JavaScript to refer to one of the pages in the frameset.
	`name`	An alternate method by which JavaScript can refer to one of the pages in the frameset.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

iframe		An internal frame, displayed inside the calling HTML page.
	id	JavaScript uses this to refer to the iframe.
	name	JavaScript can alternately use this to refer to the iframe.
	src	The URL of the iframe page.
	width	The width (in pixels or percent) of the iframe.
	height	The height (in pixels or percent) of the iframe.
	align	Aligns the iframe right or left.
	frameborder	Displays a border around the iframe.

PREV NEXT

downloaded from: lib.ommolketab.ir

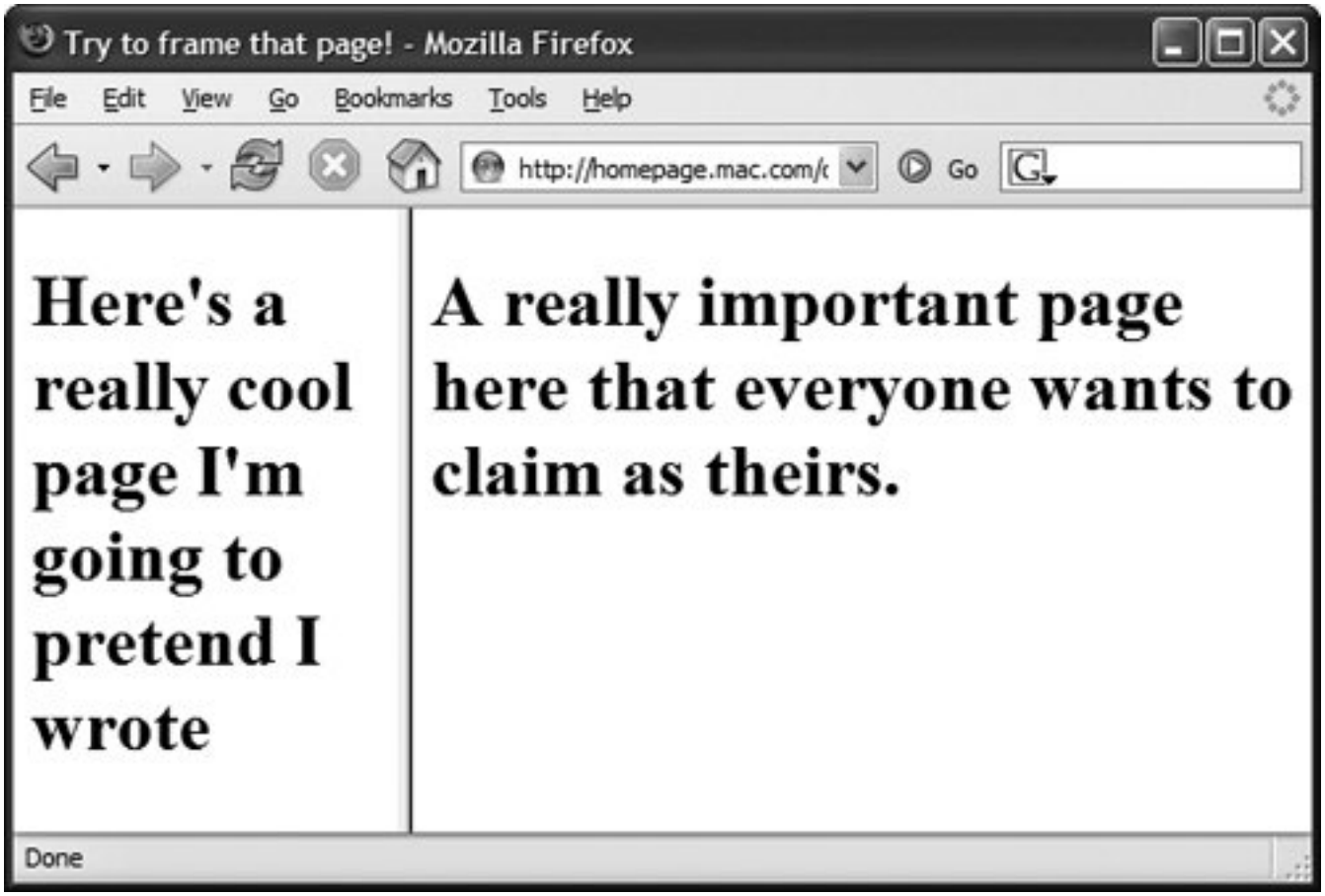
downloaded from: lib.ommolketab.ir

Keeping a Page out of a Frame

Other people can put one of your pages inside a frame on their site, making it appear that your page is part of their content. In JavaScript, windows appear in a hierarchy, with the parent window at the top of the heap. When someone hijacks your page, they are forcing it to be a child frame to their parent window. **Figure 5.2** shows how the page would appear as part of someone else's site. With these scripts, you can prevent this page hijacking and force your page to always be in a browser window by itself. There are two scripts; **Script 5.1** is the HTML page that should always stand alone and has the `<script>` tag that calls the JavaScript; **Script 5.2** is the JavaScript document, which we'll describe next.

Figure 5.2. Our page, buried in someone else's frameset.

[View full size image]



Script 5.1. Here is an HTML page that people want to hijack.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
     <title>Can't be in a frame</title>
     <script language="javascript" type="text/javascript" src="script01.js"></script>
</head>
<body bgcolor="#FFFFFF">
     <h1>A really important page here that everyone wants to claim as theirs.</h1>
</body>
</html>
```

Script 5.2. JavaScript provides a way to force our page to always appear on a separate page.

```
if (top.location != self.location) {
     top.location.replace(self.location);
}
```

To isolate a page:

1. `if (top.location != self.location) {`

   First, check to see if the location of the current page (`self`) is the top-most in the browser window hierarchy. If it is, there's no need to do anything.

2. `top.location.replace(self.location);`

   If the current page isn't at the top, replace the top page with the location of the current page. This forces the current window to be our page and our page only. **Figure 5.3** shows our page as we designed it.

Figure 5.3. Our page, after escaping from the evil hijacking frameset.

[View full size image]

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

✓ Tip

- We could just set `top.location` to `self.location`, but this has one nasty side effect: users can no longer use the browser's back button. If they try to, going back to the previous page automatically jumps them back to the current page. Using the `replace()` method shown above replaces the current page in the history, which allows the back button to display the previous page.

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Forcing a Page into a Frame

When a search engine catalogs one of your pages, it doesn't know that the page is part of a frame. When a user finds your page via the search engine, clicking the link shows just the single page, not the full frameset as you designed it. **Script 5.3** shows the frameset. The page the user landed on (not shown) contains a call (just like the one in Script 5.1) to the JavaScript. **Script 5.4** shows you how to force the full frameset to display even though Google or another search engine doesn't know about the frameset. **Figure 5.4** shows the page looking out-of-place, and **Figure 5.5** shows it at home, snug in its frame.

Script 5.3. The frameset page.

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Frameset//EN">
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
     <title>This is the page to show</title>
</head>
<frameset cols="30%,70%">
     <frame src="left2.html" name="left" id="left" />
     <frame src="frame2.html" name="content" id="content" />
</frameset>
</html>
```

Script 5.4. Use JavaScript to force your page into the frameset.

```
if (top.location == self.location) {
     self.location.replace("frameset2.html");
}
```

Figure 5.4. A lonely page, stranded by itself.

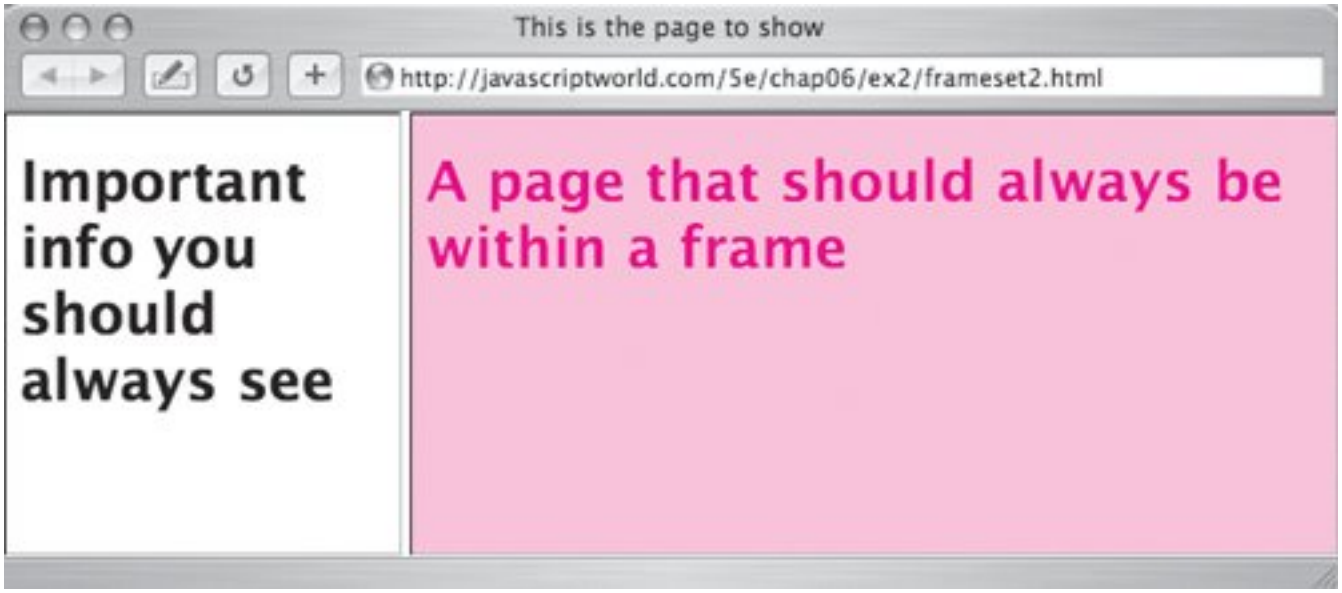
[View full size image]

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Figure 5.5. Our page, happily reunited with its parent and sibling.

[View full size image]



To force a page into a frame:

1. `if (top.location == self.location) {`

   Check to see if the current page (`self`) is at the top-most level. If it isn't, we're in a frameset.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

If the location of the current page is at the top, then replace the current page with the URL of the frameset. This then displays our framed site as we designed it.

✓ Tip

- This method works fine if you only have a few pages that might be called from outside their frames, because it requires a separate frameset page for every page that you might want loaded (in this example) into the content frame. The next example shows a way to handle a large site.

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Forcing a Site into a Frame

If you have a large site, with numerous pages that you want inside a frame, the method described on the preceding page can easily become unwieldy. Here's a method that works better for larger sites. **Script 5.5** shows the frameset, which also calls the JavaScript, shown in **Script 5.6** (detailed below). **Figure 5.6** shows our page by itself, and **Figure 5.7** shows how we intended our site to look. Not shown is the simple HTML page that makes up the left-hand navigation bar in Figure 5.7, or the equally simple HTML pages that make up the content frames. The latter call the JavaScript (just in case they are loaded directly), in the same way as Script 5.5.

Script 5.5. The frameset page calls the external JavaScript file.

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Frameset//EN">
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
     <title>Site Frameset</title>
     <script language="javascript" type="text/javascript" src="script03.js"></script>
</head>
<frameset cols="30%,70%">
     <frame src="left3.html" name="left" id="left" />
     <frame src="frame3a.html" name="content" id="content" />
</frameset>
</html>
```

Script 5.6. This JavaScript forces the site we want into the frame we want.

```
var framesetPage = "frameset3.html";
var currPage = justTheFilename (self.location.pathname);
if (top.location == self.location && framesetPage != currPage) {
     self.location.replace(framesetPage + "?" + currPage);
}
window.onload = chgFrame;
function chgFrame() {
     if (top.location == self.location && document.location.search) {
        var linkURL = justTheFilename (document.location.search);
        var contentWin = document.getElementById ("content").contentWindow;
        var currURL = justTheFilename (contentWin.location.pathname);

        if (currURL != linkURL) {
           contentWin.location.replace (linkURL);
        }
     }
}
```

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
function justTheFilename(thisFile) {
     if (thisFile.indexOf("/") > -1) {
        thisFile = thisFile.substring (thisFile.lastIndexOf("/")+1);
     }

     if (thisFile.indexOf("?") == 0) {
        thisFile = thisFile.substring(1);
     }

     return thisFile;
}
```

Figure 5.6. Here's our page outside the frame.

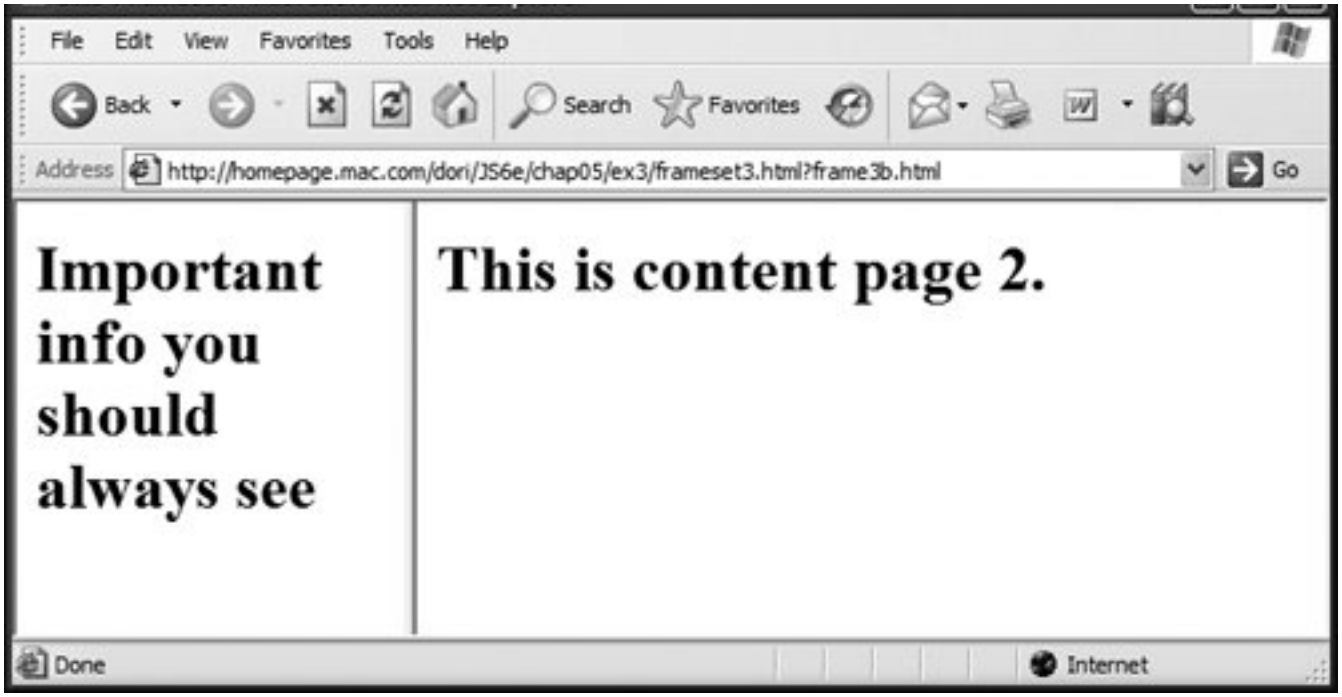
[View full size image]

Figure 5.7. But here's how we really want it to look.

[View full size image]

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir



To force a site into a frame:

1.
```
var framesetPage = "frameset3.html";
var currPage = justTheFilename
  (self.location.pathname);
```

We start off by creating and setting two variables: `framesetPage` and `currPage`. The former is the frameset page that we always want to load overall, so that's hard-coded to `frameset3.html`. The latter is the name of the HTML page that called this external JavaScript file. It needs to be calculated, as JavaScript doesn't have a built-in function that does this (although it should!). We'll use the `justTheFilename()` function to do that, as explained in step 10.

In this step, that function gets passed `self.location.pathname` (a variable that holds that part of a URL that comes *after* the domain name). For example, if you are viewing http://www.peachpit.com/index.html, `self.location. pathname` is `/index.html`. If you are at http://www.peachpit.com/books/index.html, `self.location.pathname` is `/books/index.html`. In either case, all we want is `index.html`, so that's what `justTheFilename()` will calculate and return, and that's what will be stored in `currPage`.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
  self.location.replace (framesetPage + "?" + currPage);
}
```

Now we do the usual check to see if `top.location` is the same as `self.location` that we've done previously, with one thing added: a check to see if we're currently on the frameset page. If we are, that's great; we don't need to reload anything. But if `currPage` isn't the frameset, something's wrongso we need to reload this page, going to the frameset page, and passing `currPage` in the bargain so that it ends up in the content frameset.

3. `window.onload = chgFrame;`

The `onload` handler is here because we want every page that uses this external JavaScript file to call the `chgFrame()` function.

4. `function chgFrame() {`

This function checks to see if (a) it's the frameset page and (b) there was a question mark in the URL followed by a file name. If that's the case, that file needs to be loaded into the content frame.

5. `if (top.location == self.location && document.location.search) {`

Once again, we're doing the usual check to see if `top.location` is the same as `self.location`in this case, if the two are equal, we know we're in the frameset. After that, we look at `document.location.search`, another built-in field that will contain everything in a URL from a question mark (if one exists) to the end. If there's no question mark, `document.location.search` has no value, and we get kicked out of this function.

6. `var linkURL = justTheFilename (document.location.search);`

This is the first of three variables we'll need to set before we load in a new content frame. The first, `linkURL`, is the file to load in the content frame. The `linkURL` field is set by calling `justTheFilename()` and passing in `document.location.search`.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

The `contentWin` variable needs to contain what JavaScript knows about the content frame. Set it by looking for the id `content`, taking its result (which will be a frame), and then getting `contentWindow` of that framewhich is the page loaded into that frame.

8.
```
var currURL = justTheFilename (contentWin.location.pathname);
```

The `currURL` variable is set here to the current content frame page, that is, the current HTML page loaded in the content frame. That is done by calling `justTheFilename()`, this time passing it `contentWin.location.pathname`, and storing the result.

9.
```
if (currURL != linkURL) {
   contentWin.location.replace (linkURL);
}
```

At this point, we could reload the content page, as we've got everything we needbut we can make things smarter by adding one more step. Why bother reloading the content page, if what we're going to load is already there? Here's where we check to see if `currURL` is equal to `linkURL`. If it is, we're on the right page already, so don't do anything. If it isn't, call that same old `replace()`, and we're done.

10.
```
function justTheFilename(thisFile) {
  if (thisFile.indexOf("/") > -1) {
     thisFile = thisFile.substring (thisFile.lastIndexOf ("/")+1);
  }

  if (thisFile.indexOf("?") == 0) {
     thisFile = thisFile.substring(1);
  }

  return thisFile;
}
```

All that's left now is the `justTheFilename()` function. This function takes in a string and tries to clean it up and turn it into a filename. First, we check to see if it contains a /. If it does, then we look for the *last* / in the filename (note that `lastIndexOf`), resetting the filename to be everything after it. Then, we look for a question mark. If it's the first character in the filename (i.e., at position zero), then we reset the filename to be everything from position one to the end. The filename is returned to wherever it was called.

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Setting a Target

If your site uses frames, it's common to have a framed navigation bar that loads the different pages into the main frame. The main frame is the target for the links in the navigation bar, and to load that main frame using HTML, you use the `target` attribute of the `<a>` tag. But if you want to use both frames and XHTML Strict, JavaScript is the only way to set the target. That's because the `target` attribute isn't allowed in XHTML Strict, and you have to set the target in order to use frames.

The XHTML Strict frameset in **Script 5.7** allows you to load your choice of page into the main content frame, just by clicking a link in the left frame (**Script 5.8**, detailed below). The result is shown in **Figure 5.8**.

Script 5.7. When you're using HTML Strict in your frameset, you need JavaScript to set frame targets.

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Strict//EN">
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
     <title>Nav Bar</title>
     <script type="text/javascript" src="script04.js"></script>
</head>
<body>
     <h1>Navigation Bar</h1>
     <h2>
     <a href="frame4a.html">Page 1</a><br />
     <a href="frame4b.html">Page 2</a><br />
     <a href="frame4c.html">Page 3</a>
     </h2>
</body>
</html>
```

Script 5.8. And here is the JavaScript you need to do the job.

```
window.onload = initLinks;

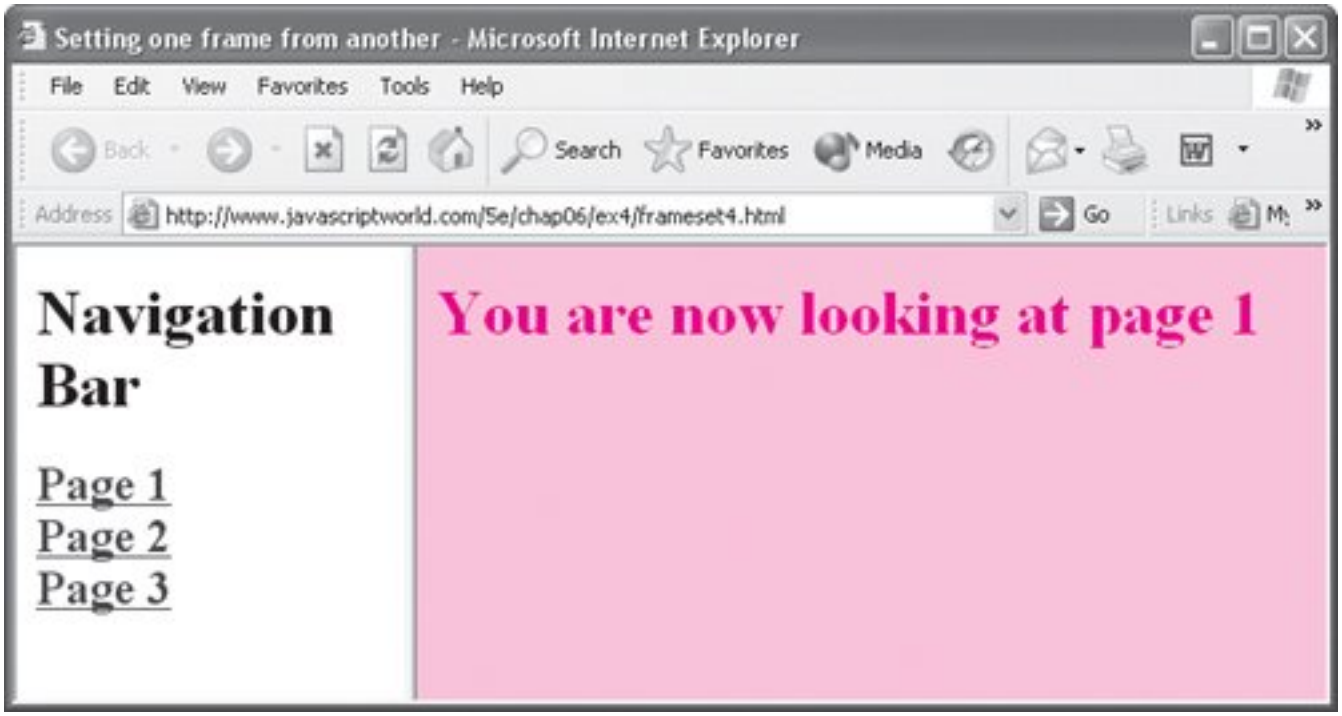
function initLinks() {
     for (var i=0; i<document.links.length; i++) {
         document.links[i].target = "content";
     }
}
```

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

appearing in a content frame.

[View full size image]



To set the target for a frame:

1. ```
   window.onload = initLinks;
   ```

   When the page loads, call the `initLinks()` function.

2. ```
   function initLinks() {
     for (var i=0; i<document.links. length; i++) {
        document.links[i].target = "content";
     }
   }
   ```

   This function loops through all of the links on the page. When the loop finds a link, it sets the `target` property to the string `"content"`. And that's all it takes.

✓ Tip

- If JavaScript is turned off, visitors will find that the first link that gets clicked loads into

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

XHTML Strict work.

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Creating and Loading a Dynamic Frame

Because JavaScript can create page content on-the-fly, it's useful for loading dynamic data into frames based on a user's choice in another frame. **Script 5.9** is a frameset that loads a dummy content page (**Script 5.10**) *and* **Script 5.11**, detailed next, that can create a page and load it into the main content frame. It creates a page that looks like **Figure 5.9**.

Script 5.9. This frameset loads a dummy page, ready to be replaced by JavaScript.

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Frameset//EN">
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
     <title>Setting one frame from another</title>
</head>
<frameset cols="30%,70%">
     <frame src="left5.html" name="left" id="left" />
     <frame src="frame5.html" name="content" id="content" />
</frameset>
</html>
```

Script 5.10. Speaking of which, here is the dummy page.

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN">
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
     <title>Content frame</title>
</head>
<body bgcolor="#FFFFFF">
</body>
</html>
```

Script 5.11. This script creates a page and loads it into the main content frame.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

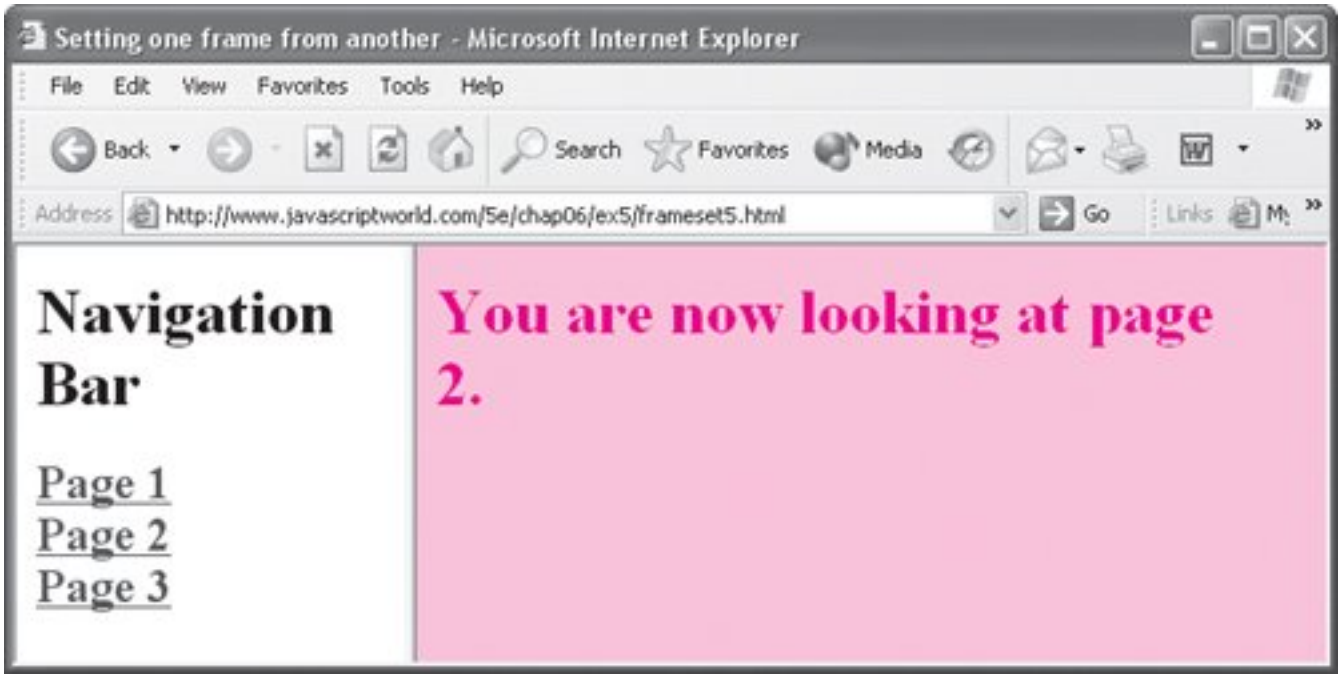
```
function initLinks() {
     for (var i=0; i<document.links.length; i++) {
         document.links[i].onclick = writeContent;
         document.links[i].thisPage = i+1;
      }
}

function writeContent() {
     var newText = "<h1>You are now looking at page " + this.thisPage + ".<\/h1>";

     var contentWin = parent.document.getElementById("content").contentWindow;
     contentWin.document.body.innerHTML = newText;
     return false;
}
```

Figure 5.9. Here's the result of Script 5.8, a Web page written by a JavaScript. The content of the frame on the right was generated under script control.

[View full size image]



To load a dynamic frame from another frame:

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
for (var i=0; i<document.links. length; i++) {
   document.links[i].onclick = writeContent;
   document.links[i].thisPage = i+1; }
```

The `initLinks()` function begins in the same way as in Script 5.8, by looping through the links on the page. Then, for each link, two things are set: the `onclick` handler for that link, and a new property is added: `thisPage`. The latter contains the page number to be displayed when that link is clicked, i.e., link 0 is "page 1", link 1 is "page 2", and so on. The `onclick` handler in the loop sets every link to call the `writeContent()` function when they're clicked.

2.
```
var newText = "<h1>You are now looking at page " + this.thisPage + ".<\/h1>";

var contentWin = parent.document.getElementById("content"). contentWindow;
contentWin.document.body.innerHTML = newText;
```

Here is the meat of the `writeContent()` function, which first declares and sets a variable, `newText`, and assigns it some text. Next, the `contentWin` variable is set, as shown earlier in this chapter in Script 5.6, and then we reset `contentWin.document.body.innerHTML` to `newText`. To explain this a bit further, given `contentWin`, we want the `document` it contains; then we get the `body` of that `document`, and then we reset `innerHTML`, which is the HTML contained *within* that tag.

3.
```
return false;
```

Lastly, `writeContent()` returns false, which tells the browser that it should *not* also load in the `hrefs` in the navigation bar's frame. Otherwise, the browser would do both. We've handled everything within JavaScript, so the `href` doesn't need to be loaded.

✓ Tips

- Why is there a backslash ("\") before the slash ("/") in step 2? According to the HTML standards, the browser may interpret the beginning of a closing tag ("</") as the end of the line. The backslash "escapes" the slash, allowing us to write out HTML without the chance of causing an error.
- We're using `parent.document.getElement...` here versus `document.getElement...` that we used back in Script 5.6. That's because that JavaScript was going to be called by the *frameset* page, whereas here, it's being called by one of the *framed* pages. In the latter case, JavaScript has to go back up to its parent (i.e., the frameset) in order to look at the content page (another child of the parent).

downloaded from: lib.ommolketab.ir

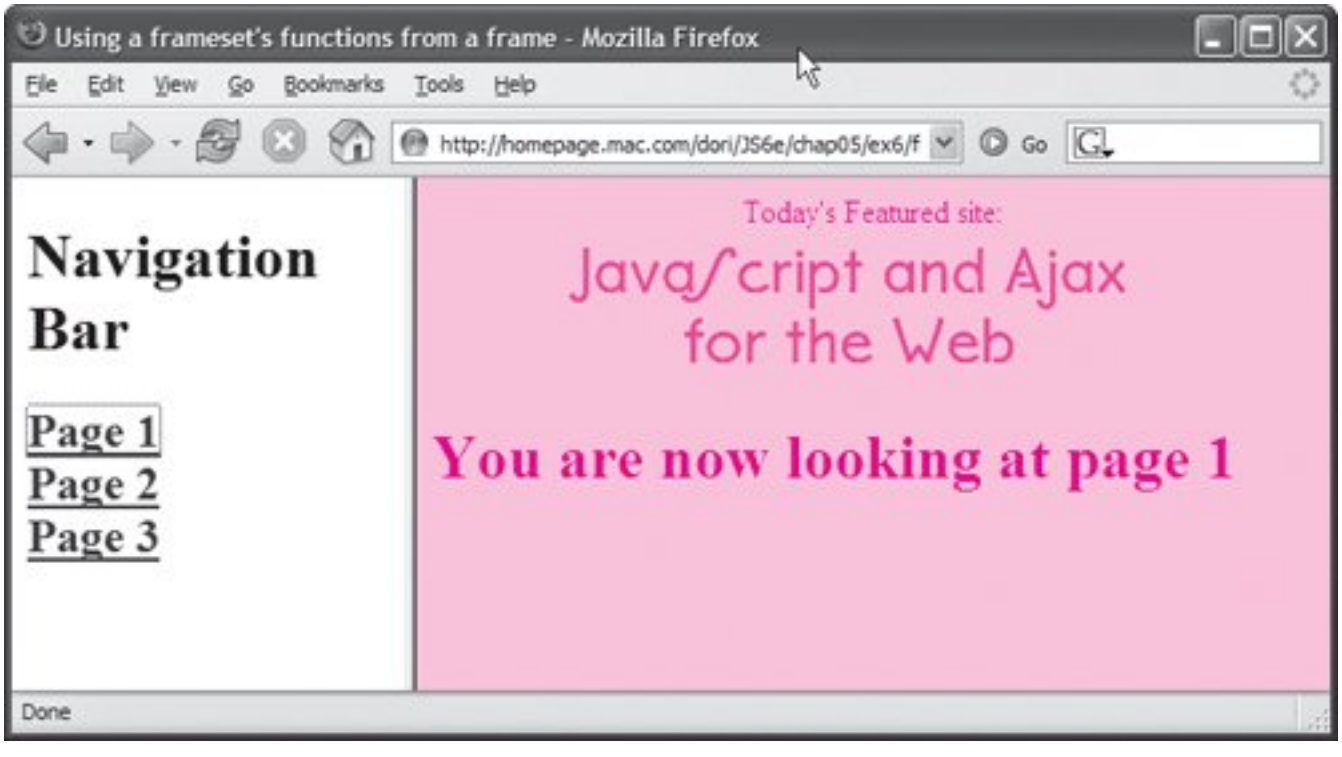
downloaded from: lib.ommolketab.ir

Sharing Functions between Frames

One common frame layout uses a permanent navigation frame and a content frame that might display a variety of different pages. Once again, it makes sense to put the call to the external JavaScript file into the page that's always present (the frameset page) instead of duplicating it for every possible content page. In **Figure 5.10**, we use this capability to have many pages share an identical function that returns a random banner image. **Script 5.12** loads the pages into the frameset.

Figure 5.10. The information in the right, or content, frame is created by code called from the frameset.

[View full size image]



Script 5.12. This script allows you to share functions between multiple frames.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
var bannerArray = new Array("images/redBanner. gif", "images/greenBanner.gif", "images/
blueBanner.gif");
window.onload = initFrames;

function initFrames() {
     var leftWin = document.getElementById ("left").contentWindow.document;

     for (var i=0; i<leftWin.links.length; i++) {
        leftWin.links[i].target = "content";
        leftWin.links[i].onclick = resetBanner;
     }

     setBanner();
}

function setBanner() {
     var contentWin = document.getElementById ("content").contentWindow.document;
     var randomNum = Math.floor(Math.random() * bannerArray.length);

     contentWin.getElementById("adBanner").src = bannerArray[randomNum];
}

function resetBanner() {
      setTimeout("setBanner()",1000);
}
```

To use a function on another page:

1. [View full width]
   `var bannerArray = new Array ("images/redBanner.gif", "images/greenBanner.gif", "images /blueBanner.gif");`

   Start by creating a new array that contains all the possible banner image names, and assign the array to the `bannerArray` variable.

2. `window.onload = initFrames;`

   When the frameset loads, call `initFrames()`.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Now we start the code inside the `initFrames()` function. We begin by creating the `leftWin` variable and setting it the same way we've previously stored framed pages: given the frame name (`left`), get that element (`document.getElementById("left")`); given that element, get the `contentWindow` property (`document.getElementById("left").contentWindow`); and given the `contentWindow` property, get its `document` property.

4.
```
for (var i=0; i<leftWin.links. length; i++) {
  leftWin.links[i].target = "content";
  leftWin.links[i].onclick = resetBanner;
```

Because this function is being called from the frameset's context, setting the left navigation bar's links is slightly different than in previous examples. This time, we reset both the `target` property and the `onclick` handler for each link. The `target` is set to `"content"` and the `onclick` handler is set to the `resetBanner` function.

5.
```
setBanner();
```

As the last initialization step, the `setBanner()` function is called.

6.
```
var contentWin = document.getElementById("content"). contentWindow.document;
```

The `setBanner()` function loads up the content window and calculates a random number. Then, the ad banner in the content window is set to a random ad from the array. We begin by creating the `contentWin` variable and setting it the same way we've previously stored framed pages: given the frame name (`content`), get that element (`document.getElementById("content")`); given that element, get the `contentWindow` property (`document.getElementById ("content").contentWindow`); and given the `contentWindow` property, get its `document` property.

7.
```
var randomNum = Math.floor (Math.random() * bannerArray. length);
```

This line uses the `Math.random()` function multiplied by the number of elements in the `bannerArray` array to calculate a random number between 0 and the number of elements in the array. Then it places the result into the `randomNum` variable.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Here, we set the `src` for `adBanner` to the current item in the array. That's the new image name, which will then be displayed on the page.

9.
```
function resetBanner() {
  setTimeout("setBanner()",1000);
}
```

The `resetBanner()` function is a little tricky, although it only has a single line of code. What it's doing is waiting for the `content` frame to load with its new page (one second should be sufficient), after which it can then call `setBanner()` to reset the banner.

If we instead called `setBanner()` immediately, the new `content` page might not have loaded yet. In that case, we would have a problem, as we would then either get an error (because `adBanner` wasn't found), or we would reset the old `adBanner`the one from the page that's being unloaded.

✓ Tip

- Note that `resetBanner` does *not* return falsethis means that the browser will both do what's here *and* load the page from the `HRef`. This script depends on that, which is why both the `onclick` handler and `target` were set.

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Storing Information in Frames

In situations similar to that in the previous example, you can also keep track of useful information across frames, by storing the variables in the frameset page. **Figure 5.11** shows how many times a user has visited each content page this session. One of the three (almost identical) content frames is shown in **Script 5.13**. Once again, the script is called from the frameset page, and the external JavaScript script is shown in **Script 5.14**.

Figure 5.11. The JavaScript says that you have viewed page 2 four times in this session.

[View full size image]

Script 5.13. The contents of the `<span>` will be replaced by JavaScript.

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN">
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
     <title>Content frame</title>
<body bgcolor="#FFFFFF">
     <h1>You are now looking at page 1.</h1>
     <h2>You have been to this page <span id="pageCt"> </span> times.</h2>
</body>
</html>
```

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

[View full width]

```
var pageCount = new Array(0,0,0);
var pageArray = new Array("frame7a.html", "frame7b.html","frame7c.html");

window.onload = initFrames;

function initFrames() {
     var leftWin = document.getElementById ("left").contentWindow.document;

     for (var i=0; i<leftWin.links.length; i++) {
        leftWin.links[i].onclick = resetPageCt;
        leftWin.links[i].thisPage = i;
     }

     bumpPageCt(0);
}

function bumpPageCt(currPage) {
     pageCount[currPage]++;

     var contentWin = document.getElementById ("content").contentWindow.document;
     contentWin.getElementById("pageCt"). innerHTML = pageCount[currPage] + " ";
}
function resetPageCt() {
     document.getElementById("content"). contentWindow.location.href = pageArray[this.
thisPage];

     setTimeout("bumpPageCt("+this.thisPage+") ",1000);
     return false;
}
```

To keep a count of page visits:

1. `<h2>You have been to this page <span id="pageCt"> </span> times.</h2>`

   Script 5.13 has a `<span>` with an `id`. There's apparently nothing inside the `<span>`, but we can reset it via JavaScript. Really, there's a blank space inside it because some browsers see that this span is empty and don't create itsomething has to go in there for it to end up as part of the document.

2. `var pageCount = new Array(0,0,0);`
   `var pageArray = new Array ("frame7a.html","frame7b.html", "frame7c.html");`

   Beginning Script 5.14, we declare two arrays and set their initial contents.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
  leftWin.links[i].onclick = resetPageCt;
  leftWin.links[i].thisPage = i;
```

The `initFrames()` function starts off like it did in the previous task, but it sets the `onclick` handler to `resetPageCt` and the new `thisPage` property to `i`so `thisPage` (based on the link) will be 0, 1, or 2 (numbering starts at 0).

4.
```
bumpPageCt(0);
```

The function ends by calling `bumpPageCt` and passing it a zero (so as to bump up the count for page 1).

5.
```
function bumpPageCt(currPage) {
  pageCount[currPage]++;

  var contentWin = document.getElementById("content"). contentWindow.document;
  contentWin.getElementById ("pageCt").innerHTML = pageCount[currPage] + " ";
}
```

The `bumpPageCt()` function takes in a page and increments the counter for that page (saved in the `pageCount` array). Again, we get `contentWin` (that is, the framed main content document). We then use that to set the `innerHTML` value of `pageCt` to the current page count, causing it to display on the page.

6.
```
function resetPageCt() {
  document.getElementById("content"). contentWindow.location.href = pageArray[this.thisPage];

  setTimeout("bumpPageCt("+this. thisPage+")",1000);
  return false;
}
```

The `resetPageCt()` function is a cross between the previously seen `resetBanner()` and `bumpPageCt()` functions plus a little more. Instead of letting the browser change the content window on its own, here, we reset it based on the `pageArray` array. Once the content page has changed, we want to call the `bumpPageCt()` function *after* the content page has finished loading, so once again, we use `setTimeout()`. And finally, we return false, because JavaScript is handling the page loading by itself.

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Loading Multiple Frames at Once

It just takes a single link with a `target` attribute to change the content of a frame; that's simple HTML. To change the content of multiple frames with one click, you need JavaScript. The HTML files are trivial; all the action takes pace in **Script 5.15**. Two of the possible states the window can take are shown in **Figures 5.12** and **5.13**.

Script 5.15. JavaScript lets you load multiple frames with a single user click.

[View full width]

```
window.onload = initFrames;

function initFrames() {
     var leftWin = document.getElementById ("left").contentWindow.document;

     for (var i=0; i<leftWin.links.length; i++) {
        leftWin.links[i].onclick = setFrames;
     }
}

function setFrames() {
     document.getElementById("left"). contentWindow.document.location.href = this.id + ".
html";
     document.getElementById("content"). contentWindow.document.location.href = this.href;
     setTimeout("initFrames();",1000);
     return false;
}
```

Figure 5.12. The page looks like this initially.

[View full size image]

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

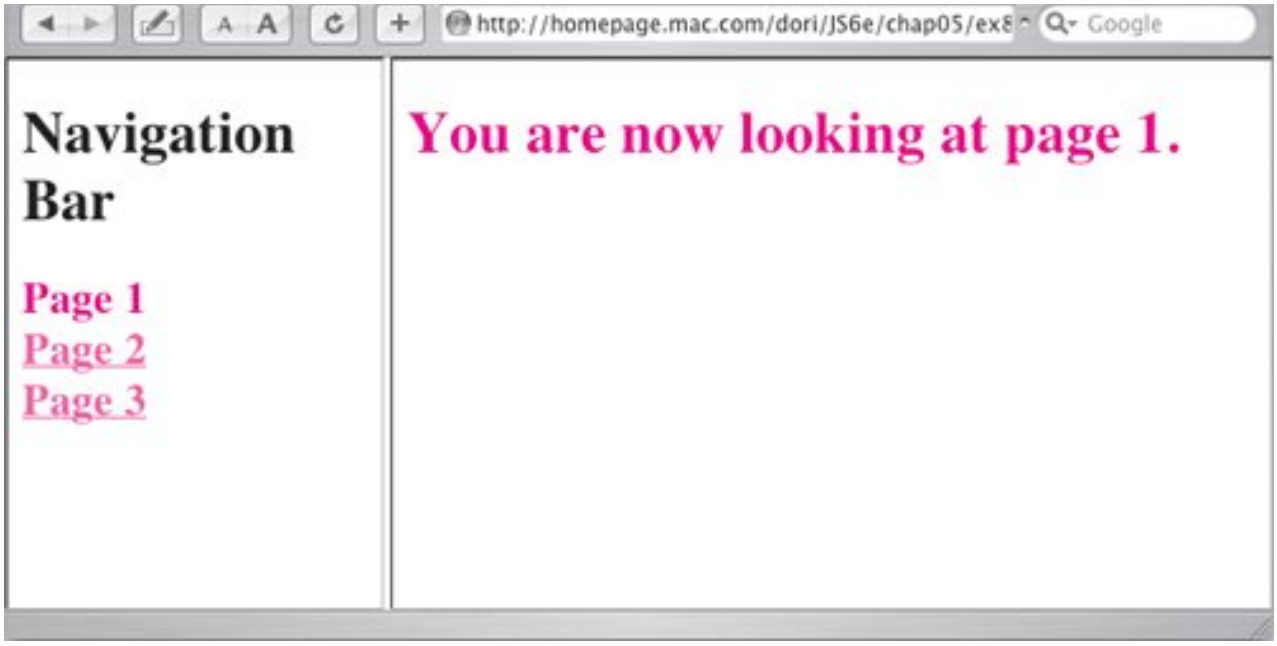
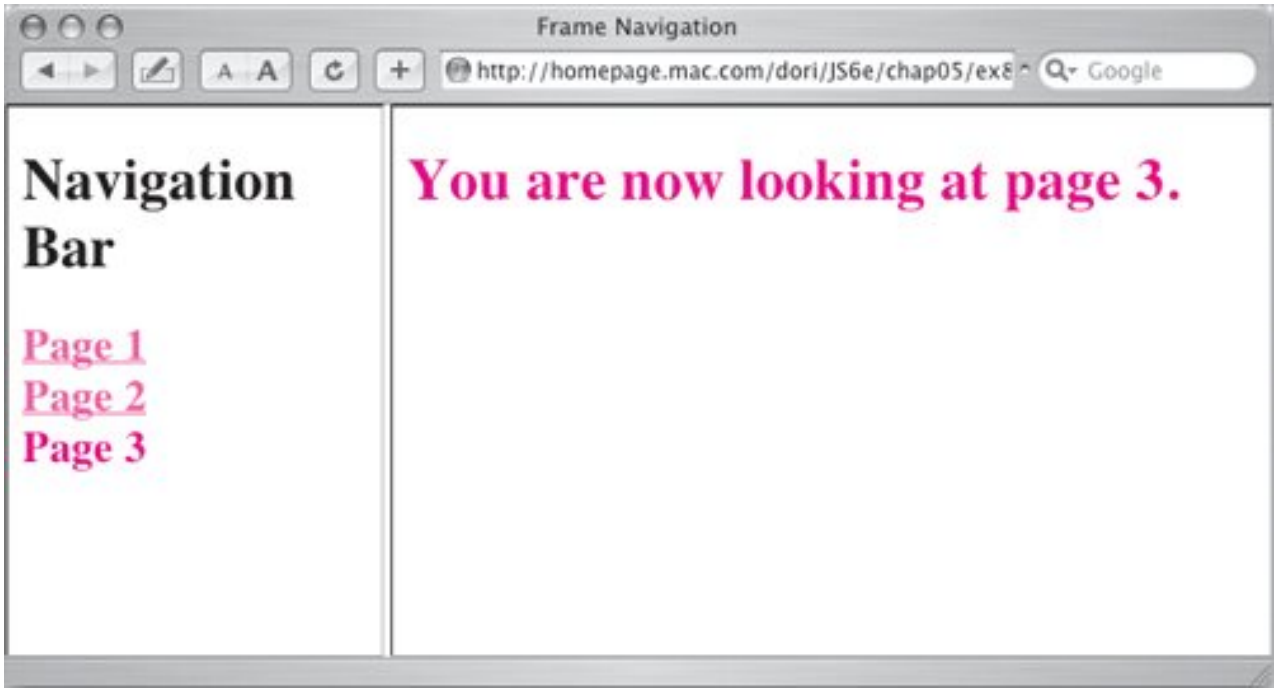


Figure 5.13. But when a link is clicked, both frames change.

[View full size image]



To load multiple frames at once:

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
  var leftWin = document.getElementById("left"). contentWindow.document;

  for (var i=0; i<leftWin.links. length; i++) {
     leftWin.links[i].onclick = setFrames;
  }
}
```

The `initFrames()` function is pretty similar to what it's been previously in this chapter. It's called `onload`, as always. The function loops through the navigation bar (left) links. This time, it sets the `onclick` handlers to the `setFrames()` function.

2.
```
document.getElementById("left"). contentWindow.document.location. href = this.id + ".html";
document.getElementById("content"). contentWindow.document.location. href = this.href;
setTimeout("initFrames();",1000);
```

The `setFrames()` function first resets the left frame based on the `id` of the link that called it. The function then resets the content frame based on the `HRef` of the link that called ityes, we have access to that via JavaScript, so why not use it?

The function waits a second (by using `setTimeout`) and then calls the `initFrames()` function. This has to happen again because it's what sets the `onclick` handlers in the navigation bar, and as soon as we loaded a new navigation page into the bar, all those `onclick` handlers went away. In order to keep things working, they've all got to be reset for the new page, and this is how it's done.

3.
```
return false;
```

And finally, we return false, so the browser won't load the new page in.

✓ Tip

- If you click links in the navigation bar quickly, you'll get an unexpected result; a content page replaces the navigation bar. That's because the navigation page must finish loading before it is ready to accept the next click.

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Working with Iframes

An *iframe* is an inline frame, that is, a frame that can be embedded within a regular HTML page instead of needing to be inside a frameset. Like a regular frame, an iframe is a separate HTML document. You can use an iframe as the target of a script, so you can create content on the fly under script control and display it in the page without having to use a frameset.

In this task, we have a regular HTML page with a content area that is an iframe. The content of the iframe is created using JavaScript. **Script 5.16** creates the regular page. **Script 5.17** is the placeholder HTML document that shows the user the initial content in the iframe, namely the "Please load a page" instruction, as shown in **Figure 5.14**. That content will be replaced by the product of **Script 5.18**; when the user clicks one of the links, JavaScript writes out new code to the iframe. In this case, it's displaying the name of the page and how many times the user has gone to that page in this session. As you will see, most of this script is built of pieces you've seen earlier in this chapter.

Script 5.16. This page creates the iframe and calls the external JavaScript.

[View full width]

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN">
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
     <title>iframes</title>
     <script language="javascript"  type="text/javascript" src="script09. js"></script>
</head>
<body bgcolor="#FFFFFF">
     <iframe src="frame9b.html" width="550" height="300" name="content" id="content"
 align="right" frameborder="1">Your browser does not support iframes</iframe>
     <h1>Navigation Bar</h1>
     <h2>
     <a href="page1.html">Page 1</a><br />
     <a href="page2.html">Page 2</a><br />
     <a href="page3.html">Page 3</a>
     </h2>
</body>
</html>
```

Script 5.17. The initial page that goes in the iframe.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
     <title>Content frame</title>
</head>
<body bgcolor="#FFFFFF">
     Please load a page
</body>
</html>
```

Figure 5.14. The iframe, on the right, initially contains an instruction to click a link.

[View full size image]

Script 5.18. This script calculates the content of the iframe and writes it into the window.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
window.onload = initFrames;

function initFrames() {
     for (var i=0; i<document.links.length; i++) {
        document.links[i].onclick = writeContent;
        document.links[i].thisPage = i+1;
     }

}

function writeContent() {
     pageCount[this.thisPage]++;

     var newText = "<h1>You are now looking at page " + this.thisPage;
     newText += ".<br \/>You have been to this page ";
     newText += pageCount[this.thisPage] + " times.<\/h1>";

     var contentWin = document.getElementById ("content").contentWindow.document;
     contentWin.body.innerHTML = newText;
     return false;

}
```

To create the content for an iframe:

1. [View full width]
```
<iframe src="frame9b.html" width="550" height="300" name="content" id="content"
   align="right" frameborder="1">Your browser does not support iframes</iframe>
```

   In Script 5.16, the `iframe` tag tells the browser that the initial source for the iframe's content will be found in `frame9b.html`. Inside the tag, there's a message that will be displayed by browsers that don't understand iframes.

2. `function writeContent() {`

   Create a function called `writeContent`, which is used to build the content inside the iframe.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

This line increments the `pageCount` array, so that we can keep track of how many times we've visited this particular page.

4.
```
var newText = "<h1>You are now looking at page " + this.thisPage;
newText += ".<br \/>You have been to this page ";
newText += pageCount[this.thisPage] + " times.<\/h1>";
```

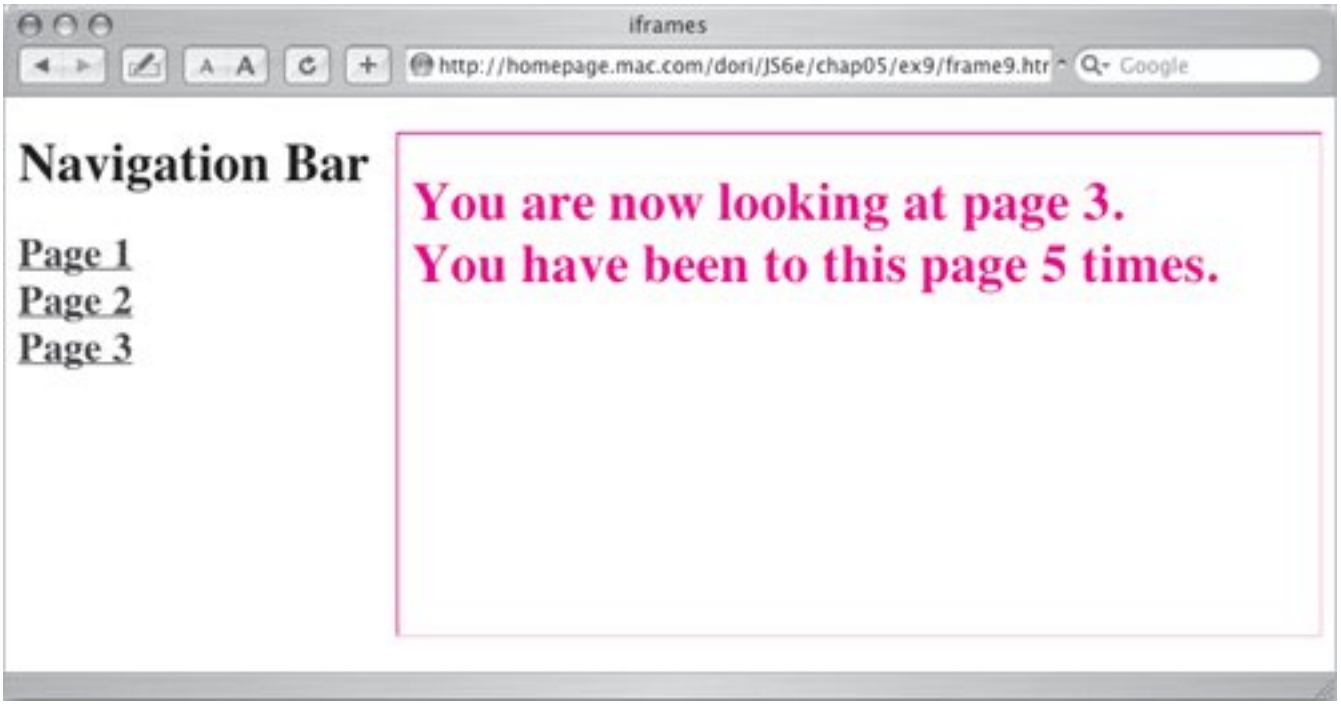
These lines create what will be the content of the iframe on the fly.

5.
```
var contentWin = document.getElementById("content"). contentWindow.document;
contentWin.body.innerHTML = newText;
return false;
```

As with previous examples, we get `contentWin` and reset the `innerHTML` property of its `body`. Resetting `innerHTML` writes the two lines of text in the iframe, and the result is shown in **Figure 5.15**. And because that's everything, we end with a `return false` so that the browser doesn't do things it shouldn't.

Figure 5.15. Each time you click a link in the navigation bar, the content in the iframe updates.

[View full size image]



downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

✓ Tip

- Note that unlike previous times we've written out to a content frame from a non-frameset page, we're using `document.getElementById("content")` instead of `parent.document.getElementById ("content")`. That's because the iframe is a child of the main page, not a frameset, and consequently, we can address it directly instead of only via the parent.

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Loading Iframes with JavaScript

Of course, you don't have to write into the contents of an iframe with JavaScript; chances are you'll want to load other HTML pages. This example shows you how. Once again, we'll have a main page that sets up the iframe and will be virtually identical to Script 5.16. Similarly, there is a page with the initial content of the iframe, like Script 5.17. There are also three other simple HTML pages (not shown) that we load into the iframe with **Script 5.19**.

Script 5.19. This script loads HTML pages into the content iframe.

```
window.onload = initiFrame;
function initiFrame() {
     for (var i=0; i<document.links.length; i++) {
        document.links[i].target = "content";
        document.links[i].onclick = setiFrame;
     }

}

function setiFrame() {
     document.getElementById("content"). contentWindow.document.location.href = this.href;
     return false;
}
```

To load an iframe with JavaScript:

1.
```
function setiFrame() {
  document.getElementById ("content").contentWindow. document.location.href = this.href;
  return false;
}
```

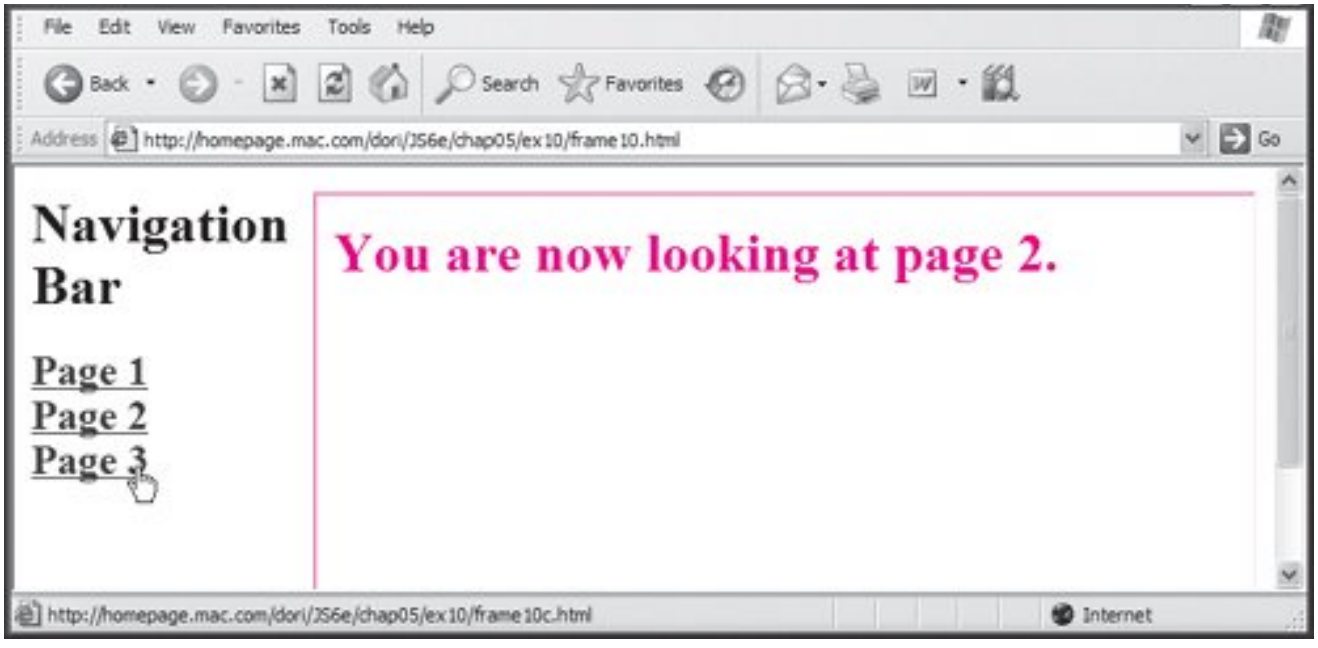
In much the same way that Script 5.12 set both the `target` and the `onclick` handler for the links, Script 5.19 does the same for an iframe. In this example, clicking any of the links triggers the `setiFrame()` function, which then loads the new page into the iframe, as shown in **Figure 5.16**.

Figure 5.16. The content iframe gets loaded when you click a link in the navigation bar.

[View full size image]

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir



PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Chapter 6. Working with Browser Windows

The window is the most important interface element in a Web browser, and as you might expect, JavaScript provides you with many tools to manipulate windows.

Don't Kill Those Pop-Ups!

This chapter is all about creating and working with windows using JavaScript. There's a name for these windows; they're called pop-up windows, and they've become a bane to many a Web surfer. We're going to be showing you some benign uses of pop-up windows, but if you're having trouble getting these examples to work, it may be because you've turned off pop-up windows in your browser, or because you have other software running that kills pop-up windows. While browsers should open any pop-up that you've explicitly chosen to open, some don't. So while you're working on this chapter, make sure your pop-up killers are turned off.

However, some browsers, allegedly for security reasons (we're looking at *you*, Microsoft Internet Explorer), will decide they know better than you and will not open pop-up windows from scripts no matter if you've asked them to or not.

JavaScript deals with windows in ways similar to that of frames (see Chapter 5). This makes perfect sense, since frames are just other document windows within the overall browser window.

In this chapter, you'll learn how to use JavaScript to open and close, update, and position windows. You'll see how you can use JavaScript to write information into windows, so you can build a Web page on the fly.

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Opening a New Window

You'll often want to create new windows, to show users additional information without losing the information that they are reading. For example, you could open up an annotation window for a technical paper or for a news story. Although it is possible to open a new browser window with HTML, using JavaScript gives you more control over the new window's content and features. **Figure 6.1** shows you a standard browser window with all the parts labeled. You can create windows that have any or all of these parts. **Script 6.1** shows the HTML, and **Script 6.2** shows the JavaScript that creates a window from a page (**Figure 6.2**) where clicking a link brings up a new window (that contains an image of our cat, in this example).

Figure 6.1. The elements of a browser window. The names in this figure correspond to the parameters you can apply in the `open()` command.

[View full size image]

Script 6.1. The HTML page that calls the external JavaScript that opens a new window.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
     <title>Opening a Window</title>
     <script src="script01.js" type="text/javascript" language="javascript">
     </script>
</head>
<body bgcolor="#FFFFFF">
     <h1>The Master of the House</h1>
     <h2>Click on His name to behold He Who Must Be Adored</h2>
     <h2><a href="#" class="newWin">Pixel</a></h2>
</body>
</html>
```

Script 6.2. Use this script to open a new window.

[View full width]

```
window.onload = newWinLinks;

function newWinLinks() {
     for (var i=0; i<document.links.length; i++) {
         if (document.links[i].className == "newWin") {
             document.links[i].onclick =  newWindow;
         }
     }
}

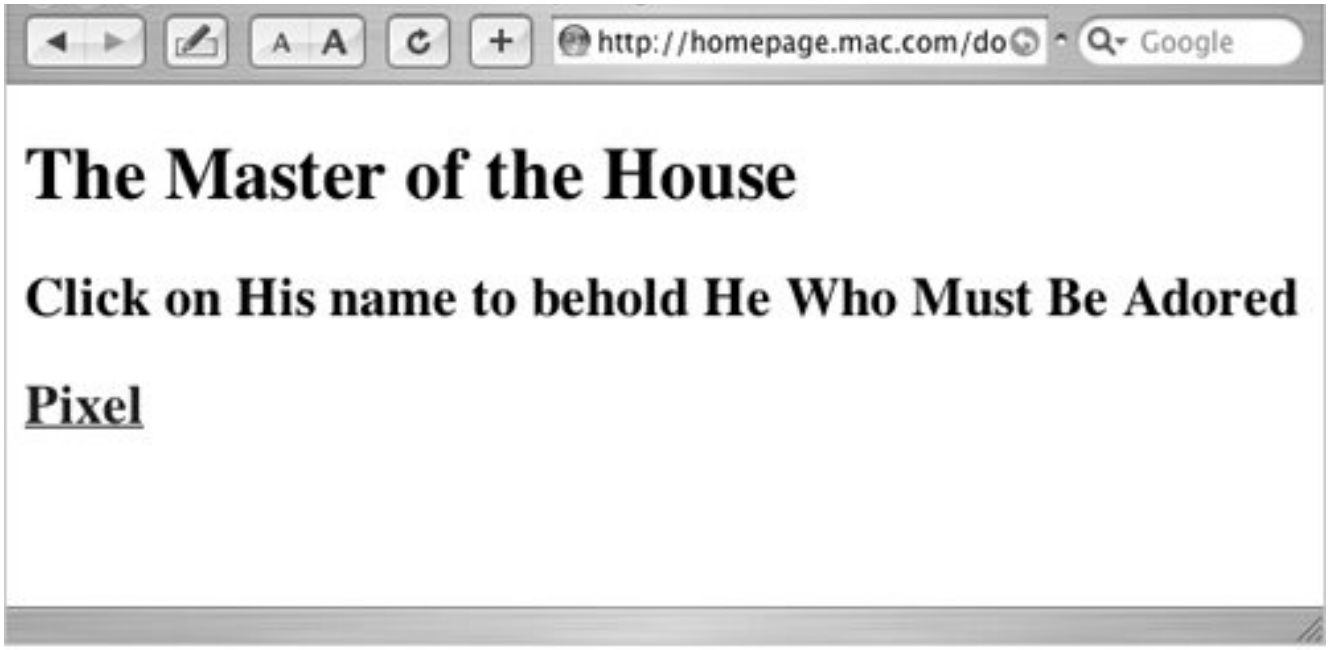
function newWindow() {
     var catWindow = window.open("../images/pixel.jpg", "catWin", "resizable=no, width=350
,height=260");
     return false;
}
```

Figure 6.2. Opening a new window.

[View full size image]

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir



You'll note that there is no JavaScript in Script 6.1, just a call to the external JavaScript file, and we also tag the link on the page with a class called `newWin`. As with the frames examples in Chapter 5, Script 6.2 includes an `onload` event handler that calls a function, in this case called `newWinLinks`. The `newWinLinks` function cycles through the links on the page and looks to see if any of the links include a class of `newWin`. If so, when the link is clicked, the function calls the `newWindow` function. Because very similar functions were used throughout Chapter 5, we've not detailed them in the steps below.

To open a new window:

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

First, define a function called `newWindow()`.

2. `var catWindow = window.open ("../images/pixel.jpg", "catWin", "resizable=no,width=350, height=260");`

The variable `catWindow` contains a new window object, referencing the image file `pixel.jpg`. The name of this new window is `catWin`. Names are required, because we might want to reference this window later in a link or in another script. The new window has a width of 350 pixels and a height of 260 pixels; these parameters are optional.

✓ Tips

- In step 2, you can't have any spaces between the commas in the width and height parameters. If you do, your script may not work in some browsers. In general, when you get script errors and you need to debug your scripts, look for little problems like this. Syntax errors are a major cause of frustration to the beginning coder.
- Internet Explorer 6 and later does some funky and inconsistent window stuff for security reasons (scripting windows will work, or not; that sort of thing). If security is turned off, everything in this chapter works fine, but we don't recommend turning off security or requiring your site visitors to turn off security. Additionally, some new windows in IE7 may open in new tabs instead, based on your tabbed browsing settings.

Adding Parameters to Windows

To add one or more of the parameters listed in Figure 6.1 to your windows, state them in the `open()` command enclosed in quotes, with `=yes` after the name of a feature you want and `=no` after one you don't want (though `=no` is usually the default, so you can often skip even mentioning those features). For example, if you want a window of a specified size with a toolbar, location box, and scrollbars, you would type

```
"toolbar=yes,location=yes, scrollbars=yes,width=300, height=300"
```

as part of the `open()` command. Note that the window created would not have a menu bar or a status bar, and would not be resizable.

Given that leaving a parameter off entirely is (usually, see below for some exceptions) the same as setting it to `=no`; you can also just use the name of the parameter itself (without the `=yes`) to turn it on. Because there are some exceptions, we've preferred to make it a little more obvious in these scripts as to what we're turning on and offconsequently, we've combined them, followed by a yes or no; i.e., we've used `"location,scrollbars=yes"` to mean the same thing as `"location=yes,scrollbars=yes"`. We could also just say `"location,scrollbars"`, but it wouldn't be as clear what was going on.

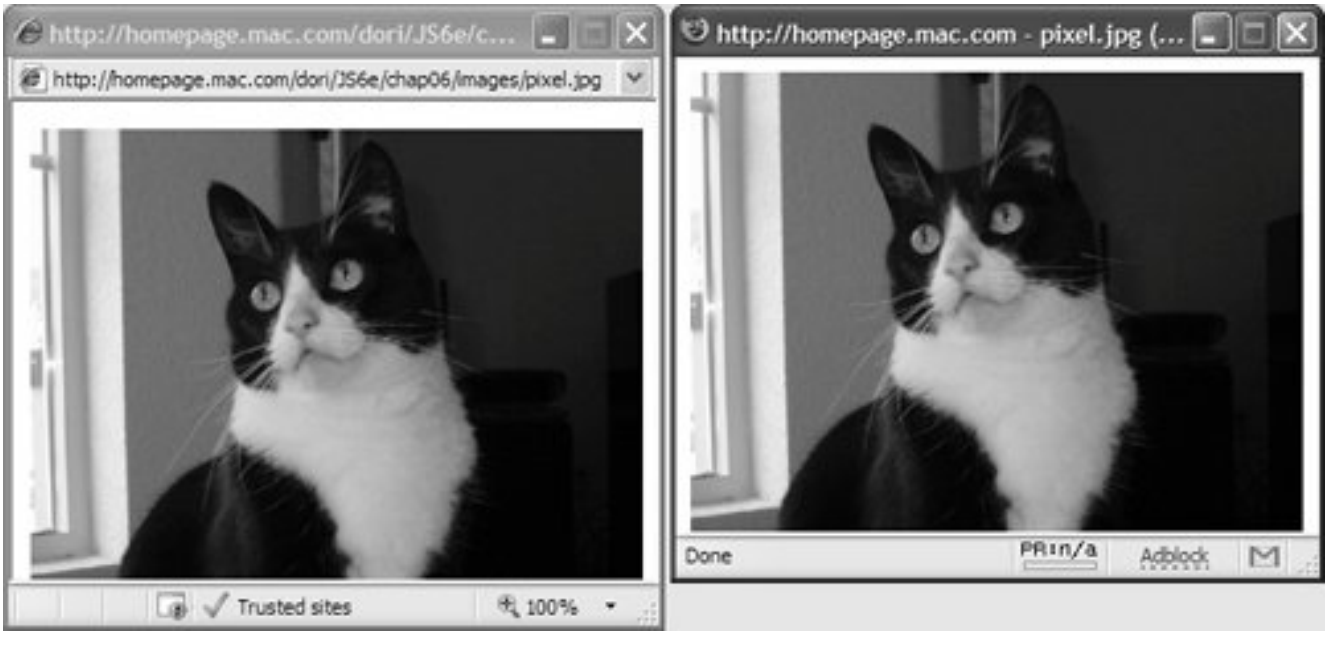
downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Some browsers have defaults that others don't. For instance, Safari has a default of "resizable=yes", which is why Script 6.2 includes the "resizable=no" parameter. Firefox on Windows, on the other hand, causes the pop-up window to be always resizable whether you've set the parameter or not, while the resize for Firefox on Mac works just as it should. In IE6 and IE7, the window always appears to be resizable (it includes the resizing control), but it really isn't unless you've specifically allowed it to be. Firefox, both Windows and Mac, and IE6 and IE7 always have the status bar whether you want it or not. IE7 also always has the location as a security "feature," and you can't change that with JavaScript. **Figure 6.3** shows the results of Script 6.2 in IE7 and Firefox for Windows; the same script gives different results, because of the browser's defaults.

Figure 6.3. Internet Explorer (left) and Firefox (right) use different window defaults, so items like the location appear in IE, but not in Firefox.

[View full size image]



Ultimately, you'll still need to test your scripts in all the browsers that you think your site's users are most likely to be using, which may mean keeping both Windows and Mac (and maybe Linux) machines around for testing. Testing (and if necessary, script revision) will help make sure that your intentions for the script will work with whatever the browser hands you.

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Loading Different Contents into a Window

In the previous task, clicking a link created a new window, filled with an image. But what if you have several links on a page, and you want them all to target the *same* new window? **Script 6.3** demonstrates this technique. The main window in **Figure 6.4** has three links. Clicking any of the links opens a new window, filled with the image of the appropriate book. If you switch back to the main window and click another link, the image in the smaller window is replaced.

Script 6.3. With this script, you can open a new window and fill it with a variety of content, triggered by clicking different links.

```
window.onload = newWinLinks;

function newWinLinks() {
     for (var i=0; i<document.links.length; i++) {
        if (document.links[i].className == "newWin") {
            document.links[i].onclick = newWindow;
        }
     }
}

function newWindow() {
     var bookWindow = window.open(this.href, "bookWin","width=135,height=165");
     bookWindow.focus();
     return false;
}
```

Figure 6.4. Clicking any of the three links opens the smaller window and fills it with the cover image of the appropriate book.

[View full size image]

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

To load different contents into a window:

1. `document.links[i].onclick = newWindow;`

In the `newWinLinks()` function, we've added the `newWindow()` function call as the `onclick` handler via JavaScript. When `newWindow()` is called, it uses `this.href`that is, the `href` attribute value from HTML.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Here, we're defining a new function called `newWindow()`.

3. `var bookWindow = window.open(this. href,"bookWin","width=135, height=165");`

Here in the variable `bookWindow`, we're opening a new window object, followed by the window's parameters. First, we pass it the value of `this.href`. The name of the new window is `bookWin`, and the width and height parameters set the size of the window.

4. `bookWindow.focus();`

This line uses the `focus()` method to tell the window we just opened to come to the front. You can use `focus()` whenever you need to make a window visible; if there are several windows open, using `focus()` brings the window to the top.

5. `return false;`

The function needs to end with `return false` so that the HTML knows to not also load the `href` in.

✓ Tip

- The opposite of the `focus()` method used in step 4 is `blur()`. Using `blur()` pushes a window behind any other windows that are open. The `focus()` and `blur()` methods of the `window` object have associated `onfocus` and `onblur` event handlers, which let you take action when a window gains or loses focus.

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Opening Multiple Windows

Sometimes you'll want to open multiple windows using a script; for example, you might want to create a script that opens a different window every time the user clicks an on-screen control. As usual, JavaScript is up to the task. In this example, we have a page with three links; clicking a link opens up a separate window containing an image; clicking another link brings up another window, one for each link. **Script 6.4** shows you how it's done, and **Figure 6.5** shows the result.

Script 6.4. When you need to open multiple windows from multiple links, this script does the trick.

```
window.onload = newWinLinks;

function newWinLinks() {
     for (var i=0; i<document.links.length; i++) {
        if (document.links[i].className == "newWin") {
            document.links[i].onclick = newWindow;
        }
     }
}

function newWindow() {
     var winName = this.id + "Win";
     var bookWindow = window.open(this.href, winName,"width=135,height=165");
     bookWindow.focus();
     return false;
}
```

Figure 6.5. Clicking the three links in the rear window produces a veritable constellation of child windows.

[View full size image]

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

To open multiple windows with a script:

1. `function newWindow() {`

   Create a function called `newWindow`.

2. `var winName = this.id + "Win";`

   The variable `winName` is based upon the `id` of the calling link, plus the string `Win`.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

This line gives `bookWindow` its value and uses the `window.open` method to open the window specified by the parameters inside the parentheses. The key to this script is that `winName` (the second parameter to `window.open`) is unique. So long as each window name is different, new windows will open.

✓ Tips

- Clicking the link for a book whose window is already open causes the window to redraw, rather than having a duplicate window open.
- If you want a new window to open up each time a user clicks a link (versus refreshing an existing window), add a random number to the window name.

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Opening Multiple Windows Simultaneously

Maybe you want to open more than one window at the same time (and really run the risk of seriously annoying the person browsing your site). You can do that with just a small addition to Script 6.4; you need to add a loop that opens a window every time it goes through the loop, as shown in **Script 6.5**.

Script 6.5. This script adds a loop to the previous script and opens multiple windows with a single click on a link.

```
window.onload = newWinLinks;

function newWinLinks() {
     for (var i=0; i<document.links.length; i++) {
        if (document.links[i].className == "newWin") {
            document.links[i].onclick = newWindows;
        }
     }
}

function newWindows() {
     var bookTitles = new Array("dw8","js6e", "ppt");

     for (var i=0; i<bookTitles.length;i++) {
        var imgName = "../images/" + bookTitles[i] + ".jpg";
        var winName = bookTitles[i] + "Win";
        var bookWindow = window.open(imgName, winName,"width=135,height=170");
     }
     return false;
}
```

To open multiple windows at the same time:

1. `document.links[i].onclick = newWindows;`

   In the `newWinLinks()` function, we've changed the line that was in Script 6.4 to call the `newWindows()` function, since we're opening more than one window.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
var bookTitles = new Array("dw8", "js6e","ppt");
```

Begin by creating a new function that will handle opening the multiple windows. Next, create a new array called `bookTitles`, and populate it with the names of the windows.

3.
```
for (var i=0; i<bookTitles. length;i++) {
  var imgName = "../images/" + bookTitles[i] + ".jpg";
  var winName = bookTitles[i] + "Win";
  var bookWindow = window.open (imgName,winName,"width=135, height=170");
}
```

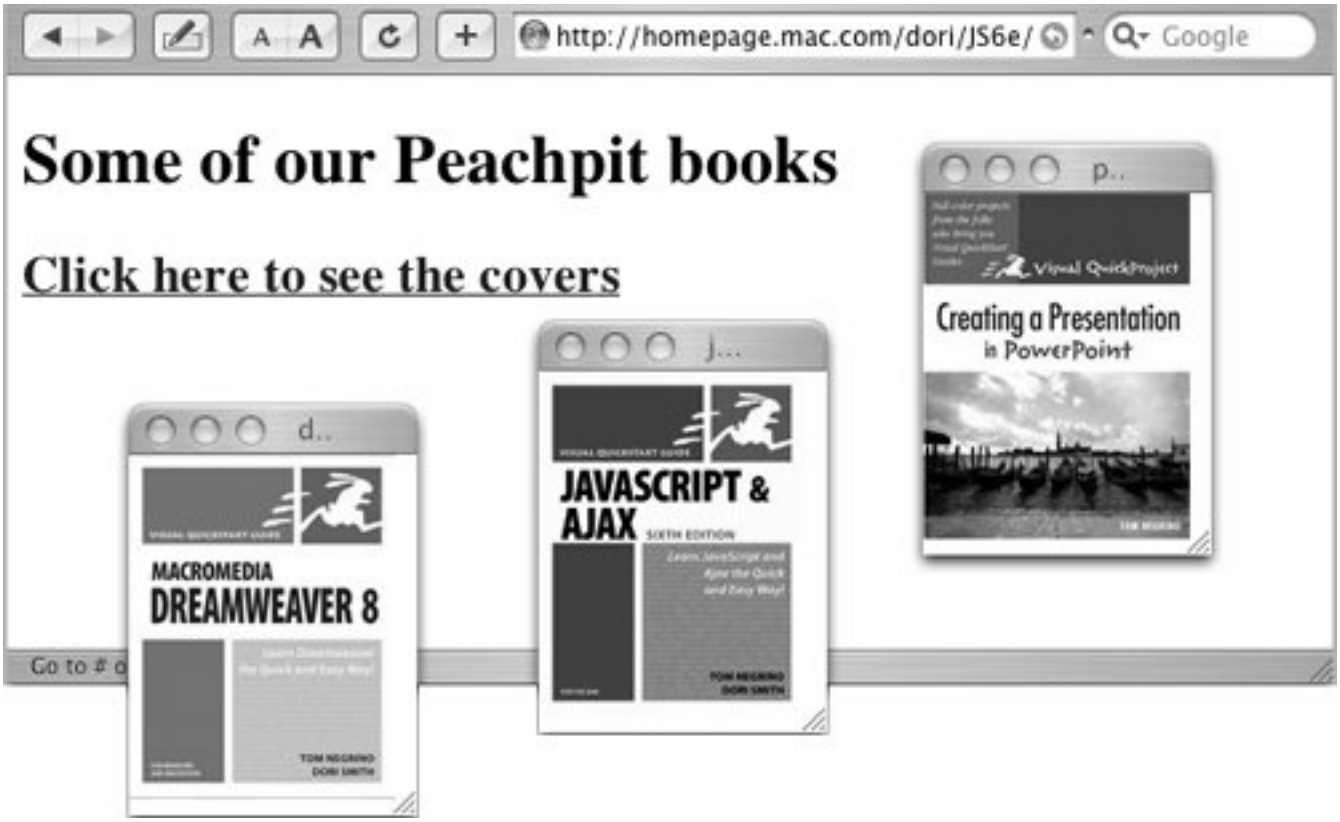
The loop will execute as many times as there are elements of the `bookTitles` array, using the `length` property. The `imgName` variable contains the constructed path of the images. The `winName` variable gets the current value of `bookTitles` and adds `Win` to it. The `bookWindow` variable opens the window with the image, adds the window's name, and specifies the window size. The result of all this looping is shown in **Figure 6.6**.

Figure 6.6. Clicking the link opened all three child windows; the placement was determined by the browser. In this case, Safari opened all three windows on top of one another, and we moved them for clarity's sake.

[View full size image]

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir



✓ Tips

- The placement of the windows is up to wherever the browser decides to put the windows. If you want to control those locations, Script 6.13 shows how to place a window in a specific location on the screen. See "Opening Windows in a Specified Location," later in this chapter.
- There's some code in Script 6.4 that's missing from this script, namely `bookWindow.focus()`. In Script 6.4, it makes the opened window the focus, i.e., the front-most window. But from a user interface standpoint, when multiple windows are opened at once it's not clear where the focus should be.

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Updating One Window from Another

If you deal with forms and data entered by your users, you'll want to know how to send information entered in one window to another window for display. You might use this in a situation where you are selling a product to replicate the user's information in a summary window. In this example, we'll use two windows: the main window is the parent window, which will receive and display information entered in a child window. **Script 6.6** and **Script 6.7** show the parent and child HTML pages, respectively. **Script 6.8** shows the script, which is called from both the parent and child windows.

Script 6.6. The HTML for the parent window.

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN">
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
     <title>Big Window</title>
     <script language="Javascript" type="text/javascript" src="script05.js">
     </script>
</head>
<body bgcolor="#FFFFFF">
<div align="center">
     <h1>Welcome to this page!</h1>
     <form action="#">
        <input type="text" size="20" id="msgLine" readonly="readonly" />
     </form>
</div>
</body>
</html>
```

Script 6.7. The HTML for the child window.

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN">
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
     <title>Little Window</title>
     <script language="Javascript" type="text/javascript" src="script05.js">
     </script>
</head>
<body bgcolor="#FFFFFF">
     <h1>What's your name?</h1>
     <form action="#">
        <input type="text" id="childField" size="20" />
     </form>
</body>
</html>
```

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Script 6.8. This script is called from both the parent and child windows.

```
window.onload = initWindows;

function initWindows() {
     if (document.getElementById("childField")) {
        document.getElementById("childField"). onchange = updateParent;
     }
     else {
        newWindow = window.open("child.html", "newWin","status=yes,width=300, height=300");
     }
}

function updateParent() {
     opener.document.getElementById("msgLine"). value = "Hello " + this.value + "!";
}
```

To update one window from another:

1. `window.onload = initWindows;`

   When the window loads, call the `initWindows()` function.

2.
```
if (document.getElementById ("childField")) {
  document.getElementById ("childField").onchange = updateParent;
}
```

   The script is called by both HTML pages (the parent and the child pages), but it needs to do different things for each file. The way it tells which one it's on is to check for the existence of the `childField` object, which only exists in the child window. If we're there, and the user changes the object, then we call the `updateParent()` function.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
newWindow = window.open("child.html","newWin","status=yes,width=300,height=300");
```

If the `childField` object doesn't exist, it's time to open the child window, using the `child.html` file. The rest of the line specifies the child window's parameters. (**Figure 6.7**).

Figure 6.7. The child window is where the user enters data.

4. `function updateParent() {`

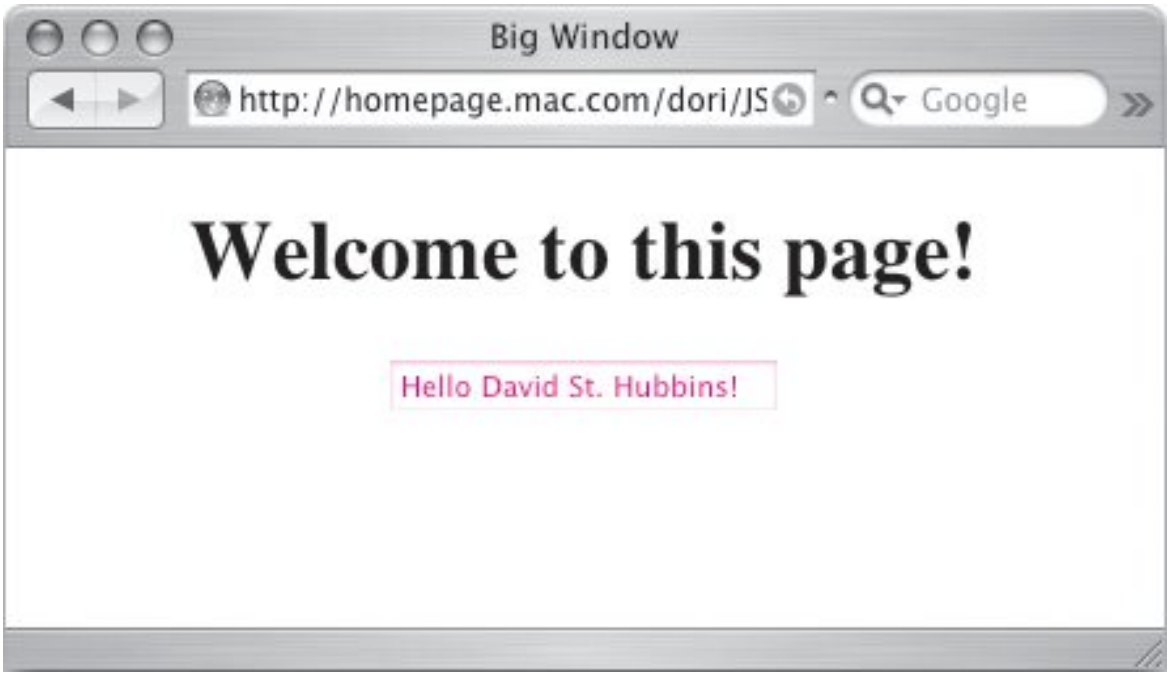
Here we create the `updateParent` function.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

This line introduces the `opener` property, which is how JavaScript references back to the parent document that opened the child window. This line tells the `opener` document (that is, the parent) window to find the field called `msgLine` and set its value to the word "Hello" and the contents of `this.value`, ending with an exclamation point (**Figure 6.8**).

Figure 6.8. The updated parent window after calling information from the child window.



✓ Tips

- Forms, fields, and how to script them are covered in depth in Chapter 7, "Form Handling."
- In Script 6.6, we've added the `readonly="readonly"` attribute to the parent window's `msgLine` field. It just makes it clear that visitors to your site can't edit that themselves; it can only be set elsewhere.

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Creating New Pages with JavaScript

Previous multiple-window examples in this chapter used more than one HTML file to create the different windows. But there's no need to do that, since you can embed HTML within a script and create a new HTML page on the fly. This is especially useful because you can use the power of JavaScript to fill the new page with dynamic content. Changing the contents of a page under JavaScript control is the basis of many Web applications. To get your feet wet, **Script 6.9** is a fairly simple example; we'll load a page (**Figure 6.9**) that creates a new child HTML page and then increment a loop that adds 100 lines of text to the child page (**Figure 6.10**).

Script 6.9. You can create new HTML pages entirely under scripted control.

[View full width]

```
window.onload = initWindows;

function initWindows() {
     var newText, newBr;
     var newWindow = window.open("","newWin", "location,scrollbars,resizable=yes,
width=300,height=300");
     var newDoc = newWindow.document;

     newDoc.title = "Generated Window";
     newDoc.bgColor = "#000000";
     newDoc.fgColor = "#FFFFFF";
     newDoc.body.innerHTML = "<h2>This window shows the result from the other window <\/
h2><div id='looper'> </div>";

     var loopDiv = newDoc.getElementById ("looper");

     for (var i=0; i<100; i++) {
        newText = newDoc.createTextNode ("The loop is now at: " + i);
        newBr = newDoc.createElement("br");

        loopDiv.appendChild(newText);
        loopDiv.appendChild(newBr);
     }
}
```

Figure 6.9. This parent window is writing into the child window...

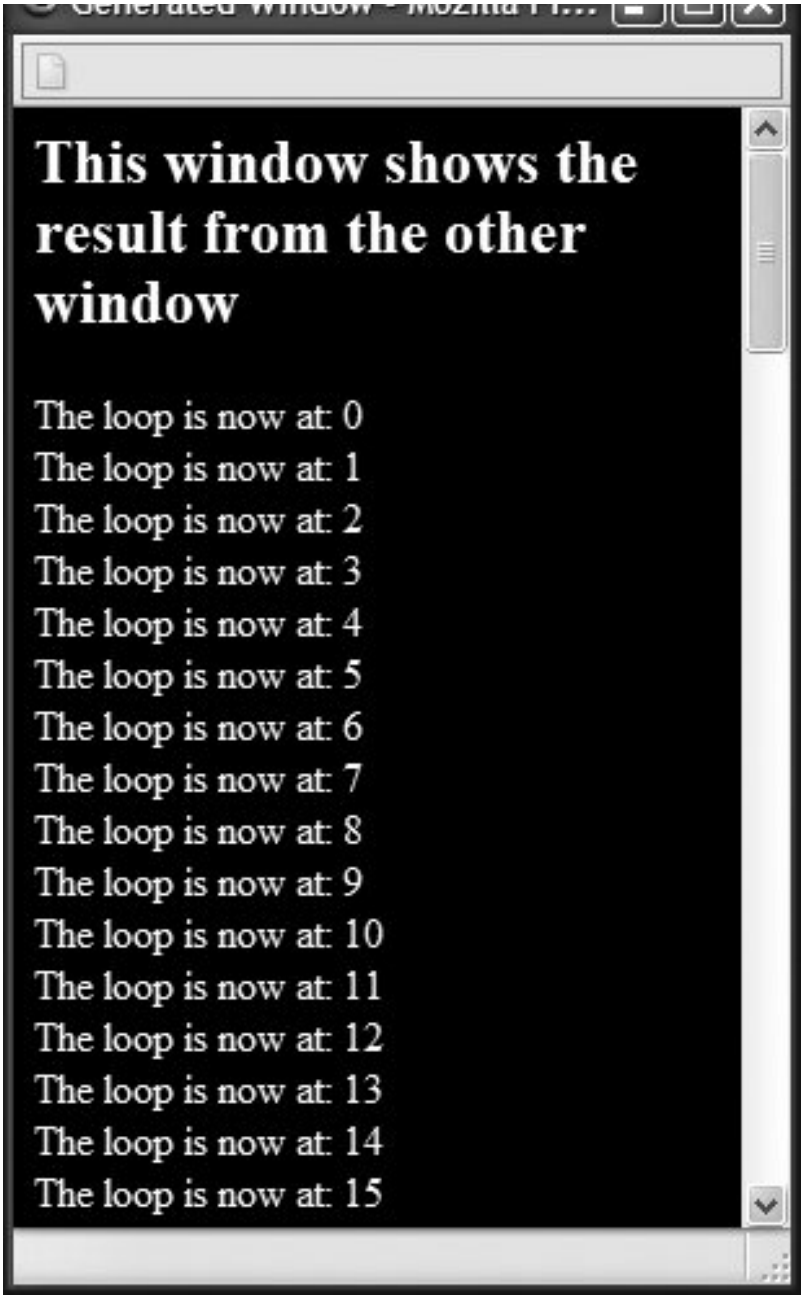
downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Figure 6.10. ...and the child window shows the result.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir



To create a new page with JavaScript:

1. [View full width]
```
var newText, newBr;
var newWindow = window.open("", "newWin","location,scrollbars, resizable=yes,width=300,
height=300");
```

In the `initWindows()` function, we declare two new variables, `newText` and `newBr`. The following line opens the new window, sets its parameters, and assigns it to the variable `newWindow`.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

This new variable, `newDoc`, stores our new window's document object, which we'll change in the next step.

3. [View full width]
```
newDoc.title = "Generated Window";
newDoc.bgColor = "#000000";
newDoc.fgColor = "#FFFFFF";
newDoc.body.innerHTML = "<h2>This window shows the result from the other window<\/
h2><div
 id= 'looper'> </div>";
```

This is the cool part, where we set the properties of the `newDoc` object (in other words, the contents of the window we've created). We can set that new document's title, background color, foreground color, and `body.innerHTML` (the contents of the document's body tag) to be whatever we want. In this case, we're generating the HTML headers and the first part of the page body (Figure 6.10).

4.
```
var loopDiv = newDoc.getElementById ("looper");
```

You probably noticed that the `div` at the end of the last step has the `id "looper"`that's the `div` that we're going to be adding to shortly. To do that, we create and set the new `loopDiv` variable.

5.
```
for (i=0; i<100; i++) {
```

We're starting a loop with the counter variable `i`. Set `i` to zero to begin; then, as long as `i` is less than 100, we increment the value of `i` by 1.

6.
```
newText = newDoc.createTextNode ("The loop is now at: " + i);
newBr = newDoc.createElement("br");
```

We need to create elements that we can then add to the `looper div`. Previously in this chapter, we've changed `innerHTML`, which overwrites what's already in that `div`. In this case, though, we want to add on, not overwrite. The two built-in functions, `createTextNode()` and `createElement()`, allow us to respectively create a text node and an element (in this case, a `<br />` element) on the fly.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
loopDiv.appendChild(newBr);
```

Once those elements have been created, they can be added to the `div` by doing an `appendChild()` with the contents of the two variables we set previously. Using `appendChild()` and other methods of manipulating nodes will be covered in more depth in Chapter 12.

Once they're added, we're still in the loop, so we loop around again until the counter in step 5 hits 100.

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Closing a Window

Just as you can create windows, you should know how to get rid of windows by closing them. In **Script 6.10**, the parent window has "open" and "close" links that create and close the child window, and each link has a unique `id` that we use in the script. The external JavaScript is in **Script 6.11**.

Script 6.10. Note the `id` tags for the two links in this HTML page.

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN">
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
     <title>Window Test</title>
     <script language="Javascript"  type="text/javascript"  src="script07.js">
     </script>
</head>
<body bgcolor="#FFFFFF">
     <div align="center">
        <h1>Let's play with windows!</h1>
        <h3>
            <a href="#" id="openWin">Open a new window</a>  
            <a href="#" id="closeWin">Close the window</a>
        </h3>
     </div>
</body>
</html>
```

Script 6.11. This script opens and closes a child window.

```
var newWindow = null;
window.onload = newWinLinks;

function newWinLinks() {
     for (var i=0; i<document.links.length; i++) {
        document.links[i].onclick = chgWindowState;
     }
}

function windowOpen() {
     if (newWindow && !newWindow.closed) {
         return true;

     }
     return false;
}
function chgWindowState() {
     if (this.id == "closeWin") {
```

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
            newWindow.close();

         }
         else {
            alert("The window isn't open");
         }
      }
      if (this.id == "openWin") {
         if (windowOpen()) {
             alert("The window is already open!");

         }
         else {
            newWindow = window.open("","newWin", "toolbar,location=yes,width=300, height=200");

         }
      }
      return false;
}
```

To close a window:

1. `var newWindow = null;`

   This line initializes the value for the `newWindow` object that we're going to use later. While most browsers do this automatically, some don't, so it needs to be set here to avoid errors later.

2. `document.links[i].onclick = chgWindowState;`

   In the `newWinLinks()` function, we're stepping through the links in the document as usual. The only difference here is that we'll call `chgWindowState()` if we detect a click on one of the links.

2.
```
function windowOpen() {
  if (newWindow && !newWindow. closed) {
     return true;
  }
  return false;
}
```

   The `if` statement poses a logical test using the `&&` operator, which returns a true result only if the values on both sides of it are true. So in this case, `newWindow` must exist and `newWindow` must not have been closed (the `!` is the logical "not" operator). This function returns `TRue` if a window is open and `false` if it isn't.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
  if (this.id == "closeWin") {
```

Here, we're checking to see if the `id` of the clicked link is `closeWin`. If it's `closeWin`, the user clicked the close link. If it's `openWin`, they clicked the open link.

5.
```
if (windowOpen()) {
  newWindow.close();
}
```

If the user clicked close and the window is open, these lines close it.

6.
```
else {
  alert("The window isn't open");
}
```

If the user clicked close and the window's already closed, an alert pops up saying so.

7.
```
if (this.id == "openWin") {
  if (windowOpen()) {
     alert("The window is already open!");
  }
```

Similarly, if the user clicked open and the window is already open, an alert pops up saying so.

8.
```
else {
  newWindow = window.open("", "newWin","toolbar,location=yes, width=300,height=200");
}
```

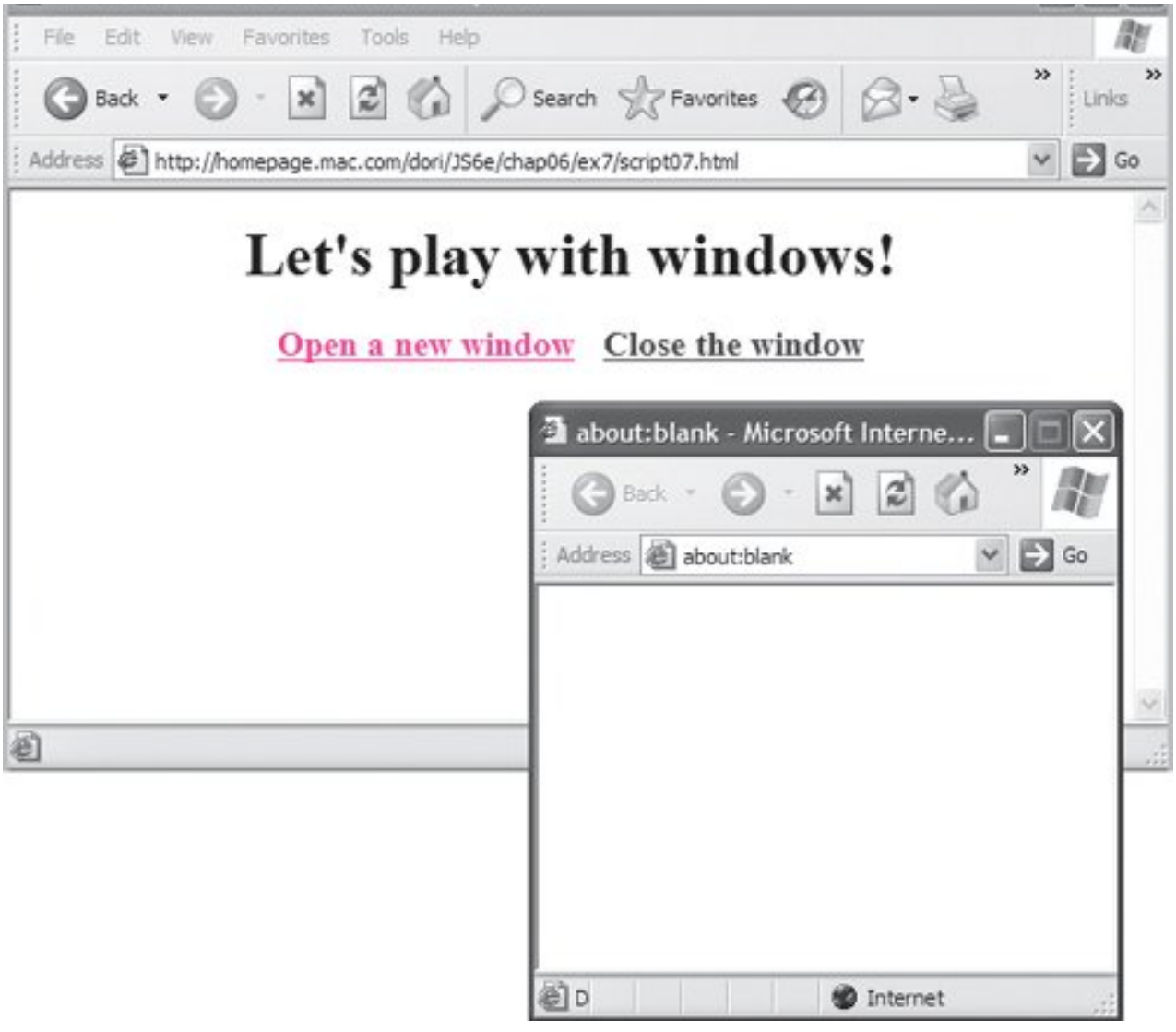
If the user clicked open and there's no current window, the window opens up, showing the parameters set in the line (**Figure 6.11**). In this case, the toolbar and location are visible.

Figure 6.11. The links in this window create and close a child window.

[View full size image]

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir



9. `return false;`

We end with a `return false` so that the `HRef` doesn't get triggered.

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Opening Windows in a Specified Location

Sometimes you want to open a window in a particular spot on the screen. In this example, you'll have your choice of opening a small window in any of the four corners of your screen. Like the previous example, we also provide a link to close the child window. The HTML is similar to previous examples, as shown in **Script 6.12**. As you would expect, each of the links is tagged with its own unique `id`. The JavaScript, in **Script 6.13**, builds on Script 6.11.

Script 6.12. This script opens a child window at a specified screen location.

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN">
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
     <title>Window Test</title>
     <script language="Javascript"  type="text/javascript"  src="script08.js">
     </script>
</head>
<body bgcolor="#FFFFFF">
     <div align="center">
         <h1>Let's play with windows!</h1>
         <h3>
             <a href="#" id="topLeftWin"> Open window in the top left </a>  
             <a href="#" id="topRightWin"> Open window in the top right</a> <br />
             <a href="#" id="bottomLeftWin"> Open window in the bottom left </a>  
             <a href="#" id="bottomRightWin"> Open window in the bottom right </a><br />
             <a href="#" id="closeWin">Close the window</a>
         </h3>
     </div>
</body>
</html>
```

Script 6.13. This script adds window-moving capability to Script 6.12.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
var newWindow = null;
window.onload = newWinLinks;

function newWinLinks() {
     for (var i=0; i<document.links.length; i++) {
        document.links[i].onclick =  chgWindowState;
     }
}

function windowOpen() {
     if (newWindow && !newWindow.closed) {
        return true;
     }
     return false;
}

function chgWindowState() {
     if (this.id == "closeWin") {
        if (windowOpen()) {
           newWindow.close();
        }
        else {
           alert("The window isn't open");
        }
        return false;
     }
     if (this.id != "closeWin") {
        if (windowOpen()) {
            alert("The window is already open!");
            return false;
        }
     }

     var topPos = (this.id.indexOf("bottom") == -1)? 0 : screen.availHeight-200;
     var leftPos = (this.id.indexOf("Right") == -1)? 0 : screen.availWidth-300;

     newWindow = window.open("","newWin", "toolbar,location=yes,width=300, height=200,
left="+leftPos+",top="+topPos);
     return false;
}
```

To open a window in a particular location:

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Where Script 6.11 looked to see if `this.id` was `openWin`, now we're just checking to see that it's not `closeWin`. That's because it could be one of several different links.

2.
```
var topPos = (this.id.indexOf ("bottom") == -1) ? 0 : screen. availHeight-200;
var leftPos = (this.id.indexOf ("Right") == -1) ? 0 : screen. availWidth-300;
```

We're creating two new variables, `topPos` and `leftPos`, based on `screen.availHeight` and `screen.availWidth`. Each of these lines is a conditional statement, using the alternative method of writing an `if...else` conditional we described in the "There's No One Right Way" sidebar in Chapter 2. Here's the way it works: if the word `"bottom"` is in the `id` (that is, `id` as specified in Script 6.12 is either `bottomLeftWin` or `bottomRightWin`), we know that the newly opened window needs to be pegged to the bottom of the screen. So, `topPos` will be set to whatever the available height is of the screen minus 200 (the height of the window being opened). If `"bottom"` isn't in the `id` (causing the `indexOf()` check to return -1, meaning not found), then `topPos` is set to zero, because it should be pegged to the top of the screen. And ditto for `leftPos` and `"Right"`.

3. [View full width]
```
newWindow = window.open("","newWin", "toolbar,location=yes,width=300, height=200
,left="+leftPos+", top="+topPos);
```

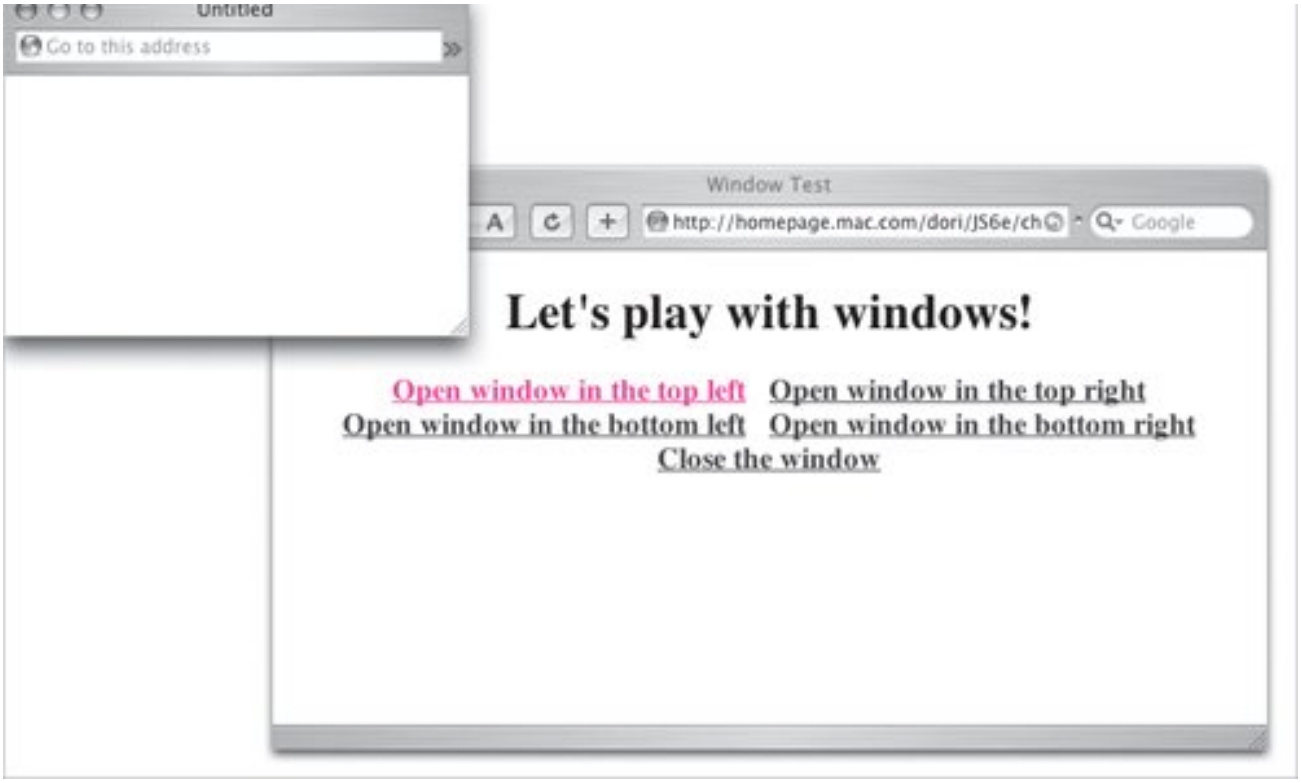
Finally, we open the new window in its correct location, and again, the toolbar and location are visible (**Figure 6.12**).

Figure 6.12. The links in the parent window open a child window in the specified spot on your screen.

[View full size image]

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir



✓ Tip

- The `availHeight` and `availWidth` properties look at only one monitor at a time, so if you have a multi-monitor setup, you can't suddenly make a window fly somewhere else; the windows will open on the same monitor that the parent window is on.

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Moving Windows to a Specified Location

In the last example, the links on the parent page opened and closed the windows in specified places on the screen. In this task, you'll see how to both open and move the window. In the parent page, clicking a link opens a window in a specified spot. You might use this sort of script for a site where you open a variety of windows, and to provide a way to rearrange the windows with just a click.

The script for this example, **Script 6.14**, builds on the script for the previous task, using the `moveTo()` method. The code for opening the windows in the corners of the screen is unchanged; we've added code to deal with moving the windows if they are already open and not in the right place. The HTML for the page is virtually unchanged, except for the wording of the links (**Figure 6.13**).

Script 6.14. If you need to move windows to specified spots, this script does the job.

[View full width]

```
var newWindow = null;
window.onload = newWinLinks;

function newWinLinks() {
     for (var i=0; i<document.links.length; i++) {
         document.links[i].onclick = chgWindowState;
     }
}

function windowOpen() {
     if (newWindow && !newWindow.closed) {
        return true;
     }
     return false;
}

function chgWindowState() {
     if (this.id == "closeWin") {
        if (windowOpen()) {
           newWindow.close();
        }
        else {
           alert("The window isn't open");
        }
        return false;
     }

     var topPos = (this.id.indexOf("bottom") == -1)? 0 : screen.availHeight-200;
     var leftPos = (this.id.indexOf("Right") == -1) ? 0 : screen.availWidth-300;
```

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
        newWindow.moveTo(leftPos,topPos);
    }
    else {
        newWindow = window.open("","newWin", "toolbar,location=yes,width=300, height=200,
left="+leftPos+", top="+topPos);
    }
    return false;
}
```

Figure 6.13. If windows are already open but not where we now want them, clicking their new placement link moves them to the specified location.

[View full size image]

To open and move windows:

1.
```
if (windowOpen()) {
  newWindow.moveTo(leftPos,topPos);
}
```

If the window is already open, we do a `newWindow.moveTo()` and pass in `leftPos` and `topPos`, which are defined earlier in the script. That's all there is to it.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
else {
  newWindow = window.open("", "newWin","toolbar,location=yes, width=300,height=200,
  left="+leftPos+",top="+topPos);
```

If the window wasn't open, we open it in the specified location, just like we did in the previous task.

✓ Tips

- If you want to change a window's dimensions instead of its location, use `resizeTo()` instead of `moveTo()`.
- Both the `resizeTo()` and `moveTo()` commands can be used on the current windownot just newly opened windows. However, it's been found that visitors to sites hate having their main window moved even more than they hate pop-up windows, so don't do it.

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Chapter 7. Form Handling

Any time you need to gather information from the users of your Web sites, you'll need to use a form.

Forms can contain most of the usual graphical interface elements, including entry fields, radio buttons, check boxes, pop-up menus, and entry lists. In addition, HTML forms can contain password fields, shielding the user's input from prying eyes.

Once the form is filled out, a click on the form's Submit button sends the form's information to your Web server, where a CGI (that stands for Common Gateway Interface, and it's a script that runs on the Web server) interprets the data and acts on it. Often, the data is then stored in a database for later use. It's useful to make sure that the data the user enters is "clean," that is, accurate and in the correct format, before it gets stored on the server side. JavaScript is the perfect way to check the data; this is called *form validation*. Though the CGI can do the validation (and should as a backup measure, since some people will have JavaScript turned off in their browsers), it's much faster and more efficient for your users to also do it on the client's machine with JavaScript.

In this chapter, you'll learn how to use JavaScript to make sure that your forms contain valid information, check data in one field against the data in another field, and highlight incorrect information to let the user know what needs to be changed.

Table 7.1. Just Enough HTMLForms

Tag	Attribute	Meaning
`form`		A tag that contains any of the following tags, making them into a valid HTML form
	`action`	The name of the server-side CGI that is run when control is passed back to the Web server
`input`		A form field of varying types, depending on the value of the `type` attribute
	`class`	The class assigned to the element
	`id`	The unique id assigned to the element
	`name`	Primarily used to group sets of radio buttons; also is a name that JavaScript can use to refer to this field; as with other JavaScript objects, no spaces or other punctuation is allowed, and it cannot start with a number
	`maxlength`	The maximum length entry that the user may enter in this field
	`size`	The number of characters that are displayed on the page

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

		password, radio, reset, submit, and text
	value	The preset value of this form field
label		Used to specify labels for controls that do not have built-in labels, such as text fields, check boxes, radio buttons, and menus
	for	Associates the label with a specific element's id
option		The possible options available inside a select tag
	selected	Indicates whether this option is selected as the default
	value	The preset value of each option
select		A form field that is either a pop-up menu or scrolling list, based on the size attribute
	class	The class assigned to the element
	id	The unique id assigned to the element
	size	The number of options that are displayed on the page; if the attribute is set to 1, or this attribute is not present, the result is a pop-up menu

PREV NEXT

downloaded from: lib.ommolketab.ir

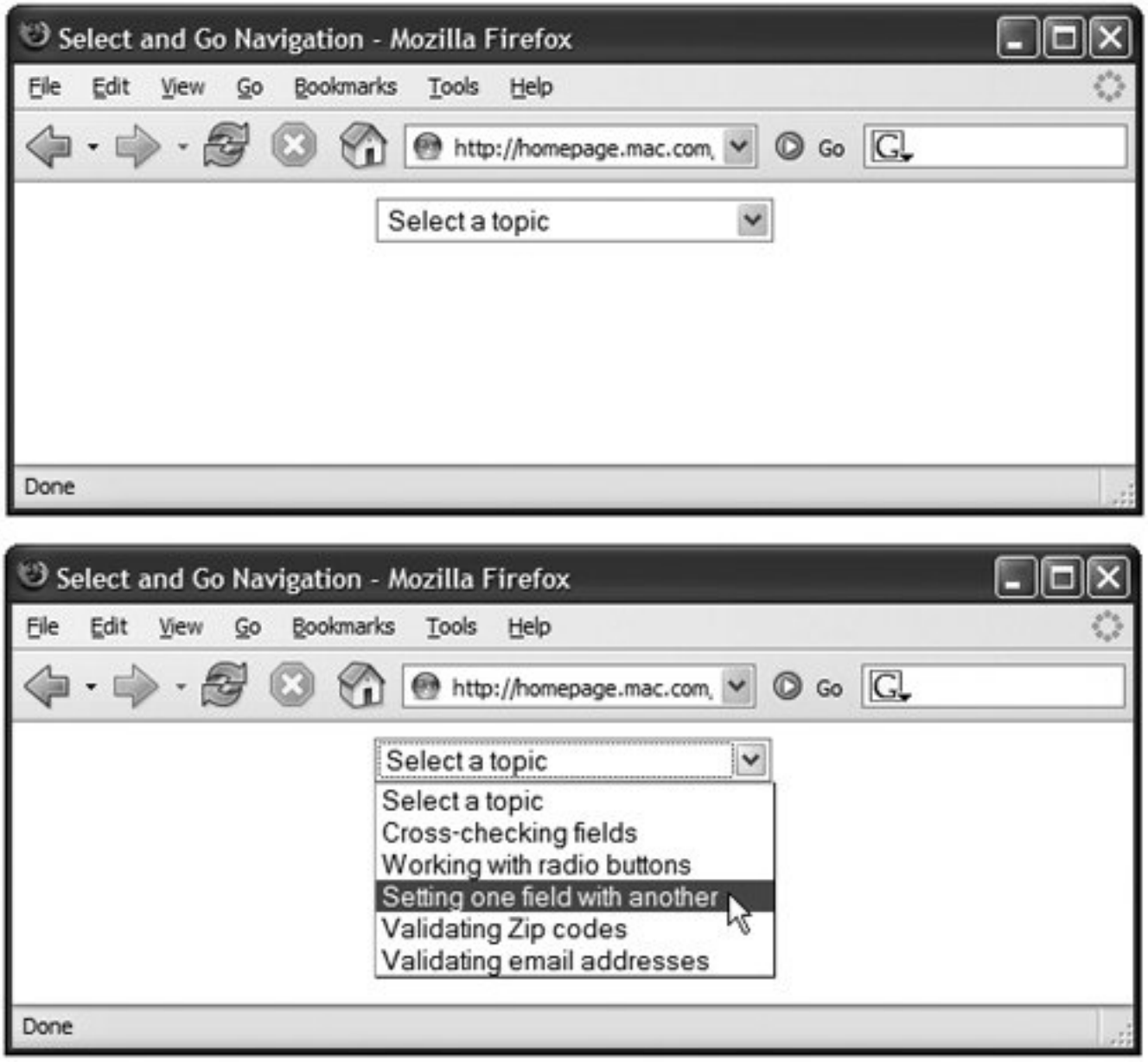
downloaded from: lib.ommolketab.ir

Select-and-Go Navigation

You've probably seen lots of examples of the standard navigation menu on the Web; you pick a choice from a menu and click a Go button, which takes you to your destination. For example, many online stores use such menus to move you to different departments. But with a bit of JavaScript, you can launch users on their way with just the menu choice, eliminating the Go button (**Figure 7.1**). This makes your site feel snappier and more responsive, which is always a good idea. We call these JavaScript-enhanced menus select-and-go menus, and they're easy to create. The HTML is in **Script 7.1**, and the JavaScript is shown in **Script 7.2**. You'll never want to use a Go button again!

Figure 7.1. Picking any of the choices in this menu jumps you directly to the page with that topic, without requiring a separate Go button.

[View full size image]



downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Script 7.1. The HTML for a select-and-go menu is fairly simple.

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN">
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
     <title>Select and Go Navigation</title>
     <script language="Javascript" type="text/javascript" src="script01.js">
     </script>
</head>
<body bgcolor="#FFFFFF">
<div align="center">
     <form action="gotoLocation.cgi">
        <select id="newLocation">
            <option selected="selected">Select a topic</option>
            <option value="script06.html">Cross-checking fields</option>
            <option value="script07.html">Working with radio buttons</option>
            <option value="script08.html">Setting one field with another</option>
            <option value="script09.html">Validating Zip codes</option>
            <option value="script10.html">Validating email addresses</option>
        </select>
        <noscript>
            <input type="submit" value="Go There!" />
        </noscript>
     </form>
</div>
</body>
</html>
```

Script 7.2. You can use JavaScript and forms for active site navigation.

```
window.onload = initForm;
window.onunload = function() {};

function initForm() {
     document.getElementById("newLocation"). selectedIndex = 0;
     document.getElementById("newLocation"). onchange = jumpPage;
}

function jumpPage() {
     var newLoc = document.getElementById ("newLocation");
     var newPage = newLoc.options [newLoc.selectedIndex].value;

     if (newPage != "") {
        window.location = newPage;
     }
}
```

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

To create a select-and-go menu:

1. ```
   window.onload = initForm;
   window.onunload = function() {};
   ```

   When the window loads, call the `initForm()` function. The next line needs some explanation, because it is a workaround for the odd behavior of some browsers.

   When the window unloads (i.e., when it is closed or the browser goes to another location), we call an *anonymous function*, that is, a function that doesn't have a name. In this case, it not only doesn't have a name, it doesn't have anything at all. It's here because we have to set `onunload` to *something*otherwise, the `onload` event isn't triggered when the browser's back button is clicked, because the page is cached in some browsers, such as Firefox and Safari. Having `onunload` do anything at all causes the page to be uncached, and therefore, when we come back, the `onload` happens.

   The *anonymous* part of the term refers to the fact that there's no name between `function` and `()`. This is the simplest way to trigger `onunload` but not have it do anything. The braces are just like any function; they would hold the contents of the function. They're empty here because this particular function does nothing.

2. ```
   document.getElementById ("newLocation").selectedIndex = 0;
   document.getElementById ("newLocation").onchange = jumpPage;
   ```

   In the `initForm()` function, the first line gets the menu on the HTML page, which has the `id` of `newLocation`, and sets its `selectedIndex` property to zero, which forces it to say "Select a topic".

   The second line tells the script to call the `jumpPage()` function when the menu selection changes.

3. ```
   function jumpPage() {
   ```

   First, create the new function `jumpPage`.

4. ```
   var newLoc = document.getElementById
   ("newLocation");
   ```

   The `newLoc` variable looks up the value chosen in the menu by the visitor.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Start from the code inside the brackets and work outward. The object `newLoc.selectedIndex` will be a number from 0 to 5 (because there are six possible menu choices; remember that JavaScript is often zero-based). Given that number, we next get the value for the corresponding menu option, which is the name of the Web page we want to jump to. Then we assign the result to the variable `newPage`.

6.
```
if (newPage != "") {
  window.location = newPage;
```

This conditional first checks to see that `newPage` is not equal to nothing (that is, it's not empty). In other words, if `newPage` has a value, then tell the window to go to the URL specified by the menu option chosen.

✓ Tips

- One of the nicest things about this script is that once the JavaScript function has been added, there's no need to modify the function when pull-down options are added, modified, or changed. Only the values of the options (i.e., the URLs that the menu options jump to) need to be set. For this reason, this script works well with WYSIWYG page editors.
- As mentioned above, Firefox caches pages, causing `onload` events to not be triggered when the back button is clicked. One way to work around this is covered above; another way we could have done this would have been to add the line:

  ```
  window.onpageshow = initForm;
  ```

  We didn't use this because it doesn't work in Safari (the other caching troublemaker). But if you are specifically targeting Firefox, it's worth knowing that there are two new non-standard window event handlers, `onpageshow` and `onpagehide`, which can be used to handle events that we only want triggered in Firefox.

- We call these "select-and-go" menus, which isn't especially elegant but clearly tells you what's going on. You may see other names for the same functionality; for example, Dreamweaver calls them "jump menus." By the way, if you're a Dreamweaver user and need a great book on getting the most out of Dreamweaver 8, let us suggest *Macromedia Dreamweaver 8 for Windows and Macintosh: Visual QuickStart Guide* (Peachpit Press, 2006), by, uh, us.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Accommodating the JavaScript-impaired User

The point of this task is to use JavaScript to eliminate the need for a Go button when using a form to jump from one page to another. But what if the user has an old, non-JavaScript-capable browser, or just has JavaScript turned off? No problem; the script handles those users just fine, by putting in a Go button that's only visible in the absence of JavaScript.

The only way to get from one page to another with a form but without JavaScript is to use a CGI, a program running on the Web server. Script 7.1 sets that up in this line:

```
<form action="gotoLocation.cgi">
```

The `form` tag has the `action` attribute, which calls the CGI. But a `form action` requires the user to click a `submit` button, and there's no such button in Figure 7.1. Ah, but there is in **Figure 7.2**, which shows what happens when you turn JavaScript off. These lines contain the button, wrapped in the `noscript` tags, which are only executed if JavaScript is missing.

Figure 7.2. If the user doesn't have JavaScript, they'll still be able to get around on your site, because the Go There! button automagically appears.

[View full size image]

```
<noscript> <input type="submit" value="Go There!"> </noscript>
```

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

The really cool thing about all this is that the CGI only ever gets called if JavaScript is missing; if the user has a JavaScript-enabled browser, then the `submit` button doesn't appear, and the CGI is unnecessary.

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Changing Menus Dynamically

It's often useful to offer the user a choice of inputs via pop-up menus, and to be able to change the contents of one or more pop-up menus depending on the choice the user makes in another pop-up menu. You've probably seen this on Web sites that ask you to choose the country you live in from a pop-up menu and then fill a second menu with state or province names, based on the choice you made. In **Scripts 7.3** (HTML) and **7.4** (JavaScript), we're using two pop-up menus (**Figure 7.3**). The first menu is for months. When the user picks a month, the script populates the second pop-up menu with the correct number of days for the selected month (**Figure 7.4**).

Script 7.3. The HTML for the pop-up menus lists the months but not the days.

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN">
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
     <title>Dynamic Menus</title>
     <script language="Javascript"  type="text/javascript" src="script02.js">
     </script>
</head>
<body bgcolor="#FFFFFF">
<form action="#">
     <select id="months">
        <option value="">Month</option>
        <option value="0">January</option>
        <option value="1">February</option>
        <option value="2">March</option>
        <option value="3">April</option>
        <option value="4">May</option>
        <option value="5">June</option>
        <option value="6">July</option>
        <option value="7">August</option>
        <option value="8">September</option>
        <option value="9">October</option>
        <option value="10">November</option>
        <option value="11">December</option>
     </select>
      

     <select id="days">
         <option>Day</option>
     </select>
</form>

</body>
</html>
```

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Script 7.4. By selecting a value from one pop-up menu, you can create the contents of a second pop-up menu.

```
window.onload = initForm;

function initForm() {
     document.getElementById("months").selectedIndex = 0;
     document.getElementById("months").onchange = populateDays;
}

function populateDays() {
     var monthDays = new Array(31,28,31,30,31,30,31,31,30,31,30,31);
     var monthStr = this.options[this.selectedIndex].value;

     if (monthStr != "") {
        var theMonth = parseInt(monthStr);

        document.getElementById("days").options.length = 0;
        for(var i=0; i<monthDays[theMonth]; i++) {
           document.getElementById("days").options[i] = new Option(i+1);
        }
     }
}
```

Figure 7.3. The contents of the Day menu are filled in automatically when the user makes a selection from the Month menu.

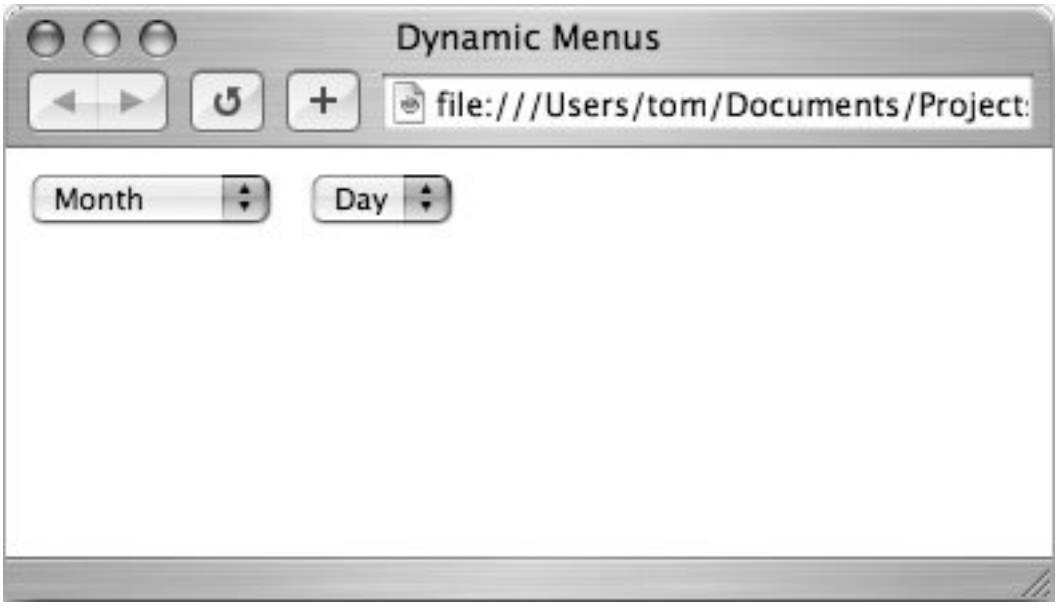
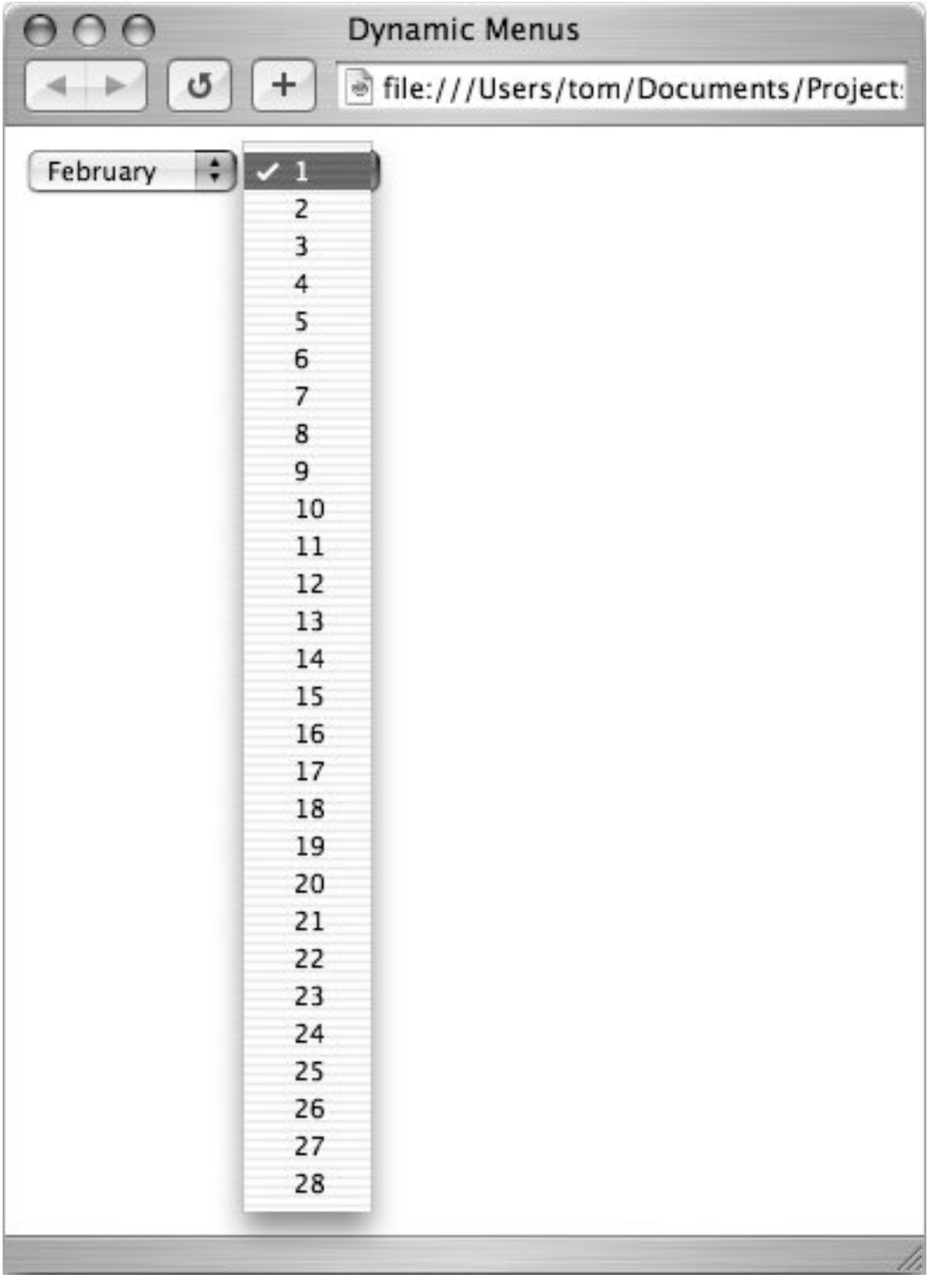


Figure 7.4. The result of choosing a month: the correct number of days of that month appear in the Day menu.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir



To change menus dynamically:

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

This new array contains 12 values for the 12 months, with the correct number of days in each month. The array is stored in the variable monthDays.

2.
```
var monthStr = this.options [this.selectedIndex].value;
```

We're using `this` (the month the user picked from the first menu) to get the value from the menu, and storing it in `monthStr`.

3.
```
if (monthStr != "") {
  var theMonth = parseInt(monthStr);
```

If the value of `monthStr` is `""`, then the user chose the word "Month" in the menu, rather than a month name. What these lines do is check to see that the value of `monthStr` is not `""`; if that condition is true, then `monthStr` is turned into a number with the `parseInt` method, and the variable `theMonth` is set to the result.

4.
```
document.getElementById("days"). options.length = 0;
for(var i=0; i<monthDays[theMonth]; i++) {
  document.getElementById("days"). options[i] = new Option(i+1);
```

Start changing the day menu by setting its options length to zero. That clears out whatever happened to be there before, so we're starting fresh. The loop simply goes through the number of days in whatever the chosen month is, adding a new option to the menu for each day. Option is passed `i`+1, so that it shows 1 to 31 instead of 0 to 30.

✓ Tip

- The `monthDays` array contains the number of days in each month, which works fine except in the case of leap years. To get your script to work in a leap year, you'll need to change the February value in `monthDays`.

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Making Fields Required

When filling out a form, you may want to specify particular fields that are required to be filled out by the user before the form can be submitted. You can use JavaScript to check that some or all fields are filled out. In this example, we use HTML, CSS, and JavaScript (**Scripts 7.5**, **7.6**, and **7.7**, respectively) to highlight fields that are not filled out with a red border and a yellow interior. The check occurs when the user clicks the form's Submit button.

Script 7.5. The HTML for the password check example.

[View full width]

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN">
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
     <title>Password Check</title>
     <script language="Javascript" type="text/javascript" src="script03.js">
     </script>
     <link rel="stylesheet" href="script03.css" />
</head>
<body>
<form action="#">
     <p><label for="userName">Your name: <input type="text" size="30"
id="userName"
class="reqd" /></label></p>
     <p><label for="passwd1">Choose a password: <input type="password"
id="passwd1"
class="reqd" /></label></p>
     <p><label for="passwd2">Verify password: <input type="password" id="passwd2"
class="reqd passwd1" /></label></p>
     <p><input type="submit" value="Submit" /> <input type="reset" /></p>
</form>
</body>
</html>
```

Script 7.6. The CSS sets the style for invalid form elements.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
    color: #000;
    background-color: #FFF;
}
input.invalid {
    background-color: #FF9;
    border: 2px red inset;
}

label.invalid {
    color: #F00;
}
```

Script 7.7. This script serves as the basis for all the rest of the examples in this chapter; it's a framework that you can use to add additional validation checks.

```
window.onload = initForms;
function initForms() {
     for (var i=0; i< document.forms.length; i++) {
        document.forms[i].onsubmit = function() {return validForm();}
     }
}

function validForm() {
     var allGood = true;
     var allTags = document.getElementsByTagName ("*");

     for (var i=0; i<allTags.length; i++) {
        if (!validTag(allTags[i])) {
           allGood = false;
        }
     }
     return allGood;

     function validTag(thisTag) {
        var outClass = "";
        var allClasses = thisTag.className. split(" ");

        for (var j=0; j<allClasses.length; j++) {
           outClass += validBasedOnClass(allClasses[j]) + " ";
        }

        thisTag.className = outClass;

        if (outClass.indexOf("invalid") > -1) {
           thisTag.focus();
           if (thisTag.nodeName == "INPUT") {
              thisTag.select();
           }
           return false;
        }
```

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
        function validBasedOnClass(thisClass) {
           var classBack = "";

           switch(thisClass) {
              case "":
              case "invalid":
                 break;
              case "reqd":
                 if (allGood && thisTag.value == "") classBack = "invalid ";
                 classBack += thisClass;
                 break;
              default:
                 classBack += thisClass;
           }
           return classBack;
        }
    }
}
```

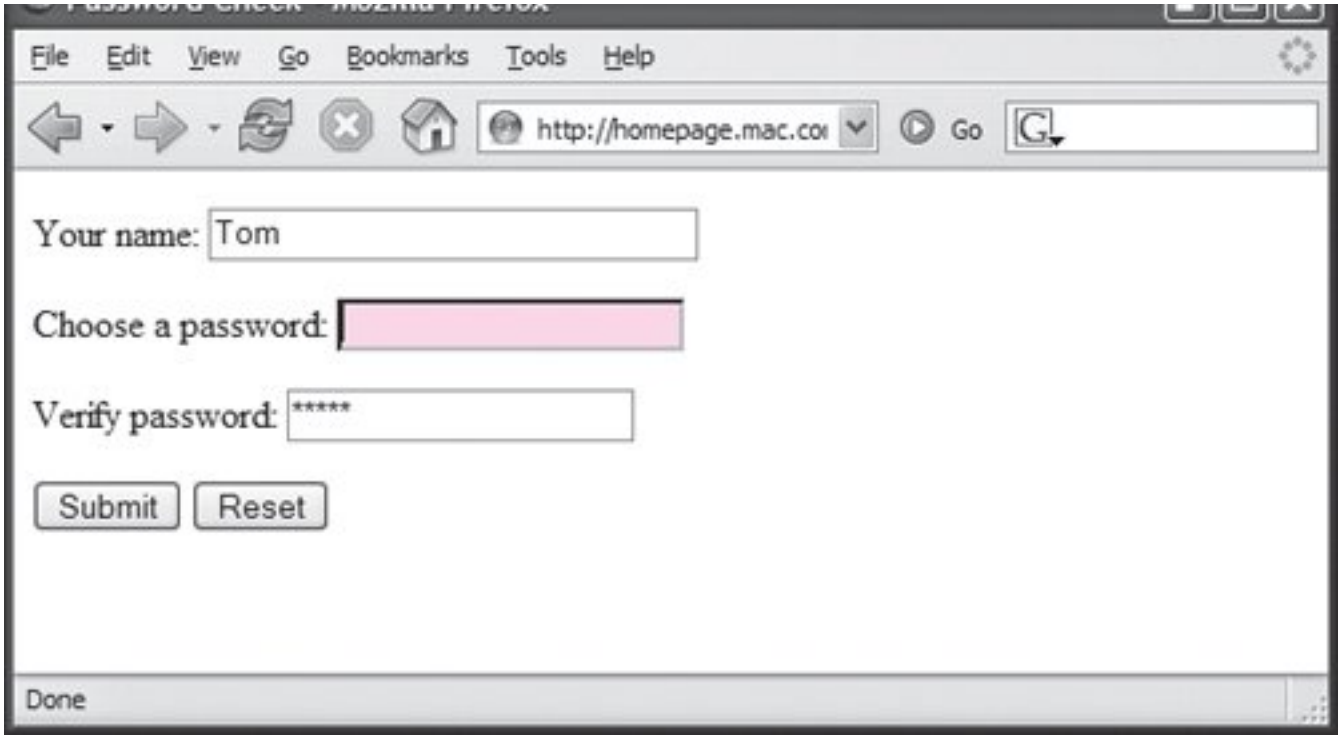
Here's the big picture: the `class` attributes in the HTML store which checks we want the JavaScript to do. If a check is failed, we add `invalid` to the list of `class` attributes. Doing that causes (1) the form submission to fail, and (2) the CSS in Script 7.6 to change the appearance of the field on the page (**Figure 7.5**).

Figure 7.5. Make sure that passwords are entered by letting the user know there's a problem with a particular field.

[View full size image]

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir



To make fields required:

1.
```
function initForms() {
  for (var i=0; i< document.forms. length; i++) {
     document.forms[i].onsubmit = function() {return validForm();}
```

When the page first loads, the `initForms()` function is called. This function loops through every form on the page. For each one, it adds an event handler to that form's `onsubmit`: a call to `function() {return validForm();}`. This is another anonymous function, but this time it does something: it returns true or false to tell the browser whether or not to continue with the action attribute. When an `onsubmit` handler returns a value of false, the form doesn't get passed back to the server. The server only gets the form (running whatever CGI is stored in the action attribute) when we return a value of true.

2.
```
var allTags = document.getElementsByTagName("*");
document.getElementsByTagName("*")
```

is very usefulthat asterisk tells JavaScript to return an array containing *every* tag on the page. Then, we can just loop through the `allTags` variable looking for things of interest.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
if (!validTag(allTags[i])) {
   allGood = false;
```

This loop searches through `allTags`, and the `if` conditional calls the `validTag()` function, which checks each tag to see if there's anything there that should keep the form from submitting this page. It's passed `allTags[i]`, which is the object that we're currently processing. If any tag causes `validTag()` to return `false`, we set `allGood` to `false`. However, even if one is `false`, we still keep going through all the tags.

4. `return allGood;`

We return `allGood`, to signify whether or not we're good to go.

5. `function validTag(thisTag) {`

Create the `validTag()` function, and set it to receive the value `thisTag`.

6. `var allClasses = thisTag.className. split(" ");`

For each tag, we want to look at every `class` attribute (remember, `class` can be set to have multiple attributes "like so and so and so"). The `allClasses` array is created and set based on `thisTag.className.split(" ");` which splits a string up into an array, broken up by the string that's passed in. Here, the string is a space, which would, for example, cause the string "this that and the other" to turn into an array of five elements: this, that, and, the, other.

We want to look at each `class` attribute, because `class` is where we're storing what we want each form field to have to provide. In this task, the one we care about is `reqd`required. If any form field has a `class` of `reqd`, it's got to contain something.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
  outClass += validBasedOnClass(allClasses[j]) + " ";
}
```

This loop uses `j` as its loop variable because we're inside a loop that's using `i`. We loop around once for each `class` attribute in `allClasses`.

For each class, we perform: `outClass += validBasedOnClass(allClasses[j]) + " ";` This calls the `validBasedOnClass()` function (explained below), passing in the current class we're looking at. That function returns something, and that something, plus a space, is appended onto the `outClass` variable.

8. `thisTag.className = outClass;`

When we've finished with the `allClasses` loop, we take the contents of `outClass` and put it into `thisTag.className`, overwriting the current `class` attribute for this form field. That's because it can change during this process, as we'll see very shortly.

9. `if (outClass.indexOf("invalid") > -1) {`

Something that can be returned in the new `class` attribute is the word "invalid", so we check for it. If that's found anywhere in the new class, do the following, as there's a problem.

10. `thisTag.focus();`

If this form field can take focus (remember, we discussed focus in Chapter 6), we want to put the focus into the field, and that's what this line does. This is a way of forcing the user to know which field is the problem.

11.
```
if (thisTag.nodeName == "INPUT") {
   thisTag.select();
}
```

Basically, these lines say, "This tag I'm looking at: is it an `<input>` tag? If so, select its value so that the user has an easier time modifying it."

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

We're still inside the "invalid was returned" block, so we return false back to where we were called.

13. `return true;`

If all is good and valid, we return true.

14. `function validBasedOnClass (thisClass) {`

Begin the new `validBasedOnClass()` function, and set it to receive the value `thisClass`.

15. `var classBack = "";`

Create the `classBack` variable, and fill it with nothing for now. This is going to contain the class to be returned, that is, the value we want to send back.

16. `switch(thisClass) {`

The `switch` statement looks at the single `class` attribute that was passed in (in `thisClass`) and does something based on it.

17.
```
case "":
case "invalid":
  break;
```

If `thisClass` is empty or `invalid`, then break out of the conditional; otherwise, continue.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
  if (allGood && thisTag.value == "") classBack = "invalid ";
  classBack += thisClass;
  break;
```

If the attribute being processed is `reqd` *and* `allGood` is true *and* the current value of the current tag is `""` (i.e., nothing), then we set `classBack` to be `invalid`, because there's a problem, and we want to notify the user. After that, whether there was a problem or not, we append the current class to `classBack` so that it doesn't get lost.

19.
```
default:
  classBack += thisClass;
```

The `default` block is executed whenever something happens that isn't caught by one of the above cases. When that happens, it's a class we don't care about, so we just stick it onto `classBack` and don't fret.

20.
```
return classBack;
```

Finally, we return `classBack`.

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Checking Fields against Each Other

It's common to want to check one field against another, especially when you're asking the user to type in a password. You want to make them type it in twice for accuracy, and you want to make sure that they typed the same thing both times.

This example reuses Scripts 7.5 (HTML) and 7.6 (CSS); and only a few lines of JavaScript need to be added to Script 7.7 (**Script 7.8**) to give the script the extra cross-checking functionality. The result is shown in **Figure 7.6**; once again, when the check fails, the offending field gets a red border.

Script 7.8. Use this script to compare the value of one field to another. Do they match?

```
window.onload = initForms;

function initForms() {
     for (var i=0; i< document.forms.length; i++) {
        document.forms[i].onsubmit = function() {return validForm();}
     }
}

function validForm() {
     var allGood = true;
     var allTags = document.getElementsByTagName("*");

     for (var i=0; i<allTags.length; i++) {
        if (!validTag(allTags[i])) {
           allGood = false;
        }
     }
     return allGood;

     function validTag(thisTag) {
        var outClass = "";
        var allClasses = thisTag.className.split(" ");

        for (var j=0; j<allClasses.length; j++) {

        outClass += validBasedOnClass(allClasses[j]) + " ";
     }

     thisTag.className = outClass;

     if (outClass.indexOf("invalid") > -1) {
        thisTag.focus();
        if (thisTag.nodeName == "INPUT") {
           thisTag.select();
        }
        return false;
     }
```

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
      function validBasedOnClass(thisClass) {
         var classBack = "";

         switch(thisClass) {
            case "":
            case "invalid":
               break;
            case "reqd":
               if (allGood && thisTag.value == "") classBack = "invalid ";
               classBack += thisClass;
               break;
            default:
               if (allGood && !crossCheck(thisTag,thisClass)) classBack = "invalid ";
               classBack += thisClass;
         }
         return classBack;
      }

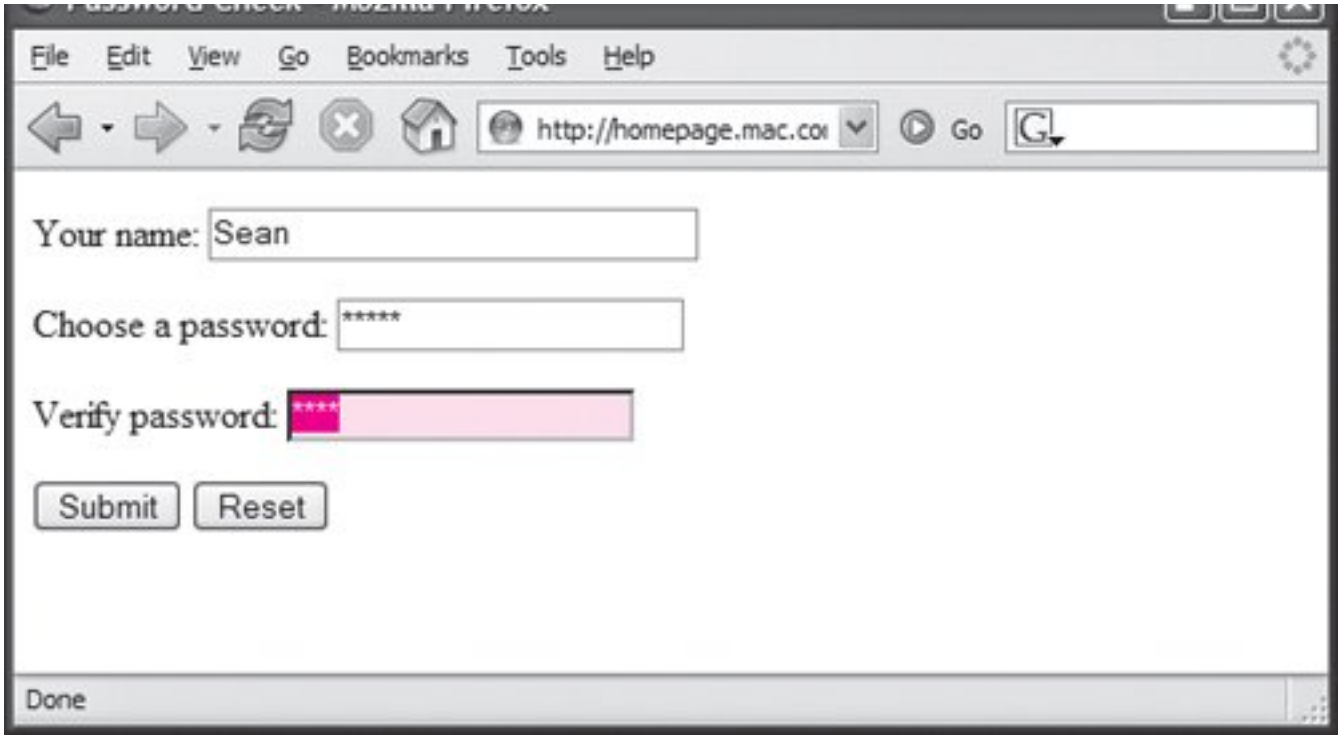
      function crossCheck(inTag,otherFieldID) {
         if (!document.getElementById(otherFieldID)) return false;
         return (inTag.value == document.getElementById(otherFieldID).value);
      }
   }
}
```

Figure 7.6. The two password fields cross-check to make sure their contents are identical. In this case, not so much.

[View full size image]

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir



To check one field against another:

1. ```
   if (allGood && !crossCheck(thisTag, thisClass)) classBack = "invalid ";
   ```

   We're now checking to make sure that the two password fields are the same. Because (see Script 7.5) the second password field has a class containing `passwd1`, this JavaScript knows that it has to crosscheck the second field against the first. Here in the `default` block of the conditional is where that's handled. If `allGood` is true *and* the `crossCheck()` function (see below) spotted a problem (and returned false), then we want to set `classBack` to `invalid`.

2. ```
   function crossCheck(inTag, otherFieldID) {
     if (!document.getElementById (otherFieldID)) return false;
     return (inTag.value == document.getElementById(otherFieldID). value);
   }
   ```

   Here's the `crossCheck()` function. It takes in the current tag and the `id` of the other field to check against. In this case, the current tag is the `passwd2 <input>` and the `id` of the other field is `passwd1`. If the other field doesn't exist, no check can be done; that's a problem, so the function returns false. Otherwise, the fields both exist, so we compare their values: if they're equivalent, true is returned; if they aren't, false is returned.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

-

- This script does not check against a master password database to see if the password the user entered is valid; that requires a CGI on the server. It just makes sure that when a password is entered twice, it is the same value both times.

PREV NEXT

downloaded from: lib.ommolketab.ir

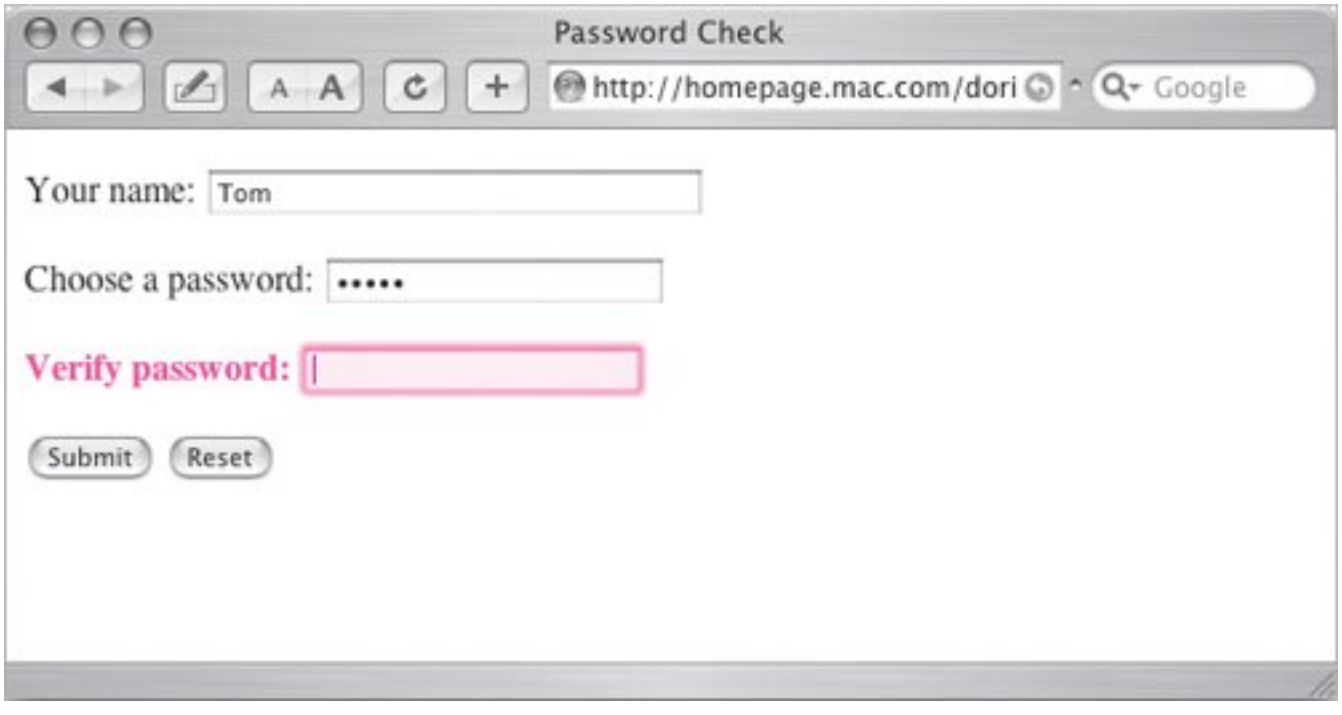
downloaded from: lib.ommolketab.ir

Identifying Problem Fields

Changing the border of the input field to red is nice and all, but it would be better if we could make it a little clearer which field was the problem. In this example, you'll learn how to set the label around the field to be red and bold, making it clear where the problem lies (**Figure 7.7**). Once again, the HTML and CSS files have not changed (they're still Scripts 7.5 and 7.6). In **Script 7.9**, we've added a few lines of JavaScript to the previous Script 7.8 to help point out entry errors.

Figure 7.7. When there's a problem, you can make the field's label red and bold, as well as the field itself.

[View full size image]



Script 7.9. This script highlights the incorrect field's label when it finds an error.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
function initForms() {
     for (var i=0; i< document.forms.length; i++) {
        document.forms[i].onsubmit = function() {return validForm();}
     }
}

function validForm() {
     var allGood = true;
     var allTags = document.getElementsByTagName("*");

     for (var i=0; i<allTags.length; i++) {
        if (!validTag(allTags[i])) {
           allGood = false;
        }
     }
     return allGood;

     function validTag(thisTag) {
        var outClass = "";
        var allClasses = thisTag.className.split(" ");

        for (var j=0; j<allClasses.length; j++) {
           outClass += validBasedOnClass(allClasses[j]) + " ";
        }
      thisTag.className = outClass;

      if (outClass.indexOf("invalid") > -1) {
         invalidLabel(thisTag.parentNode);
         thisTag.focus();
         if (thisTag.nodeName == "INPUT") {
            thisTag.select();
         }
         return false;
      }
      return true;

      function validBasedOnClass(thisClass) {
         var classBack = "";

         switch(thisClass) {
            case "":
            case "invalid":
               break;
            case "reqd":
               if (allGood && thisTag.value == "") classBack = "invalid ";
               classBack += thisClass;
               break;
            default:
               if (allGood && !crossCheck (thisTag,thisClass)) classBack = "invalid ";
               classBack += thisClass;
         }
         return classBack;
      }
```

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
      if (!document.getElementById (otherFieldID)) return false;
      return (inTag.value == document.getElementById(otherFieldID).value);
   }

   function invalidLabel(parentTag) {
      if (parentTag.nodeName == "LABEL") {
         parentTag.className += " invalid";
      }
   }
}
}
```

To identify a problem form field:

1. `invalidLabel(thisTag.parentNode);`

   This line of code has been added to the invalid check inside `validTag()`. When the current field fails validation, we want to check to see if we can also invalidate the label surrounding the problem child. To do this, call the new `invalidLabel()` function (explained below) and pass it the *parent* of our current tag. That is, if there's a problem with the `passwd1 input` field, we want both that tag *and* the `label` tag around it to be assigned a `class` of `invalid`. So, once we know that the `passwd1 input` field has a problem, we pass its parent (the `label` tag) over to `invalidLabel()` to see if it's an appropriate element to mark invalid.

2. ```
   function invalidLabel(parentTag) {
     if (parentTag.nodeName == "LABEL") {
       parentTag.className += " invalid";
     }
   }
   ```

   This function takes in a tag and checks to see if that tag is a label. If it is, it adds the attribute `invalid` to its class.

   If we now try to submit the form and there's an error, we'll notice that the field labels for the problem fields turn bold and red when there's a problem. Fix the error, submit the form, and they'll turn black again.

PREV NEXT

downloaded from: lib.ommolketab.ir
   ```

downloaded from: lib.ommolketab.ir

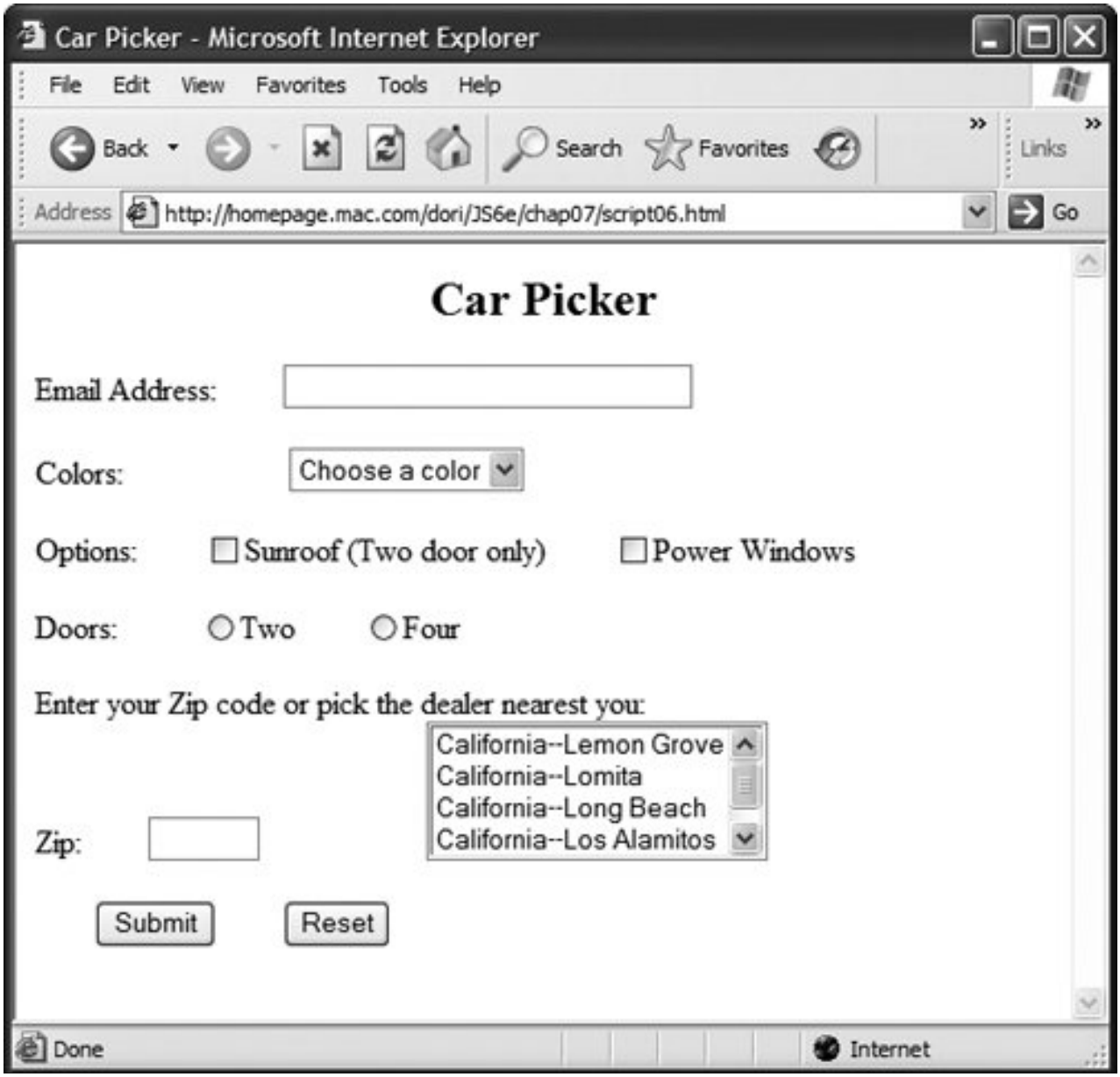
Putting Form Validation into Action

One interesting thing about the script that we built up in the last few examples is that it is largely independent of the HTML page that we used with it. In other words, you can substitute an entirely different page, with a completely different form, and you need to only make minor changes to the script to have it do all the validation tasks you want.

For example, take a look at **Figure 7.8**, which is a simplistic version of a form that could be used to customize a car that you want to purchase. The form includes a variety of options and interface elements, including radio buttons, menus, check boxes, and text fields that need validation for correct data entry. You'll find the HTML for this form in **Script 7.10**; we'll be using this HTML for the rest of the examples in this chapter.

Figure 7.8. The Car Picker form uses text fields, a pop-up menu, check boxes, and radio buttonsall common form elements.

[View full size image]



downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Script 7.10. Here's the entire HTML page for the Car Picker example.

[View full width]

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN">
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
     <title>Car Picker</title>
     <script language="Javascript" type="text/javascript" src="script06.js">
     </script>
     <link rel="stylesheet" href="script06.css" />
</head>
<body>
<h2 align="center">Car Picker</h2>
<form action="someAction.cgi">
     <p><label for="emailAddr">Email Address:
         <input id="emailAddr" type="text" size="30" class="reqd email" />
     </label></p>
     <p><label for="color">Colors:
         <select id="color" class="reqd">
             <option value="" selected="selected">Choose a color</option>
             <option value="Red">Red</option>
             <option value="Green">Green</option>
             <option value="Blue">Blue</option>
         </select>
     </label></p>
     <p>Options:
         <label for="sunroof"><input type="checkbox" id="sunroof" value="Yes" />Sunroof (
Two door only) </label>
         <label for="pWindows"><input type="checkbox" id="pWindows" value="Yes" />Power
Windows</label>
     </p>
     <p><label for="DoorCt">Doors:  
         <input type="radio" id="twoDoor" name="DoorCt" value="twoDoor" class="radio" />Two
         <input type="radio" id="fourDoor" name="DoorCt" value="fourDoor" class="radio" />Four
     </label></p>
     <p><label for="zip">Enter your Zip code or pick the dealer nearest you:<br />
         Zip: <input id="zip" type="text" size="5" maxlength="5" class="isZip dealerList" />
         <select id="dealerList" size="4" class="zip">
             <option value="California--Lemon Grove">California--Lemon Grove</option>
             <option value="California--Lomita">California--Lomita</option>
             <option value="California--Long Beach">California--Long Beach</option>
             <option value="California--Los Alamitos">California--Los Alamitos</option>
             <option value="California--Los Angeles">California--Los Angeles</option>
         </select>
     </label></p>
     <p><input type="submit" value="Submit" /> <input type="reset" /></p>
</form>
</body>
</html>
```

The JavaScript file, **Script 7.11**, builds on the script that we've used earlier in this chapter. We've added a few

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

you'll see what needed to be added to prepare the script for more validation, and subsequent examples will go deeper into specific types of form elements.

Script 7.11. This script adds several blocks to the `switch/case` conditional, setting it up for later examples.

```
window.onload = initForms;

function initForms() {
     for (var i=0; i< document.forms.length; i++) {
        document.forms[i].onsubmit = function() {return validForm();}
     }
}

function validForm() {
     var allGood = true;
     var allTags = document.getElementsByTagName("*");

     for (var i=0; i<allTags.length; i++) {
        if (!validTag(allTags[i])) {
           allGood = false;
        }
     }
     return allGood;

     function validTag(thisTag) {
        var outClass = "";
        var allClasses = thisTag.className.split(" ");

        for (var j=0; j<allClasses.length; j++) {
           outClass += validBasedOnClass(allClasses[j]) + " ";
        }

        thisTag.className = outClass;

        if (outClass.indexOf("invalid") > -1) {
           invalidLabel(thisTag.parentNode);
           thisTag.focus();
           if (thisTag.nodeName == "INPUT") {
              thisTag.select();
           }
           return false;
        }
        return true;

        function validBasedOnClass(thisClass) {
           var classBack = "";

           switch(thisClass) {
              case "":
              case "invalid":
                 break;
              case "reqd":
                 if (allGood && thisTag.value == "") classBack = "invalid ";
                 classBack += thisClass;
                 break;
```

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
            case "isNum":
            case "isZip":
            case "email":
               classBack += thisClass;
               break;
            default:
               if (allGood && !crossCheck (thisTag,thisClass)) classBack = "invalid ";
               classBack += thisClass;
         }
         return classBack;
      }

      function crossCheck(inTag,otherFieldID) {
         if (!document.getElementById (otherFieldID)) return false;
         return (inTag.value != "" || document.getElementById(otherFieldID). value != "");
      }

      function invalidLabel(parentTag) {
         if (parentTag.nodeName == "LABEL") {
            parentTag.className += " invalid";
         }
      }
   }
}
```

To validate a form with many elements:

1.
```
case "radio":
case "isNum":
case "isZip":
case "email":
  classBack += thisClass;
  break;
```

By adding additional blocks to the `switch/case` conditional inside the `validBasedOnClass()` function, we allow the script to check more fields and more situations. We've added `radio`, `isNum`, `isZip`, and `email` to the list. Although we're not validating them in this task, we want to not cause a problem when we do, so we add each to the list of attributes handled by the `switch/case`. Because there are no instructions in the first three blocks, all of them fall through to `email`, which just adds the currently being-checked attribute onto `classBack`.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

This line in `crossCheck()` has changed a bit. Instead of comparing the two fields to make sure they're the same, we're comparing two fields to make sure that at least one of them is set (this is in preparation for dealing with the Zip code and list elements at the end of the form). If either field contains a value, we return true. If not, we return false.

PREV NEXT

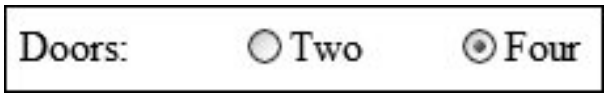
downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Working with Radio Buttons

Radio buttons are an either/or interface element that let the user pick one (and only one) choice within a group of options. Radio buttons should be used when one of those options is required. As shown in **Figure 7.9**, the form uses radio buttons to let the hypothetical car buyer choose between a two-door or four-door automobile. In this case, you can only pick one of these choices, and you must make a choice.

Figure 7.9. Radio buttons are the best way to let the user pick only one choice from a group of options.



As seen in **Script 7.12**, it doesn't take much scripting to check that one button is selected. We use a technique where we loop through each button and check its status and then turn the radio buttons' label and buttons red and bold if no button is picked.

Script 7.12. Only one radio button may be checked, and this JavaScript is there to enforce the interface law.

```
window.onload = initForms;

function initForms() {
     for (var i=0; i< document.forms.length; i++) {
        document.forms[i].onsubmit = function() {return validForm();}
     }
}

function validForm() {
     var allGood = true;
     var allTags = document.getElementsByTagName ("*");

     for (var i=0; i<allTags.length; i++) {
        if (!validTag(allTags[i])) {
           allGood = false;
        }
     }
     return allGood;

     function validTag(thisTag) {
        var outClass = "";
        var allClasses = thisTag.className.split (" ");

        for (var j=0; j<allClasses.length; j++) {
           outClass += validBasedOnClass(allClasses[j]) + " ";
        }
        thisTag.className = outClass;
```

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
         invalidLabel(thisTag.parentNode);
         thisTag.focus();
         if (thisTag.nodeName == "INPUT") {
            thisTag.select();
         }
         return false;
      }
      return true;

      function validBasedOnClass(thisClass) {
         var classBack = "";

         switch(thisClass) {
            case "":
            case "invalid":
               break;
            case "reqd":
               if (allGood && thisTag.value == "") classBack = "invalid ";
               classBack += thisClass;
               break;
            case "radio":
               if (allGood && !radioPicked (thisTag.name)) classBack = "invalid ";
               classBack += thisClass;
               break;
            case "isNum":
            case "isZip":
            case "email":
               classBack += thisClass;
               break;
            default:
               if (allGood && !crossCheck (thisTag,thisClass)) classBack = "invalid ";
               classBack += thisClass;
         }

      return classBack;
   }

   function crossCheck(inTag,otherFieldID) {
      if (!document.getElementById (otherFieldID)) return false;
      return (inTag.value != "" ||  document.getElementById (otherFieldID).value != "");
   }

   function radioPicked(radioName) {
      var radioSet = "";

      for (var k=0; k<document.forms.length; k++) {
         if (!radioSet) {
            radioSet = document.forms [k][radioName];
         }
      }
      if (!radioSet) return false;
      for (k=0; k<radioSet.length; k++) {
         if (radioSet[k].checked) {
            return true;
         }
      }
```

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
      }

      function invalidLabel(parentTag) {
         if (parentTag.nodeName == "LABEL") {
            parentTag.className += " invalid";
         }
      }
   }
}
```

To make sure that the user picks a radio button:

1. `if (allGood && !radioPicked(thisTag. name)) classBack = "invalid ";`

   This goes into the `radio` block of the `switch/case` conditional. We want to check to make sure at least one of the radio buttons was picked, and the new `radioPicked()` function handles that. If it returns false, then we set `classBack` to `invalid`.

2. `function radioPicked(radioName) {`
   `var radioSet = "";`

   Start the new `radioPicked()` function, and initialize the `radioSet` variable.

   This function takes in the name of the *set* of radio buttonsin this case, `DoorCt`, as found in Script 7.10. Note that that's not the `id` of the current tag or a `class` or anything that we usually see, but its `name`. The `name` attribute of `<input>` tags is how HTML knows which radio buttons are grouped together; that is, all `<input>` tags with the same name attribute are part of one radio button set.

3. `for (var k=0; k<document.forms. length; k++) {`
   `if (!radioSet) {`
   `radioSet = document.forms [k][radioName];`
   `}`
   `}`

   We next loop through all the forms on the current page. We know the name of the radio button set, but we don't know what form it's a part of, and any given page can have several forms. Because this function is inside another function looping on `j`, we use `k` for our loop here.

   We then try to set `radioSet` to the name of this set of radio buttons inside the form we're looking at. If it's found, `radioSet` will then have a value.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

When the loop is done, we look at `radioSet`if it hasn't been set, we return false, because we couldn't find it, and so, couldn't check it.

5.
```
for (k=0; k<radioSet.length; k++) {
  if (radioSet[k].checked) {
     return true;
  }
}
```

Okay, we've got the radio button set we want to inspect. Now, we start another loop to look through each button. When we find one that's checked, we return true, because we're done.

6.
```
return false;
```

If we make it to the end of the loop, we've looked at the entire set and nothing was clicked. In that case, return false and change the radio buttons' label and make the buttons red and bold.

PREV NEXT

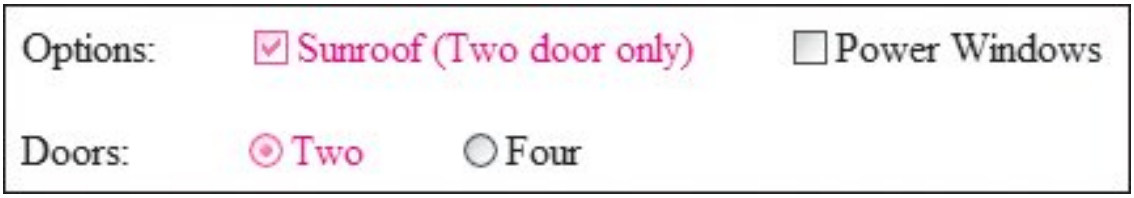
downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Setting One Field with Another

With your forms, you'll often find that if the user makes one choice, that choice dictates the value of other fields on the form. For example, let's say that the sunroof option is only available on a two-door model. You could deal with this in two ways. First, you could check the entry and put up an alert dialog if the user makes the wrong choice. But it's a slicker design to simply make the entry for the user. So if they pick the sunroof, the script automatically clicks the two-door button, as in **Figure 7.10**. **Script 7.13** shows you how.

Figure 7.10. When the user checks the sunroof option, the script automatically sets the two-door radio button.



Script 7.13. A sophisticated way to handle user choices lets you control and set field entries based on other choices made by the user.

```
window.onload = initForms;

function initForms() {
     for (var i=0; i< document.forms.length; i++) {
        document.forms[i].onsubmit = function() {return validForm();}
     }
     document.getElementById("sunroof"). onclick = doorSet;
}

function validForm() {
     var allGood = true;
     var allTags = document.getElementsByTagName ("*");

     for (var i=0; i<allTags.length; i++) {
        if (!validTag(allTags[i])) {
           allGood = false;
        }
     }
     return allGood;

     function validTag(thisTag) {
        var outClass = "";
        var allClasses = thisTag.className.split (" ");

        for (var j=0; j<allClasses.length; j++) {
           outClass += validBasedOnClass(allClasses[j]) + " ";
```

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
        thisTag.className = outClass;
        if (outClass.indexOf("invalid") > -1) {
           invalidLabel(thisTag.parentNode);
           thisTag.focus();
           if (thisTag.nodeName == "INPUT") {
              thisTag.select();
           }
           return false;
        }
        return true;

        function validBasedOnClass(thisClass) {
           var classBack = "";

           switch(thisClass) {
              case "":
              case "invalid":
                 break;
              case "reqd":
                 if (allGood && thisTag.value == "") classBack = "invalid ";
                 classBack += thisClass;
                 break;
              case "radio":
                 if (allGood && !radioPicked(thisTag.name)) classBack = "invalid ";
                 classBack += thisClass;
                 break;
              case "isNum":
              case "isZip":
              case "email":
                 classBack += thisClass;
                 break;
              default:
                 if (allGood && !crossCheck(thisTag,thisClass)) classBack = "invalid ";
                 classBack += thisClass;
           }
           return classBack;
        }

        function crossCheck(inTag,otherFieldID) {
           if (!document.getElementById(otherFieldID)) return false;
           return (inTag.value != "" || document.getElementById(otherFieldID).value != "");
        }
        function radioPicked(radioName) {
           var radioSet = "";

           for (var k=0; k<document.forms.length; k++) {
              if (!radioSet) {
                 radioSet = document.forms[k][radioName];
              }
           }
           if (!radioSet) return false;
           for (k=0; k<radioSet.length; k++) {
              if (radioSet[k].checked) {
                 return true;
              }
```

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
            return false;
         }

         function invalidLabel(parentTag) {
            if (parentTag.nodeName == "LABEL") {
               parentTag.className += " invalid";
            }
         }
      }
}

function doorSet() {
     if (this.checked) {
        document.getElementById("twoDoor").checked = true;
     }
}
```

To set a field value automatically:

1. `document.getElementById("sunroof"). onclick = doorSet;`

   This line of code has been added to `initForms()`. When the user clicks the sunroof check box, the `doorSet()` function will be called.

2.
```
function doorSet() {
  if (this.checked) {
     document.getElementById ("twoDoor").checked = true;
  }
}
```

   This new function checks to see if the sunroof field was checked; if so, it sets the `twoDoor` radio button to true. If we've clicked the sunroof check box to turn it off, nothing happens.

✓ Tip

- You may have noticed that there's no check to see if the user clicked the sunroof and then reset the `fourDoor` radio button. We'll leave that as an exercise for you, the reader.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

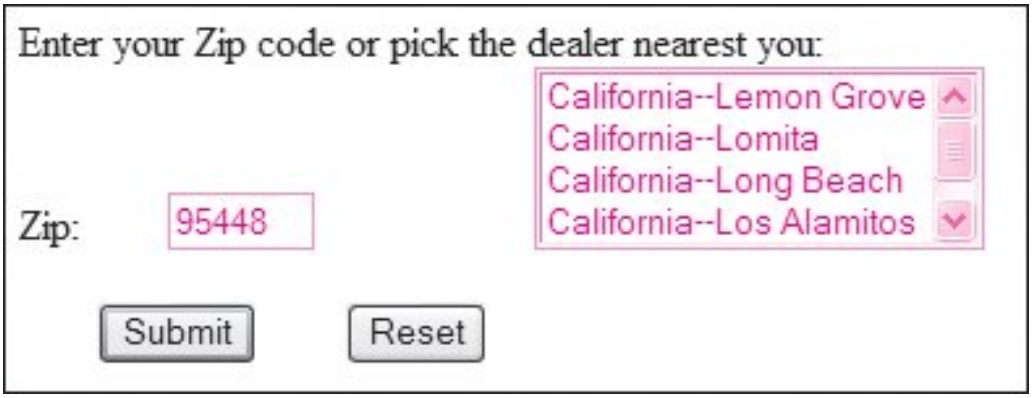
downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Validating Zip Codes

Those wacky users can type almost anything into a form, so you'll want to make sure that if they entered anything into the Zip code field (**Figure 7.11**) that it contains only numbers. **Script 7.14** shows you how.

Figure 7.11. You can make sure that the user either enters a Zip code or makes a selection from the scrolling list.



Script 7.14. Banish incorrect letters from your Zip codes with just a few lines of JavaScript.

```
window.onload = initForms;

function initForms() {
     for (var i=0; i< document.forms.length; i++) {
        document.forms[i].onsubmit = function() {return validForm();}
     }
     document.getElementById("sunroof").onclick = doorSet;
}

function validForm() {
     var allGood = true;
     var allTags = document.getElementsByTagName ("*");

     for (var i=0; i<allTags.length; i++) {
        if (!validTag(allTags[i])) {
           allGood = false;
        }
     }
     return allGood;

     function validTag(thisTag) {
        var outClass = "";
        var allClasses = thisTag.className.split (" ");

        for (var j=0; j<allClasses.length; j++) {
           outClass += validBasedOnClass(allClasses[j]) + " ";
```

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
thisTag.className = outClass;

if (outClass.indexOf("invalid") > -1) {
   invalidLabel(thisTag.parentNode);
   thisTag.focus();
   if (thisTag.nodeName == "INPUT") {
      thisTag.select();
   }
   return false;
}
return true;

function validBasedOnClass(thisClass) {
   var classBack = "";

   switch(thisClass) {
      case "":
      case "invalid":
         break;
      case "reqd":
         if (allGood && thisTag.value == "") classBack = "invalid ";
         classBack += thisClass;
         break;
      case "radio":
         if (allGood && !radioPicked (thisTag.name)) classBack = "invalid ";
         classBack += thisClass;
         break;
      case "isNum":
         if (allGood && !isNum (thisTag.value)) classBack = "invalid ";
         classBack += thisClass;
         break;
      case "isZip":
         if (allGood && !isZip (thisTag.value)) classBack = "invalid ";
         classBack += thisClass;
         break;
      case "email":
         classBack += thisClass;
         break;
      default:
         if (allGood && !crossCheck(thisTag,thisClass)) classBack = "invalid ";
         classBack += thisClass;
   }
   return classBack;
}

function crossCheck(inTag,otherFieldID) {
   if (!document.getElementById(otherFieldID)) return false;
   return (inTag.value != "" || document.getElementById(otherFieldID).value != "");
}

function radioPicked(radioName) {
   var radioSet = "";

   for (var k=0; k<document.forms.length; k++) {
      if (!radioSet) {
         radioSet = document.forms[k][radioName];
```

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
            }
            if (!radioSet) return false;
            for (k=0; k<radioSet.length; k++) {
               if (radioSet[k].checked) {
                  return true;
               }
            }
            return false;
         }

         function isNum(passedVal) {
            if (passedVal == "") {
               return false;
            }
            for (var k=0; k<passedVal.length; k++) {
               if (passedVal.charAt(k) < "0") {
                  return false;
               }
               if (passedVal.charAt(k) > "9") {
                  return false;
               }
            }
            return true;
         }

         function isZip(inZip) {
            if (inZip == "") {
               return true;
            }
            return (isNum(inZip));
         }

         function invalidLabel(parentTag) {
            if (parentTag.nodeName == "LABEL") {
               parentTag.className += " invalid";
            }
         }
      }
}

function doorSet() {
      if (this.checked) {
         document.getElementById("twoDoor").checked = true;
      }
}
```

To make sure Zip codes are valid:

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
classBack += thisClass;
```

This goes into the `isNum` block of the `switch/case` conditional. If the entry is non-numeric, `isNum()` returns false.

2.
```
if (allGood && !isZip(thisTag. value)) classBack = "invalid ";
```

This line has been added to the `isZip switch/case` block. If the field is not blank and it's not a Zip code, `isZip()` returns false.

3.
```
function isNum(passedVal) {
```

First, define the function `isNum`. The variable `passedVal` was sent to the function from the form.

4.
```
if (passedVal == "") {
  return false;
}
```

If `passedVal` is empty, then the field we're looking at isn't a number. When that happens, return false, signaling an error.

5.
```
for (var k=0; k<passedVal.length; k++) {
```

Now scan through the length of `passedVal`, incrementing the `k` counter each time it goes through the loop. We're using `k` because we're already inside another loop.

6.
```
if (passedVal.charAt(k) < "0") {
  return false;
}
if (passedVal.charAt(k) > "9") {
  return false;
}
```

The `charAt()` operator checks the character at the position `k`. If the character is less than "0" or greater than "9," it isn't a digit, so bail out and declare the input to be non-numeric, or false.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

If we make it here, we've got a number, so we return true.

8.
```
function isZip(inZip) {
  if (inZip == "") {
    return true;
  }
  return (isNum(inZip));
}
```

In the context of this form, it's valid for the Zip code field to be empty. Because of that, we first check the field to see if the user entered anything, and if they didn't, we return trueit's a valid entry. If they did enter anything, though, it needs to be numeric, so that's the next check.

✓ Tips

- If at some later point we wanted to add a new field to the HTML form that had to be numeric, no new JavaScript code would need to be written. Instead, we'd just use the now-existing `isNum` check.
- Remember, it's the World Wide Web, not the American Web. If your site is likely to draw attention from outside the United States, don't require that the user enter a Zip code. Addresses outside the United States may or may not have postal codes, and those postal codes may not be numeric.

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Validating Email Addresses

Internet addresses can be tricky things for users, especially new users, to type. You can help them out by scanning the email address they enter and checking it for improper form. For example, you can check that there's only one @ sign, and that there are no invalid characters, as there are in **Figure 7.12**. The limit, of course, is that your script can't catch misspellings, so if the user meant to type in `joe@myprovider.com` and instead entered `joe@yprovider.com`, the mistake will go through. **Script 7.15** shows you how to snoop through an address for errors.

Figure 7.12. Here's an example of the kind of entry error that the email validation script will catch.

Script 7.15. By scanning through the text within an email field on your form, you can ensure that you get proper email addresses.

```
window.onload = initForms;

function initForms() {
     for (var i=0; i< document.forms.length; i++) {
         document.forms[i].onsubmit = function() {return validForm();}
     }
     document.getElementById("sunroof").onclick = doorSet;
}

function validForm() {
     var allGood = true;
     var allTags = document.getElementsByTagName ("*");

     for (var i=0; i<allTags.length; i++) {
        if (!validTag(allTags[i])) {
           allGood = false;
        }
     }
     return allGood;

     function validTag(thisTag) {
        var outClass = "";
        var allClasses = thisTag.className.split (" ");

        for (var j=0; j<allClasses.length; j++) {
           outClass += validBasedOnClass(allClasses[j]) + " ";
        }

        thisTag.className = outClass;
        if (outClass.indexOf("invalid") > -1) {
           invalidLabel(thisTag.parentNode);
```

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
      if (thisTag.nodeName == "INPUT") {
         thisTag.select();
      }
      return false;
   }
   return true;

   function validBasedOnClass(thisClass) {
      var classBack = "";

      switch(thisClass) {
         case "":
         case "invalid":
            break;
         case "reqd":
            if (allGood && thisTag.value == "") classBack = "invalid ";
            classBack += thisClass;
            break;
         case "radio":
            if (allGood && !radioPicked (thisTag.name)) classBack = "invalid ";
            classBack += thisClass;
            break;
         case "isNum":
            if (allGood && !isNum (thisTag.value)) classBack = "invalid ";
            classBack += thisClass;
            break;
         case "isZip":
            if (allGood && !isZip (thisTag.value)) classBack = "invalid ";
            classBack += thisClass;
            break;
         case "email":
            if (allGood && !validEmail (thisTag.value)) classBack = "invalid ";
            classBack += thisClass;
            break;
         default:
            if (allGood && !crossCheck (thisTag,thisClass)) classBack = "invalid ";
            classBack += thisClass;
      }
      return classBack;
   }

   function crossCheck(inTag,otherFieldID) {
      if (!document.getElementById (otherFieldID)) return false;
      return (inTag.value != "" ||  document.getElementById (otherFieldID).value != "");
   }

   function radioPicked(radioName) {
      var radioSet = "";

      for (var k=0; k<document.forms. length; k++) {
         if (!radioSet) {
            radioSet = document.forms [k][radioName];
         }
      }
      if (!radioSet) return false;
      for (k=0; k<radioSet.length; k++) {
         if (radioSet[k].checked) {
            return true;
```

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
      }
      return false;
   }

   function isNum(passedVal) {
      if (passedVal == "") {
         return false;
      }
      for (var k=0; k<passedVal.length; k++) {
         if (passedVal.charAt(k) < "0") {
            return false;
         }
         if (passedVal.charAt(k) > "9") {
            return false;
         }
      }
      return true;
   }

   function isZip(inZip) {
      if (inZip == "") {
         return true;
      }
      return (isNum(inZip));
   }

   function validEmail(email) {
      var invalidChars = " /:,;";

      if (email == "") {
         return false;
      }
      for (var k=0; k<invalidChars.length; k++) {
         var badChar = invalidChars. charAt(k);
         if (email.indexOf(badChar) > -1) {
            return false;
         }
      }
      var atPos = email.indexOf("@",1);
      if (atPos == -1) {
         return false;
      }
      if (email.indexOf("@",atPos+1) != -1) {
         return false;
      }
      var periodPos = email.indexOf(".",atPos);
      if (periodPos == -1) {
         return false;
      }
      if (periodPos+3 > email.length) {
         return false;
      }
      return true;
   }

   function invalidLabel(parentTag) {
      if (parentTag.nodeName == "LABEL") {
```

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
        }
     }
}

function doorSet() {
     if (this.checked) {
        document.getElementById("twoDoor").checked = true;
     }
}
```

To validate an email address:

1. `if (allGood && !validEmail(thisTag. value)) classBack = "invalid ";`

   This line has been added to the `email switch/case` block. If the `validEmail()` function returns false, set the `class` to be `invalid`.

2. `function validEmail(email) {`

   First define a function to which the contents of the email field on the form are passed.

3. `var invalidChars = " /:,;";`

   Create a variable, `invalidChars`, that contains the five most likely invalid characters in an email address: blank space, slash, colon, comma, and semicolon.

4. ```
   if (email == "") {
     return false;
   ```

   This test says, "If the contents of `email` is nothing (or empty), then the result is false."

downloaded from: lib.ommolketab.ir
   ```

downloaded from: lib.ommolketab.ir

In this `for` statement, start a loop that scans through the `invalidChars` string. Start by initializing the counter `k` to zero, then, each time through the loop that `k` is less than the length of the string, add 1 to `k` with the `++` increment operator.

6.
```
var badChar = invalidChars.charAt(k);
if (email.indexOf(badChar) > -1) {
  return false;
}
```

The `badChar` variable is set to the invalid character in position `k` in the `invalidChars` string, and we then check to see if that character is in `email`. If so, `indexOf()` returns the position where it was found; if not, it returns a -1. If we get a value other than -1, we've found a bad character, and so we then return a value of false.

7.
```
var atPos = email.indexOf("@",1);
if (atPos == -1) {
  return false;
}
```

The `atPos` variable holds the position of the @ sign. Using `indexOf`, the script checks for the first @ sign, starting at the second character in the address. If the result is that the position of the @ sign is 1, it means that there is no @ sign in the address, and you've got trouble in Address City.

8.
```
if (email.indexOf("@",atPos+1) != -1) {
  return false;
}
```

Now the script is making sure that there is only one @ sign and rejecting anything with more than one @, by checking characters beginning at 1 past where we found the first @.

9.
```
var periodPos = email.indexOf (".",atPos);
if (periodPos == -1) {
  return false;
}
```

Now the script checks that there is a period somewhere after the @ sign. If not, we get a false result.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
  return false;
}
return true;
```

Finally, the script requires that there be at least two characters after the period in the address. If we made it this far without a false result, then the value of the function `validEmail` is true, meaning we have a good email address.

✓ Tips

- There's a difference between validating an email address and verifying it. This script validates addresses by making sure that what the user entered is in the proper form for an email address. But it doesn't verify that the address really exists. The only way to do that would be to send an email message to the address and see if the message bounces. Besides the fact that you would probably annoy your users a great deal if you sent such a verifying message, it can take hours for a message to bounce, and the user isn't going to wait patiently at your form in the meantime.
- This script routine doesn't catch every possible incorrect email address, just the most likely errors. A full check for every possible bad email address would take several pages of code. If you think about it a bit, you can probably come up with possible mistakes that fall outside the checks in this script.
- This script doesn't handle some of the newer Top Level Domains, such as .museum and .info, because those suffixes have more than three characters. You would need to modify the script so that it can deal with these sorts of domains.

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Chapter 8. Forms and Regular Expressions

Regular expressions are an amazingly powerful way to validate and format text strings. Using regular expressions, you can write a line or two of JavaScript code that can accomplish tasks that otherwise would have taken several dozen lines.

A *regular expression* (often abbreviated as *RegExp*) is a pattern, written using special symbols, which describes one or more text strings. You use regular expressions to match patterns of text, so that your script can easily recognize and manipulate text. Like an arithmetic expression, you create a regular expression by using *operators*, in this case operators that work on text, rather than numbers. There are many regular expression operators, and we'll look at some of the most common in this chapter. By learning and using these operators, you'll be able to save yourself a huge amount of effort whenever you need to detect and manipulate text strings.

Regular expressions are also commonly considered to be one of the geekiest parts of programming. You've gotten to the point where you think that you have a good grasp of JavaScript, and then you'll look at a script that contains a regular expression, and it makes no sense at all. If you don't know the syntax, you don't have any way of even guessing what's going on. What does all that gibberish mean?

But the syntax isn't that hard, so long as you break the gibberish down into small, meaningful pieces (at which point it's no longer gibberish). In this chapter, we'll demystify regular expression syntax and discuss how to make your code tighter and more powerful using regular expressions.

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Validating an Email Address with Regular Expressions

Back in Chapter 7, one of the tasks was validating an email address. To do the job, the script needed to be relatively long. **Script 8.1**, at its heart, does exactly the same thing as Script 7.15; but by using regular expressions, it takes many fewer lines, and you get a more rigorous result. You'll find the simple HTML in **Script 8.2**, and the CSS is unchanged from Script 7.6.

Script 8.1. These few lines of JavaScript go a long way to validate email addresses.

```
window.onload = initForms;

function initForms() {
     for (var i=0; i< document.forms.length; i++) {
         document.forms[i].onsubmit = function() {return validForm();}
     }
}

function validForm() {
     var allGood = true;
     var allTags = document.getElementsByTagName ("*");

     for (var i=0; i<allTags.length; i++) {
        if (!validTag(allTags[i])) {
           allGood = false;
        }
     }
     return allGood;

     function validTag(thisTag) {
        var outClass = "";
        var allClasses = thisTag.className.split (" ");

        for (var j=0; j<allClasses.length; j++) {
           outClass += validBasedOnClass(allClasses[j]) + " ";
        }

        thisTag.className = outClass;

        if (outClass.indexOf("invalid") > -1) {
           invalidLabel(thisTag.parentNode);
           thisTag.focus();
           if (thisTag.nodeName == "INPUT") {
              thisTag.select();
           }
           return false;
        }
           return true;

           function validBasedOnClass(thisClass) {
```

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
            switch(thisClass) {
               case "":
               case "invalid":
                  break;
               case "email":
                  if (allGood && !validEmail (thisTag.value)) classBack = "invalid ";
               default:
                  classBack += thisClass;
            }
            return classBack;
         }

         function validEmail(email) {
            var re = /^\w+([\.-]?\w+)*@\w+  ([\.-]?\w+)*(\.\w{2,3})+$/;

            return re.test(email);
         }

         function invalidLabel(parentTag) {
            if (parentTag.nodeName == "LABEL") {
               parentTag.className += " invalid";
            }
         }
      }
}
```

Script 8.2. The HTML for the email validation example.

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN">
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
     <title>Email Validation</title>
     <link rel="stylesheet" href="script01.css" />
     <script language="Javascript" type="text/ javascript" src="script01.js">
     </script>
</head>
<body>
     <h2 align="center">Email Validation</h2>
     <form action="someAction.cgi">
         <p><label>Email Address:
         <input class="email" type="text" size="50" /></label></p>
         <p><input type="reset" /> <input type="submit" value="Submit" /></p>
     </form>
</body>
</html>
```

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

1. `var re = /^\w+([\.-]?\w+)*@\w+ ([\.-]?\w+)*(\.\w{2,3})+$/;`

Yow! What on earth is this? Don't panic; it's just a regular expression in the `validEmail()` function. Let's break it apart and take it piece by piece. Like any line of JavaScript, you read a regular expression from left to right.

First, `re` is just a variable. We've given it the name `re` so that when we use it later, we'll remember that it's a regular expression. The line sets the value of `re` to the regular expression on the right side of the equals sign.

A regular expression always begins and ends with a slash, `/` (of course, there is still a semicolon here, to denote the end of the JavaScript line, but the semicolon is not part of the regular expression). Everything in between the slashes is part of the regular expression.

The caret `^` means that we're going to use this expression to examine a string starting at the string's beginning. If the caret was left off, the email address might show as valid even though there was a bunch of garbage at the beginning of the string.

The expression `\w` means any *one* character, "a" through "z", "A" through "Z", "0" through "9", or underscore. An email address must start with one of these characters.

The plus sign `+` means *one or more of* whatever the previous item was that we're checking on. In this case, an email address must start with one or more of any combination of the characters "a" through "z", "A" through "Z", "0" through "9", or underscore.

The opening parenthesis `(` signifies a group. It means that we're going to want to refer to everything inside the parentheses in some way later, so we put them into a group now.

The brackets `[]` are used to show that we can have any *one* of the characters inside. In this example, the characters `\.-` are inside the brackets. We want to allow the user to enter either a period or a dash, but the period has a special meaning to regular expressions, so we need to preface it with a backslash `\` to show that we really want to refer to the period itself, not its special meaning. Using a backslash before a special character is called *escaping* that character. Because of the brackets, the entered string can have either a period or a dash here, but not both. Note that the dash doesn't stand for any special character, just itself.

The question mark `?` means that we can have *zero or one* of the previous item. So along with it being okay to have either a period or a dash in the first part of the email address (the part before the @), it's also okay to have neither.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Are You Freaking Out Yet?

If this is the first time that you've been exposed to regular expressions, chances are you're feeling a bit intimidated right about now. We've included this chapter here because it makes the most sense to use regular expressions to validate form entries. But the rest of the material in this book doesn't build on this chapter, so if you want to skip on to the next chapter until you've got a bit more scripting experience under your belt, we won't mind a bit.

Following the `?`, we once again have `\w+`, which says that the period or dash must be followed by some other characters.

The closing parenthesis `)` says that this is the end of the group. That's followed by an asterisk `*`, which means that we can have *zero or more* of the previous itemin this case, whatever was inside the parentheses. So while "dori" is a valid email prefix, so is "testing-testing-1-2-3".

The @ character doesn't stand for anything besides itself, located between the email address and the domain name.

The `\w+` once again says that a domain name must start with one or more of any character "a" through "z", "A" through "Z", "0" through "9", or underscore. That's again followed by `([\.-]?\w+)*` which says that periods and dashes are allowed within the suffix of an email address.

We then have another group within a set of parentheses: `\.\w{2,3}` which says that we're expecting to find a period followed by characters. In this case, the numbers inside the braces mean *either 2 or 3* of the previous item (in this case the `\w`, meaning a letter, number, or underscore). Following the right parenthesis around this group is a `+`, which again means that the previous item (the group, in this case) must exist *one or more* times. This will match ".com" or ".edu", for instance, as well as "ox.ac.uk".

And finally, the regular expression ends with a dollar sign `$`, which signifies that the matched string must end here. This keeps the script from validating an email address that starts off properly but contains garbage characters at the end. The slash closes the regular expression. The semicolon ends the JavaScript statement, as usual.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

This single line takes the regular expression defined in the previous step and uses the `test()` method to check the validity of `email`. If the entered string doesn't fit the pattern stored in `re`, `test()` returns false, and the user sees the incorrect field and its label turn red and bold, as shown in **Figure 8.1**. Otherwise, a valid entry returns true (**Figure 8.2**), and the form submits the email address to a CGI, `someAction.cgi` for additional processing.

Figure 8.1. Here's the result if the user enters an invalid email address; the label and field turn red and bold.

Figure 8.2. But this address is just fine.

✓ Tips

- This code doesn't match every possible legal variation of email addresses, just the ones that you're likely to want to allow a person to enter.
- Note that in Script 8.1, after we assigned the value of `re`, we used `re` as an object in step 2. Like any other JavaScript variable, the result of a regular expression can be an object.
- Compare the `validEmail()` functions in Scripts 7.15 and 8.1. The former has 27 lines of code; the latter, only four. They do the same thing, so you can see that the power of

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

- In the script above, `someAction.cgi` is just an example name for a CGIit's literally "some action"any action that you want it to be. If you want to learn to write CGIs, we recommend Elizabeth Castro's book *Perl and CGI for the World Wide Web, Second Edition: Visual QuickStart Guide*.
- You'll see in **Table 8.1** that the special characters (sometimes called *meta characters*) in regular expressions are case- sensitive. Keep this in mind when debugging scripts that use regular expressions.

Table 8.1. Regular Expression Special Characters

Character	Matches
`\`	Toggles between literal and special characters; for example, "`\w`" means the special value of "\w" (see below) instead of the literal "w", but "`\$`" means to ignore the special value of "$" (see below) and use the "$" character instead
`^`	Beginning of a string
`$`	End of a string
`*`	Zero or more times
`+`	One or more times
`?`	Zero or one time
`.`	Any character except newline
`\b`	Word boundary
`\B`	Non-word boundary
`\d`	Any digit 0 through 9 (same as `[0-9]`)
`\D`	Any non-digit
`\f`	Form feed
`\n`	New line
`\r`	Carriage return
`\s`	Any single white space character (same as `[ \f\n\r\t\v]`)
`\S`	Any single non-white space character
`\t`	Tab
`\v`	Vertical tab

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

\W	Any character other than a letter, number, or underscore
\xnn	The ASCII character defined by the hexadecimal number nn
\onn	The ASCII character defined by the octal number nn
\cX	The control character X
[abcde]	A character set that matches any one of the enclosed characters
[^abcde]	A complemented or negated character set; one that does not match any of the enclosed characters
[a-e]	A character set that matches any one in the range of enclosed characters
[\b]	The literal backspace character (different from \b)
{n}	Exactly *n* occurrences of the previous character
{n,}	At least *n* occurrences of the previous character
{n,m}	Between *n* and *m* occurrences of the previous character
()	A grouping, which is also stored for later use
x|y	Either x or y

- There are characters in regular expressions that modify other operators. We've listed them in **Table 8.2**.

Table 8.2. Regular Expression Modifiers

Modifier	Meaning
g	Search for all possible matches (globally), not just the first
i	Search without case-sensitivity

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Validating a File Name

There are many things that can be done with regular expressions, but one of the most useful is validating entry fields in forms on your Web pages. **Script 8.3** expects the user to enter a valid URL of an image, and the regular expression helps to make sure that users do as they should (specifically, that there has to be a .gif or .jpg suffix to denote an image file). **Figure 8.3** shows the appearance of the page when an invalid entry was accidentally entered, and **Figure 8.4** shows the result when the image name was typed correctly.

Script 8.3. This script asks for an image location and, if it passes the validation, displays the image on the page.

```
window.onload = initForms;

function initForms() {
     for (var i=0; i< document.forms.length; i++) {
        document.forms[i].onsubmit = function() {return validForm();}
     }
}

function validForm() {
     var allGood = true;
     var allTags = document.getElementsByTagName ("*");

     for (var i=0; i<allTags.length; i++) {
        if (!validTag(allTags[i])) {
           allGood = false;
        }
     }
     return false;

     function validTag(thisTag) {
        var outClass = "";
        var allClasses = thisTag.className.split (" ");

        for (var j=0; j<allClasses.length; j++) {
           outClass += validBasedOnClass(allClasses[j]) + " ";
        }

        thisTag.className = outClass;

        if (outClass.indexOf("invalid") > -1) {
           invalidLabel(thisTag.parentNode);
           thisTag.focus();
           if (thisTag.nodeName == "INPUT") {
              thisTag.select();
           }
           return false;
           }
           return true;
```

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
            var classBack = "";
            switch(thisClass) {
               case "":
               case "invalid":
                  break;
               case "imgURL":
                  if (allGood && !imgURL (thisTag.value)) classBack = "invalid ";
               default:
                  classBack += thisClass;
            }
            return classBack;
         }

         function imgURL(newURL) {
            var re = /^(file|http):\/\/\S+  \/\S+\.(gif|jpg)$/i;

            if (re.test(newURL)) {
               document.getElementById ("chgImg").src = newURL;
               return true;
            }
            return false;
         }

         function invalidLabel(parentTag) {
            if (parentTag.nodeName == "LABEL") {
               parentTag.className += " invalid";
            }
         }
      }
}
```

Figure 8.3. If the user enters something that isn't a valid image file name, the page shows an error, thanks to regular expressions.

[View full size image]

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

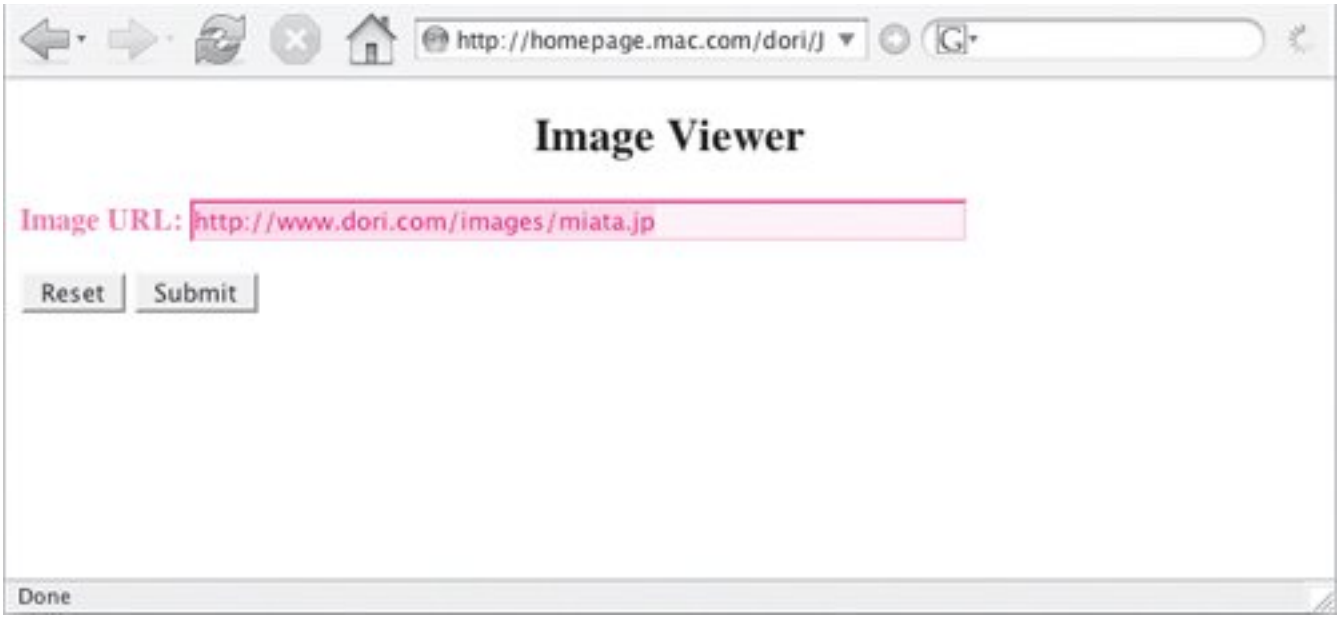
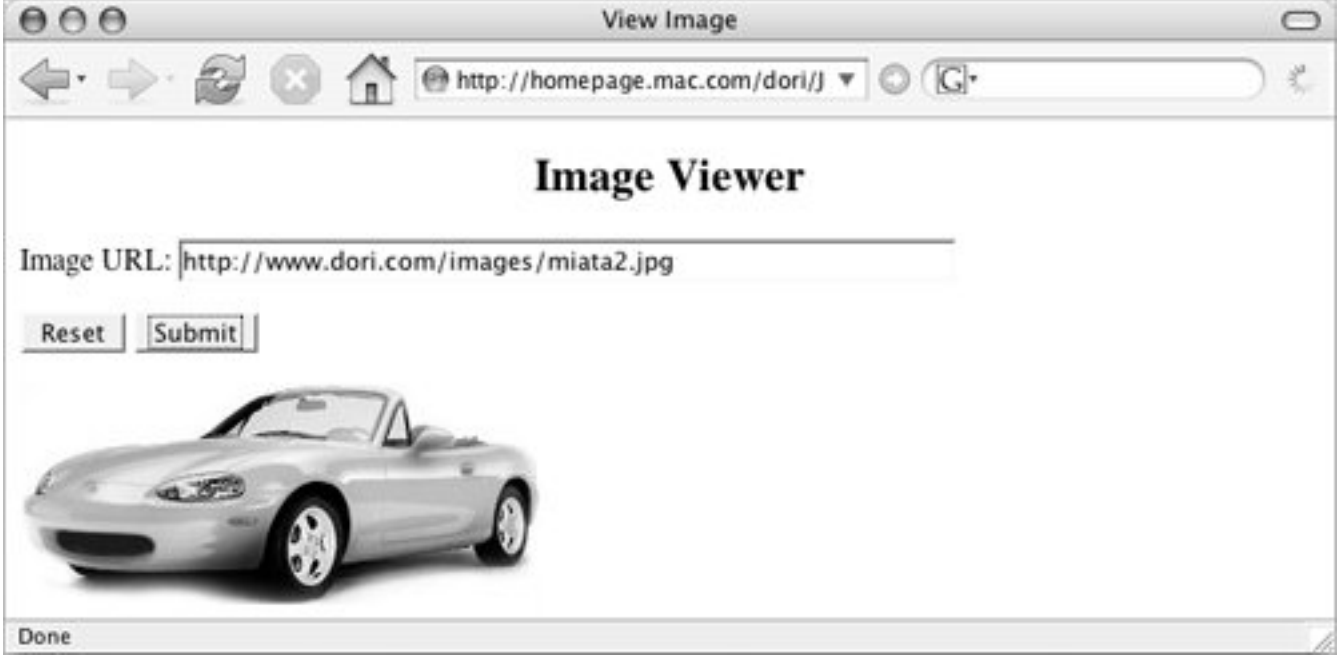


Figure 8.4. When the image name is entered correctly, the image is displayed on the page.

[View full size image]



To validate a URL:

- `var re = /^(file|http):\/\/\S+\/\S+ \.(gif|jpg)$/i;`

  This is in the `imgURL()` function. As in the previous example, we want to check the full field entered, so the regular expression begins with `/^` and ends with `$/`. The input can begin with either the text "http" or "file", so the two are grouped together with a `|` to show that either one or the other value

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

characters have to be "://", so that's checked for next. Note that each of the forward slashes must be escaped individually (that's what the two instances of `\/` are, escaped forward slashes), because forward slashes are regular expression special characters.

After that, nearly anything goes, so `\S+` is used to signify that one or more nonwhite space characters follow. Then there's another required forward slash (again escaped) to separate the domain from the file name, and then another `\S+` to handle the file name.

The file name needs to end with a period and then either "gif" or "jpg". The period is escaped, and the two suffixes are grouped together to test for either.

After the regular expression, the modifier `i` is used, to allow the user input to be either upper- or lowercase. This modifier tells the regular expression not to be case-sensitive.

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Extracting Strings

String validation isn't the only useful thing you can do with regular expressions. String *extraction* is also useful; being able to take just part of a string and manipulate it allows you to have more control over the final result. In **Script 8.4**, we'll take a list of names entered in first-name-first order and swap them so that they're in last-name-first order.

Script 8.4. This script rearranges an entered list of names.

```
window.onload = initForms;

function initForms() {
     for (var i=0; i< document.forms.length; i++) {
        document.forms[i].onsubmit = function() {return validForm();}
     }
}

function validForm() {
     var allTags = document.getElementsByTagName ("*");

     for (var i=0; i<allTags.length; i++) {
        validTag(allTags[i]);
     }
     return false;

     function validTag(thisTag) {
        var allClasses = thisTag.className. split(" ");

        for (var j=0; j<allClasses.length; j++) {
               validBasedOnClass(allClasses[j]);
           }

           function validBasedOnClass(thisClass) {
              switch(thisClass) {
                 case "":
                    break;
                 case "nameList":
                    thisTag.value = nameList (thisTag.value);
                 default:
              }
           }

           function nameList(inNameList) {
              var newNames = new Array;
              var newNameField = "";

              var re = /\s*\n\s*/;
              var nameList = inNameList.split(re);

              re = /(\S+)\s(\S+)/;
```

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
                newNames[k] = nameList[k].replace (re, "$2, $1");
            }

            for (k=0; k<newNames.length; k++) {
                newNameField += newNames[k] + "\n";
            }
            return newNameField;
        }
    }
}
```

To extract strings:

1. `var re = /\s*\n\s*/;`

   Here's a new regular expression, which simply searches for a pattern that consists of any white space `\s*`, followed by a new line character `\n`, followed again by any white space `\s*`.

2. `var nameList = inNameList.split(re);`

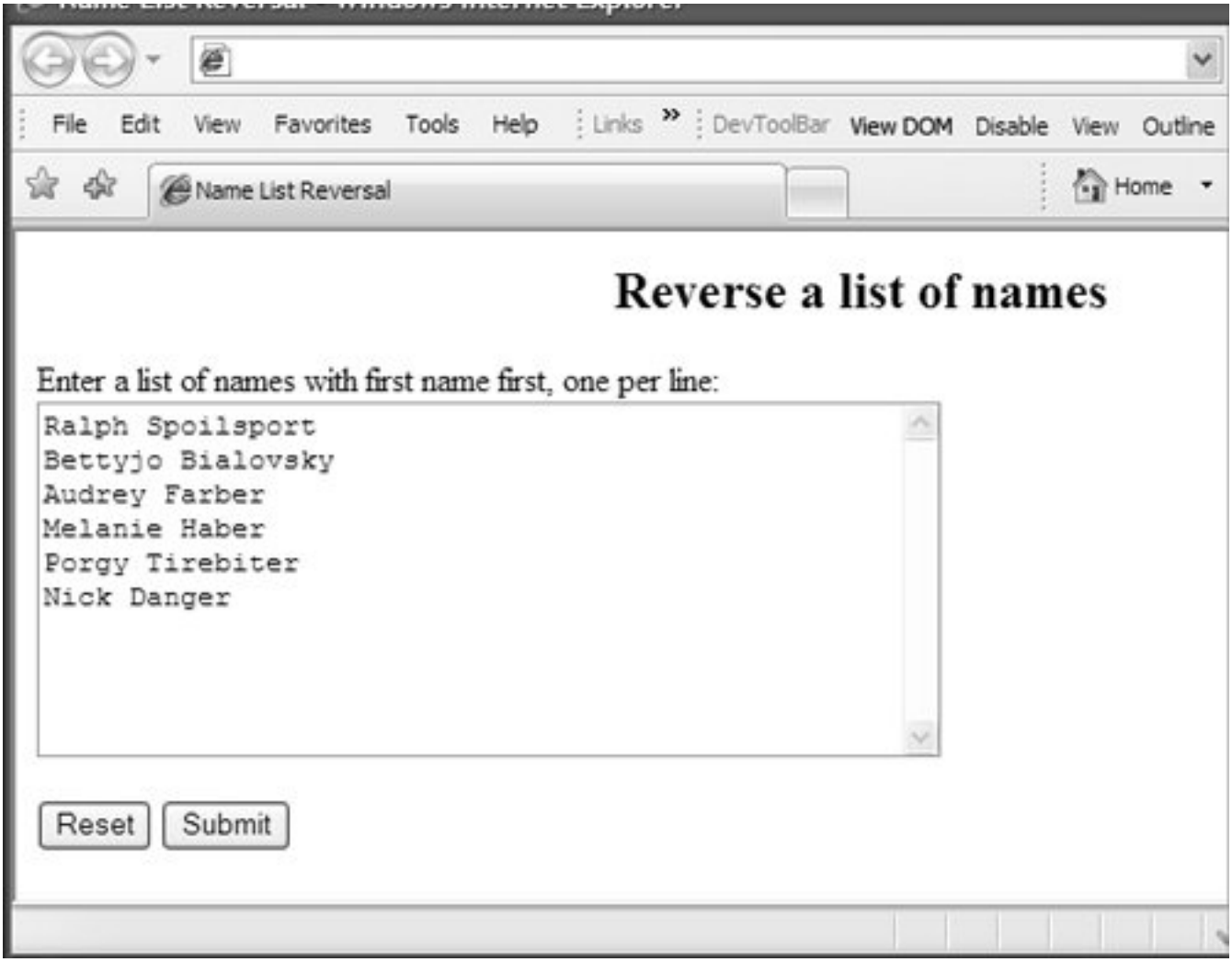
   The string method `split()` takes the regular expression and applies it to the data entered by the user (**Figure 8.5**), stored in `inNameList`. Every new line separates a name, and `split()` cuts up the entered data at each new line. The result is a string array of the entered names, one name per array element, stored in the array `nameList`.

Figure 8.5. Here's the before version of the list.

[View full size image]

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir



3. `re = /(\S+)\s(\S+)/;`

Next we'll need another regular expression, which splits each name into first and last names. It looks for any nonwhite space characters `(\S+)` followed by a single white space character `\s`, followed by any nonwhite space characters `(\S+)`. The parentheses are required around each group of characters so that the information can be used later.

4. `for (var k=0; k<nameList.length; k++) {`

For each name in the `nameList` array, loop through the following line of code.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Remember those parentheses in step 3? When the `replace()` method is executed, the regular expression `re` breaks apart `nameList` into first and last names. Those parentheses tell JavaScript to store the first name in the regular expression property `$1` and the last name in the regular expression property `$2`. The `replace()` method then uses the second parameter passed to it to return the last name `$2`, followed by a comma, followed by the first name `$1`. The names, now in last-name-first order, are stored in the new array `newNames`.

6.
```
for (k=0; k<newNames.length; k++) {
  newNameField += newNames[k] + "\n";
}
```

This loop sets up a new variable `newNameField`, which will contain the revised version of the user-entered text. For each name in the `newNames` array, append that name followed by a new line character to `newNameField`.

7.
```
return newNameField;
```

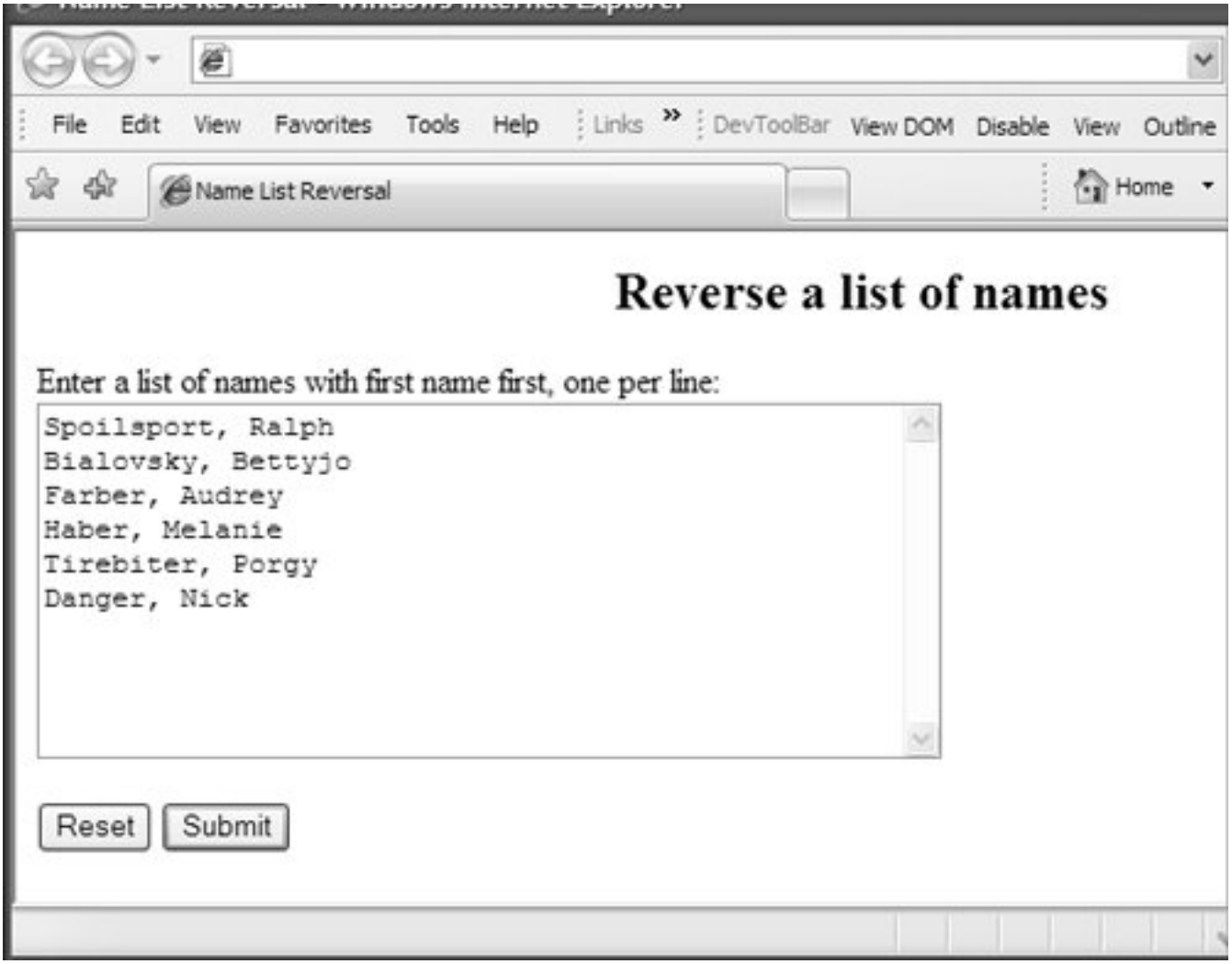
We pass the result back up to update the Web page. This happens in the `switch/case` section: `thisTag.value = nameList(thisTag.value);`. The result is shown in **Figure 8.6**.

Figure 8.6. Here's the reordered version of the page.

[View full size image]

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir



✓ Tips

- This script, as shown, only handles first and last names that are separated by a space. You'll have to change it if you want it to handle middle names or multi-part last names.
- In this script, the variable `re` gets used more than once, with different values being assigned to it at different parts of the script. That's perfectly okay to do in JavaScript (and that's why we've done it here as an illustration), but you might want to consider using different variable names in your own scripts. It makes them easier to debug or change when you come back to them in a few months.

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Formatting Strings

Those darn users often enter data in a haphazard fashion. If you want entries to follow a standard format, your best bet is to handle the formatting yourself. **Script 8.5** shows how to take a list of names and convert them to standard capitalization format.

Script 8.5. This script takes a name entered in any format and replaces it with the capitalization you desire.

[View full width]

```
window.onload = initForms;

function initForms() {
     for (var i=0; i< document.forms.length; i++) {
         document.forms[i].onsubmit = function() {return validForm();}
     }
}

function validForm() {
     var allTags = document.getElementsByTagName("*");

     for (var i=0; i<allTags.length; i++) {
        validTag(allTags[i]);
     }
     return false;

     function validTag(thisTag) {
        var allClasses = thisTag.className.split(" ");

        for (var j=0; j<allClasses.length; j++) {
           validBasedOnClass(allClasses[j]);
        }

        function validBasedOnClass(thisClass) {
           switch(thisClass) {
              case "":
                 break;
              case "nameList":
                 thisTag.value = nameList(thisTag.value);
              default:
           }
        }

           function nameList(inNameList) {
              var newNames = new Array;
              var newNameField = "";

              var re = /\s*\n\s*/;
              var nameList = inNameList.split(re);
```

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
            re = /^(\S)(\S+)\s(\S)(\S+)$/;

            for (var k=0; k<nameList.length; k++) {
               if (nameList[k]) {
                  re.exec(nameList[k]);
                  newNames[k] = RegExp.$1. toUpperCase() + RegExp.$2. toLowerCase() +
"
 " + RegExp.$3.toUpperCase() + RegExp.$4.toLowerCase();
               }
            }

            for (k=0; k<newNames.length; k++) {
               newNameField += newNames[k] + "\n";
            }
            return newNameField;
         }
      }
}
```

To format a string:

1. `re = /^(\S)(\S+)\s(\S)(\S+)$/;`

   This regular expression again expects to find names in first name, space, last name order, and separates each name into four parts: the first letter of the first name `^(\S)`, the remainder of the first name `(\S+)`, the first letter of the last name `(\S)`, and the remainder of the last name `(\S+)$`. Note that the `^` and `$` force the string to begin at the beginning and end at the endingwe don't want to leave any parts out.

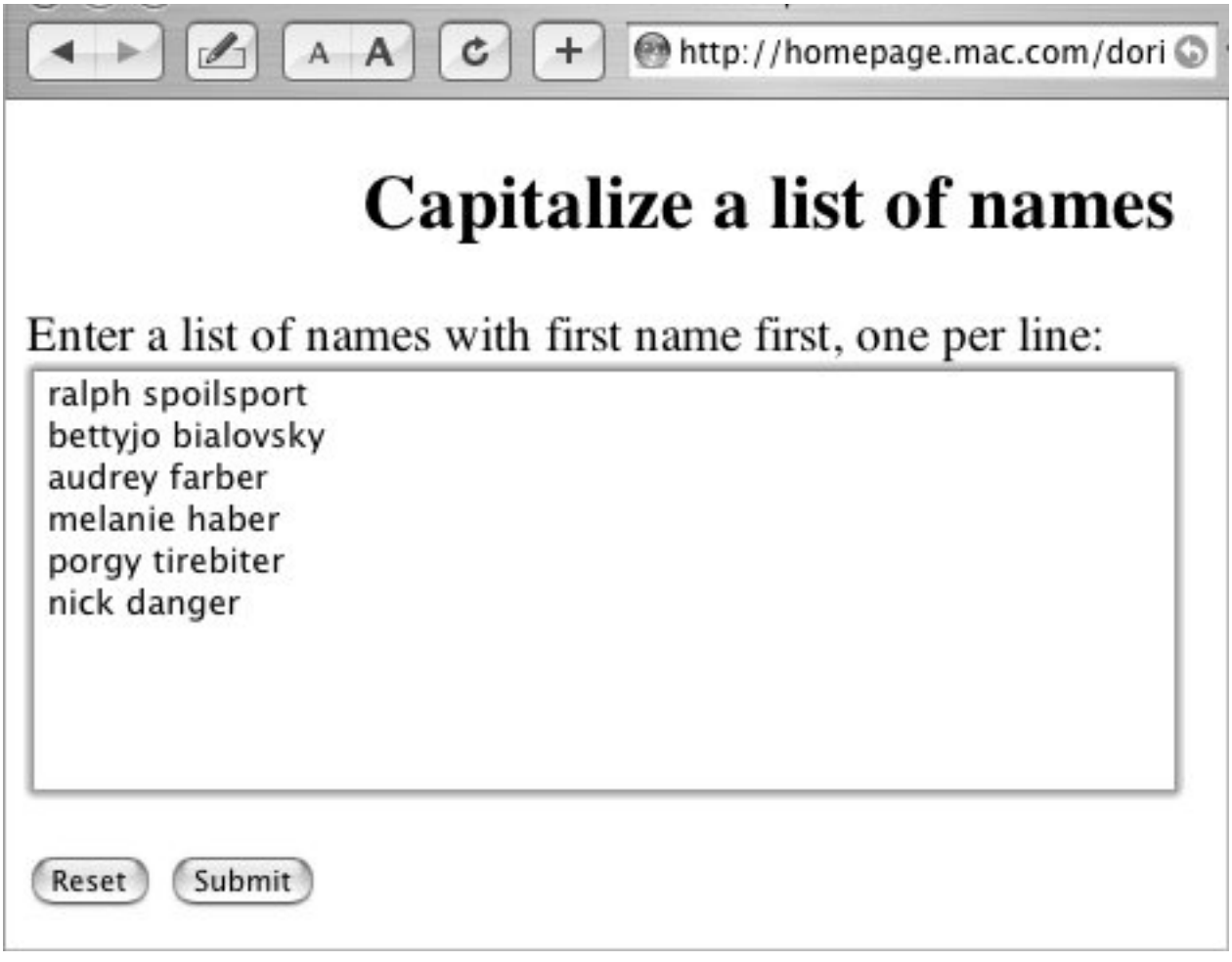
2. `for (var k=0; k<nameList.length; k++) {`

   We want to look at each name in the `nameList` array, shown in **Figure 8.7**.

Figure 8.7. Here's the before version of the names.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir



3. `re.exec(nameList[k]);`

This step uses the `exec()` method to execute the `re` pattern on the string `nameList[k]`, breaking the string into four parts and automatically setting JavaScript's built-in `RegExp` object. These four parts will be stored in `RegExp.$1`, `RegExp.$2`, `RegExp.$3`, and `RegExp.$4` (respectively).

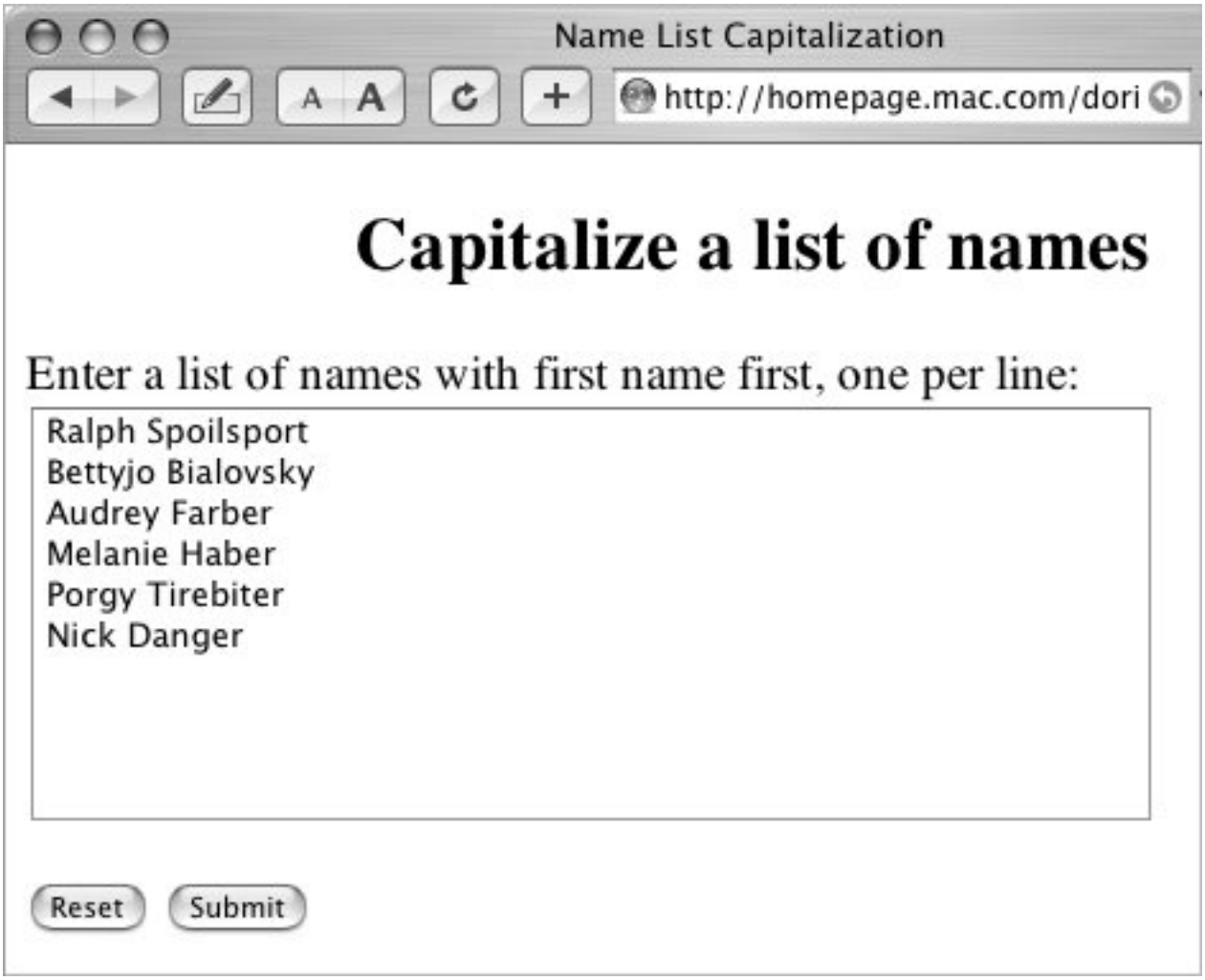
downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
newNames[k] = RegExp.$1. toUpperCase() + RegExp.$2. toLowerCase() + " " + RegExp.$3.
  toUpperCase() + RegExp.$4. toLowerCase();
```

The new version of the name is stored in the `newNames` array. It consists of the first letter of the first name (`RegExp.$1`), forced to uppercase, then the remainder of the first name (`RegExp.$2`) forced to lowercase, then a space, then the first letter of the last name (`RegExp.$3`) forced to uppercase, and finally the remainder of the last name (`RegExp.$4`) forced to lowercase. The name is then displayed, as shown in **Figure 8.8**.

Figure 8.8. And here's how they look afterwards, just the way we wanted them.



downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

About the RegExp Object

JavaScript has a built-in `RegExp` object that's automatically set (and reset) every time a script executes a regular expression method (given in **Tables 8.4** and **8.5**). The properties of this object are shown in **Table 8.3** and its methods in **Table 8.4**. The `RegExp` object isn't a variable that contains the result of the regular expression operation, but rather it contains the *pattern* described by the regular expression, in a form that can be used in your scripts via the `RegExp` object's properties and methods.

Table 8.3. Properties of the RegExp Object

Properties	Meaning
`$1` (tHRough `$9`)	Parenthesized substring matches
`$_`	Same as `input`
`$*`	Same as `multiline`
`$&`	Same as `lastMatch`
`$+`	Same as `lastParen`
`$'`	Same as `leftContext`
`$'`	Same as `rightContext`
`constructor`	Specifies the function that creates an object's prototype
`global`	Search globally (`g` modifier in use)
`ignoreCase`	Search case-insensitive (`i` modifier in use)
`input`	The string to search if no string is passed
`lastIndex`	The index at which to start the next match
`lastMatch`	The last matched characters
`lastParen`	The last parenthesized substring match
`leftContext`	The substring to the left of the most recent match
`multiline`	Whether strings are searched across multiple lines
`prototype`	Allows the addition of properties to all objects

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

source	The regular expression pattern itself

Table 8.4. Methods of the RegExp Object

Methods	Meaning
compile(pattern,[, "g" | "i" | "gi"])	Compiles a regular expression
exec(string)	Executes a search for a match
test(string)	Tests for a match
toSource()	Returns a literal representing the object
toString()	Returns a string representing the specified object
valueOf()	Returns the primitive value of the specified object

Table 8.5. String Methods

Methods	Meaning
match(re)	Finds a match for a regular expression pattern (re) within a string
replace(re,replaceStr)	Using the regular expression (re), performs the desired replacement
search(re)	Searches for a match to the regular expression (re)
split(re)	Splits a string based on a regular expression (re)

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Formatting and Sorting Strings

Another typical task you might want to do is to sort a group of names. **Script 8.6** combines the previous two examples and adds a sort. The end result is the list of names in last-name order, properly capitalized, and alphabetized.

Script 8.6. This script takes a bunch of names in any format and order and turns them into a neat and orderly list.

[View full width]

```
window.onload = initForms;

function initForms() {
     for (var i=0; i< document.forms.length; i++) {
        document.forms[i].onsubmit = function() {return validForm();}
     }
}

function validForm() {
     var allTags = document.getElementsByTagName("*");

     for (var i=0; i<allTags.length; i++) {
        validTag(allTags[i]);
     }
     return false;

     function validTag(thisTag) {
        var allClasses = thisTag.className.split(" ");

        for (var j=0; j<allClasses.length; j++) {
           validBasedOnClass(allClasses[j]);
        }

        function validBasedOnClass(thisClass) {
           switch(thisClass) {
              case "":
                 break;
              case "nameList":
                 thisTag.value = nameList(thisTag.value);
              default:
           }
        }

          function nameList(inNameList) {
             var newNames = new Array;
             var newNameField = "";
```

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
            var nameList = inNameList.split(re);

            re = /^(\S)(\S+)\s(\S)(\S+)$/;

            for (var k=0; k<nameList.length; k++) {
               if (nameList[k]) {
                  re.exec(nameList[k]);
                  newNames[k] = RegExp.$3. toUpperCase() + RegExp.$4. toLowerCase() +
",
 " +  RegExp.$1.toUpperCase() +  RegExp.$2.toLowerCase();
               }
            }

            newNames.sort();
            for (k=0; k<newNames.length; k++) {
               newNameField += newNames[k] + "\n";
            }
            return newNameField;
         }
      }
}
```

To format and sort strings:

1. [View full width]
   ```
   newNames[k] = RegExp.$3. toUpperCase() + RegExp.$4. toLowerCase() + ", " + RegExp.$1.
    toUpperCase() + RegExp.$2. toLowerCase();
   ```

   In this example, we want to sort by last name, so we create the new `newNames` array by appending the uppercased first letter of the last name, the lowercased remainder of the last name, a comma and space, the uppercased first letter of the first name, and the lowercased remainder of the first name.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

The array method `sort()` sorts the elements of an array in place, overwriting the previous contents. **Figure 8.9** shows the "before" version and **Figure 8.10** the "after" version.

Figure 8.9. Here's the version as the user entered it.

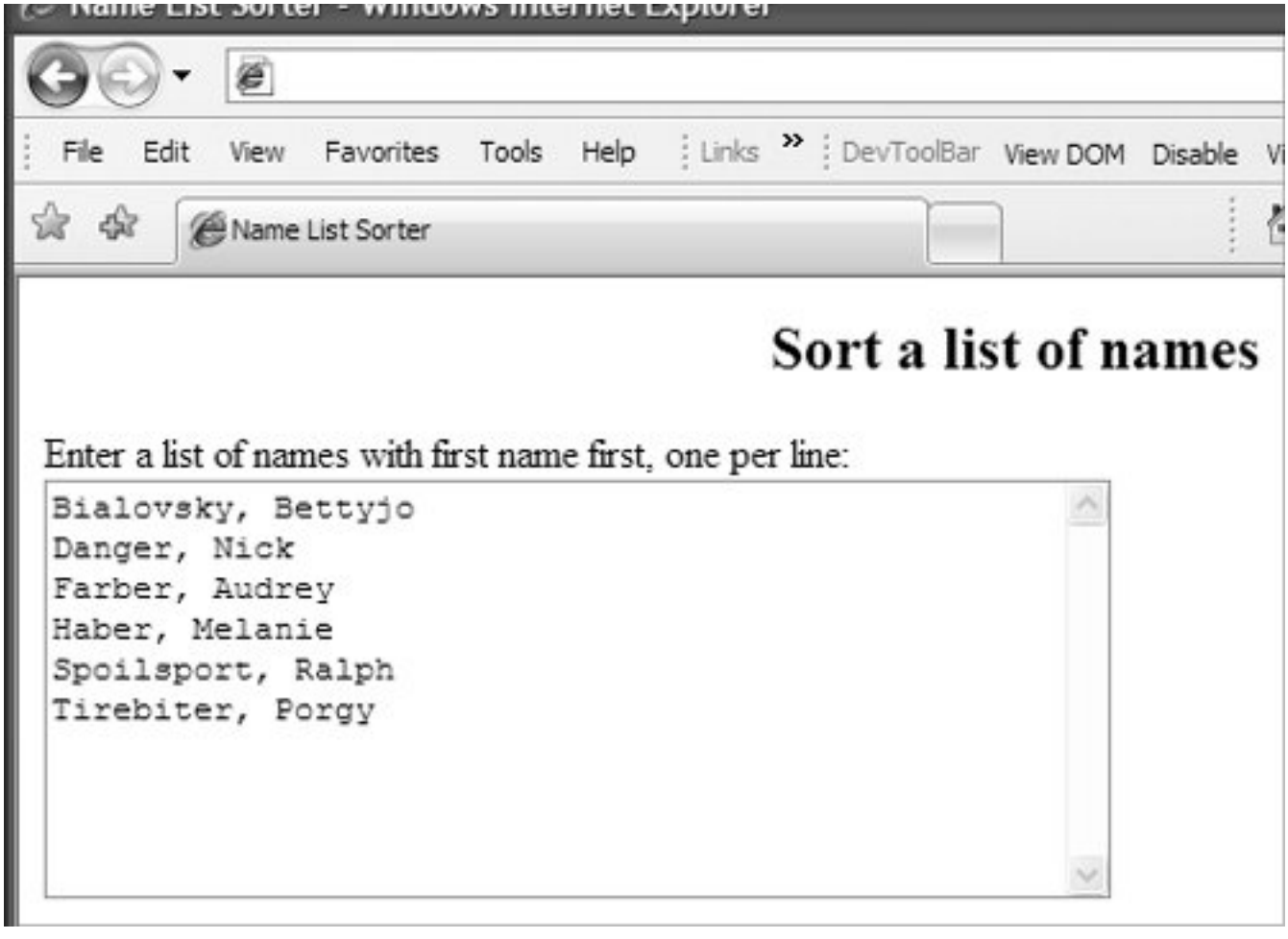
[View full size image]

Figure 8.10. And here's the sorted and cleaned up list, just the way we want it.

[View full size image]

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir



PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Formatting and Validating Strings

Regular expressions can be used to simultaneously format *and* validate an entered value. In **Script 8.7**, the user enters a phone number in any format. Either the end result will be a formatted phone number or the input box will turn red and the label will turn red and bold.

Script 8.7. This script validates and formats a user-entered phone number.

[View full width]

```
window.onload = initForms;

function initForms() {
     for (var i=0; i< document.forms.length; i++) {
        document.forms[i].onsubmit = function() {return validForm();}
     }
}

function validForm() {
     var allTags = document.getElementsByTagName("*");

     for (var i=0; i<allTags.length; i++) {
        validTag(allTags[i]);
     }
     return false;

     function validTag(thisTag) {
        var outClass = "";
        var allClasses = thisTag.className.split(" ");

        for (var j=0; j<allClasses.length; j++) {
           outClass += validBasedOnClass(allClasses[j]) + " ";
        }

        thisTag.className = outClass;

        if (outClass.indexOf("invalid") > -1) {
           invalidLabel(thisTag.parentNode);
           thisTag.focus();
           if (thisTag.nodeName == "INPUT") {
              thisTag.select();
           }
        }

        function validBasedOnClass(thisClass) {
           var classBack = "";

           switch(thisClass) {
              case "":
              case "invalid":
```

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
            case "phone":
               if (!validPhone(thisTag.value)) classBack = "invalid ";
            default:
               classBack += thisClass;
         }
         return classBack;
      }

      function validPhone(phoneNum) {
         var re = /^\(?(\d{3})\)?[\.\-\/ ]?  (\d{3})[\.\-\/ ]?(\d{4})$/;

         var phoneArray = re.exec(phoneNum);
         if (phoneArray) {
            document.getElementById ("phoneField").value = "(" + phoneArray[1] + ") "
+
 phoneArray[2] + "-" +  phoneArray[3];
            return true;
         }
         return false;
      }

      function invalidLabel(parentTag) {
         if (parentTag.nodeName == "LABEL") {
            parentTag.className += " invalid";
         }
      }
   }
}
```

To format and validate a phone number:

1. `var re = /^\(?(\d{3})\)?[\.\-\/ ]?  (\d{3})[\.\-\/ ]?(\d{4})$/;`

   This regular expression looks for a string that has:

   - An optional left parenthesis `\(?`
   - 3 digits `(\d{3})`
   - An optional right parenthesis `\)?`
   - An optional period, dash, forward slash, or space `[\.\-\/ ]?`
   - 3 digits `(\d{3})`
   - An optional period, dash, forward slash, or space `[\.\-\/ ]?`
   - 4 digits `(\d{4})`

   This pattern is anchored to both the beginning and ending of the string, so extraneous characters are not valid. The sequences of three digits (the area code), three digits (the prefix), and four digits (the suffix) are saved, if found.

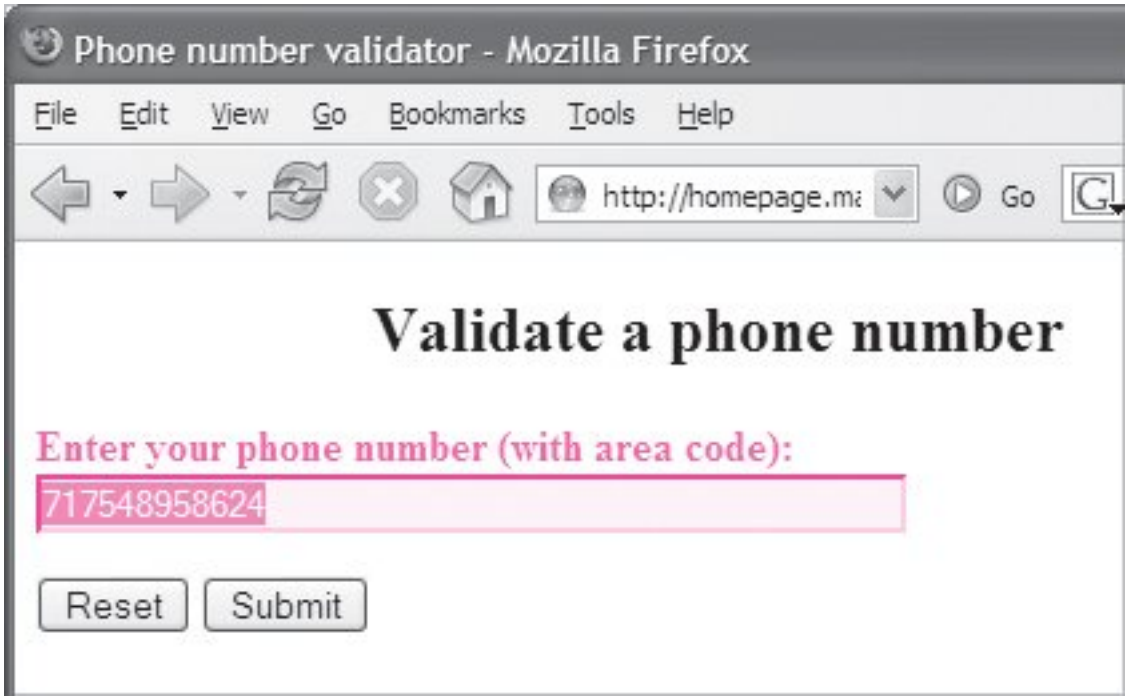
downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

2. `var phoneArray = re.exec(phoneNum);`

The `exec()` method performs the regular expression stored in `re` on `phoneNum`. If the pattern we're searching for isn't found (**Figure 8.11**), `phoneArray` will be set to null. Otherwise, `phoneArray` will be an array of the values stored by the regular expression.

Figure 8.11. Here's the result when an invalid number is entered.



3. [View full width]

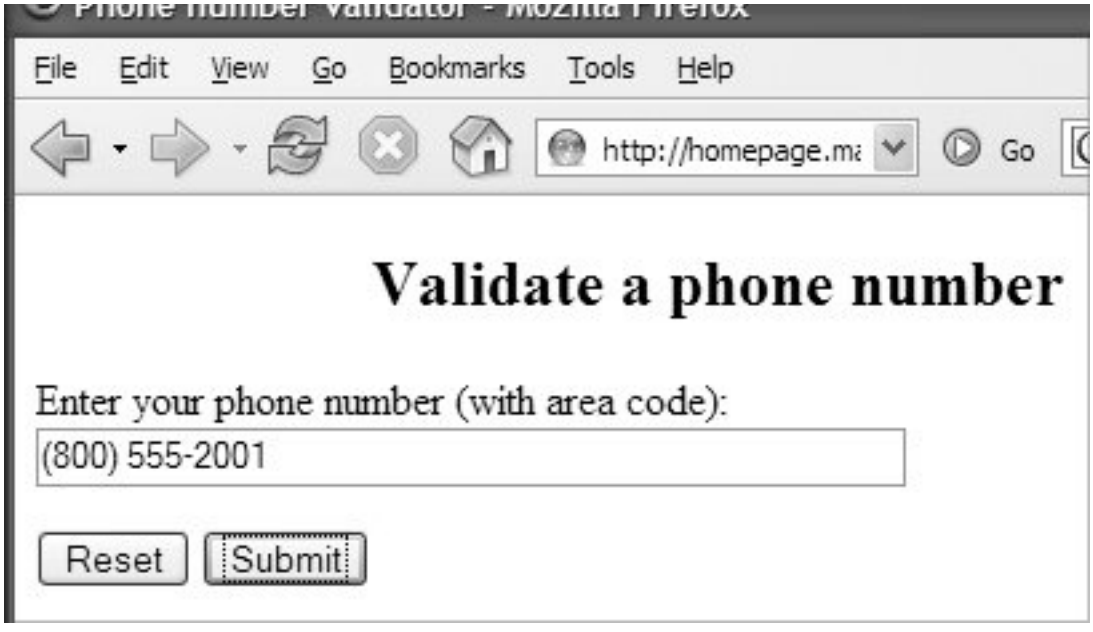
```
if (phoneArray) {
  document.getElementById ("phoneField").value = "(" + phoneArray[1] + ") " +
   phoneArray[2] + "-" + phoneArray[3];
```

If `phoneArray` is true, the test was successfully passed, and the array has been initialized. So, we reset the form field on the page to the area code inside parentheses and a space, followed by the prefix, a dash, and the suffix, as shown in **Figure 8.12**.

Figure 8.12. And here's what's displayed when the number is entered correctly.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir



PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Replacing Elements using Regular Expressions

You've already seen how useful regular expressions are for finding, matching, and replacing strings. But you can also use them to replace the names of page elements, and this can often save you a bunch of time. In this task, we're going to retrofit a regular expression into a script that you've seen before, Script 4.5. That script built three-state rollovers. It's a useful script, but it has one drawback: it requires you to have tagged every image that you want to manipulate with its own `id`. That's not too difficult, but you can instead use JavaScript to build the names of page elements and save you some work.

At this point, you should review Scripts 4.4 and 4.5 to see what's going on in this example. Go ahead, we'll wait.

Back so soon? Great. In short, instead of creating the `_click` and `_on` names of an image on the fly based on the `id` of each image, we're instead creating the `_click` and `_on` names on the fly based on the `_off` name of the image. That way, we don't even need the image `id`s. **Script 8.8** shows you the way. There's no change in the way the page looks or acts from changing the JavaScript; but it saves you work in creating the HTML pages.

Script 8.8. Use regular expressions to save you from writing or retrofitting your HTML files.

```
window.onload = rolloverInit;

function rolloverInit() {
     for (var i=0; i<document.images.length; i++) {
        if (document.images[i].parentNode. tagName == "A") {
           setupRollover(document.images[i]);
        }
     }

}

function setupRollover(thisImage) {
     var re = /\s*_off\s*/;

     thisImage.outImage = new Image();
     thisImage.outImage.src = thisImage.src;
     thisImage.onmouseout = rollOut;

     thisImage.clickImage = new Image();
     thisImage.clickImage.src = thisImage.src. replace(re,"_click");
     thisImage.onclick = rollClick;

     thisImage.overImage = new Image();
     thisImage.overImage.src = thisImage.src. replace(re,"_on");
     thisImage.onmouseover = rollOver;

}
```

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
     this.src = this.overImage.src;
}

function rollOut() {
     this.src = this.outImage.src;
}

function rollClick() {
     this.src = this.clickImage.src;
}
```

To use a regular expression to replace an element:

1. `var re = /\s*_off\s*/;`

   This line sets up a new regular expression pattern that looks for the text `_off` anywhere in a string.

2. `thisImage.clickImage.src = thisImage.src.replace(re,"_click");`

   The line in Script 4.5 was `thisImage. clickImage.src = "images/" + thisImage.id + "_click.gif";` The new line uses the `re` pattern to look for that particular bit of a string and, when it's found, replace it with *this* string. In this case, we're looking for `_off` and turning it into `_click`. This allows us to not worry about the `id` attribute being set on this imageit just doesn't matter any more.

3. `thisImage.overImage.src = thisImage. src.replace(re,"_on");`

   The line in Script 4.5 was `thisImage. overImage.src = "images/" + thisImage.id + "_on.gif";`. In this case, we're looking for `_off` and turning it into `_on`.

✓ Tip

- This can also be handy if your images are a mixture of GIF and JPEG filesnow, your JavaScript code doesn't have to ever know what suffix each image has.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Chapter 9. Handling Events

Events are actions that the user performs while visiting your page. When the browser detects an event, such as a mouse click or a key press, it can trigger JavaScript objects associated with that event, called *event handlers*. In most of the previous chapters in this book, you've seen examples of how event handlers are used. But event handling is such an important technique to understandand it encompasses virtually all of your pages' interaction with the userthat it deserves its own chapter.

In this chapter, you'll see how to use event handlers to work with windows, capture mouse movements and clicks, deal with form events, and react when the user presses keys on the keyboard.

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Handling Window Events

Window events occur when the user does something affecting an entire browser window. The most common window event is simply loading the window by opening a particular Web page. You can also have events that trigger event handlers when windows are closed, moved, or even sent to the background.

When working with event handlers, you'll often find it useful to connect an event handler to an object using dot syntax, like so:

```
window.onfocus
window.onload
document.onmousedown
```

Note that when you use the event handler as part of an object like this, the event handler is written all in lowercase. Also, keep your event handlers in external scripts, rather than placing them inside the HTML tagthis approach is more standards- compliant, it separates out the JavaScript code from the HTML code, and it's easier to edit (or replace) all your JavaScript code in an external file.

The onload event

We have used the `onload` event frequently throughout this book. It is triggered when the user enters your page and all its elements have completed loading. The epidemic of advertising pop-up windows is an example, though not an especially pleasant one, of the `onload` event handler in action.

Although we've shown `onload` repeatedly, up until now we've skipped one important bit of information: what to do when you have multiple things you need to have happen when the page loads. **Scripts 9.1** and **9.2** demonstrate how to do this.

Script 9.1. The HTML for the multiple `onload` example.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
     <title>Welcome!</title>
     <script type="text/javascript"
language="Javascript" src="script01.js">
     </script>
</head>
<body id="pageBody">
     <h1>Welcome to our Web site!</h1>
</body>
</html>
```

Script 9.2. Setting multiple `onload` attributes using our new `addOnload()` function.

```
addOnload(initOne);
addOnload(initTwo);
addOnload(initThree);

function addOnload(newFunction) {
     var oldOnload = window.onload;

     if (typeof oldOnload == "function") {
        window.onload = function() {
           if (oldOnload) {
              oldOnload();
           }
           newFunction();
        }
     }
     else {
        window.onload = newFunction;
     }
}

function initOne() {
     document.getElementById("pageBody").style. backgroundColor = "#0000FF";
}

function initTwo() {
     document.getElementById("pageBody").style. color = "#FF0000";
}

function initThree() {
     var allTags = document.getElementsByTagName ("*");

     for (var i=0; i<allTags.length; i++) {
        if (allTags[i].nodeName == "H1") {
           allTags[i].style.border = "5px green solid";
           allTags[i].style.padding = "25px";
           allTags[i].style.backgroundColor = "#FFFFFF";
```

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
    }
}
```

1.
```
addOnload(initOne);
addOnload(initTwo);
addOnload(initThree);
```

In this script, we'll want three entirely separate things to happen when the page first loads. Setting `window.onload` three times wouldn't work, because the second time would overwrite the first, and then the third would overwrite the second. Instead, we're calling a new function (defined below), `addOnload()`, which handles the `onload` handler for us. For each call, we're passing one parameter: the name of the function we want to run when an `onload` event is triggered. You can see the result in Figure 9.1.

Figure 9.1. The script is setting multiple `onload` handlers (in this case, for color formatting) to be run when the page loads.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

This line starts off a new function, much like any other function. What's being passed in is the name of a function.

This can be a bit confusing, so here's an example. Instead of calling

```
window.onload = myNewFunction;
```

we'll instead call

```
addOnload(myNewFunction);
```

which works out the same at the end.

3. `var oldOnload = window.onload;`

This line declares a new variable `oldOnload`if we've already set `window.onload`, we'll store its value here. If we haven't, it doesn't hurt anything.

4. `if (typeof oldOnload == "function") {`

In this line, we check to see what kind of variable `oldOnload` is. If we've previously set `window.onload`, it'll be a function call (otherwise, it'll be nothing at all). If it's a function, do the following.

✓ Tips

- If you want to have an `onload` handler do more than one thing, the easiest way is to create one function that does everything, and then have the `onload` handler call that function. But make sure that each function returnsif, for example, your function contains a `setTimeout()` call to itself, it'll never return and therefore never go on to the rest of the called functions.
- If you're working with an existing body of code, it's easy to accidentally reset `window.onload`any given HTML page can call multiple external JavaScript files, any of which can set the event handler. If one place sets `window.onload` directly, but every time after that you call `addOnload()`, you're fine. But if you set `window.onload` after you've set it previously (whether directly or via `addOnload()`), you'll have walked on top of your handler and lost its original value.
- This script is (very) loosely based on one by Simon Willison (`simonwillison.net`) and is used with his permission.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

5.
```
window.onload = function() {
  if (oldOnload) {
     oldOnload();
  }
  newFunction();
}
```

These lines of code reset the value of `window.onload` to do two things: whatever it was doing before, and our new function. The `window.onload` event handler is set to be an anonymous function (one that doesn't have a name). Then, if `oldOnload` has a value (which it should, but this works around a bug in Internet Explorer 7), we tell `window.onload` to do what it was already doing. But before the function ends, we add that it needs to *also* do our `newFunction()` as well.

6.
```
else {
  window.onload = newFunction;
}
```

If `oldOnload` wasn't a function, that is, it was undefined, we tell it do our new function when the page completes loading. In this fashion, we can call `addOnload()` multiple times: the first time it assigns its function to `window.onload`; the second and later times it creates that anonymous function, telling JavaScript to do everything it's been told to do previously *and* the new thing as well.

The onunload event

The `onunload` handler is triggered when the user leaves your Web page. The most common use for this is advertising windows that pop up when you leave some commercial sites, especially pornographic sites. If you find yourself on one of the latter, you'll often find that it's almost impossible to leaveevery time you close a window or attempt to navigate away from the site, window after window appears, re-opening the same or other pages, all of the same genre.

Consequently, people have come to hate the `onunload` handler with a passion, so use it sparingly.

The onresize event

Netscape 4.x has a well-known bug where dynamic content isn't redrawn when a Web page is resized. **Scripts 9.3** and **9.4** force the page to reload its contents to avoid this problem. Thankfully, Netscape versions 6 and later no longer suffer from this bug.

Script 9.3. This HTML includes the JavaScript hidden inside a multi-line comment, since it's meant for use in older browsers.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
     <title>onResize Netscape fix</title>
     <script language="Javascript"  type="text/javascript" src="script02.js">
     </script>
</head>
<body bgcolor="#FFFFFF">
     <h1>
     <script language="Javascript"  type="text/javascript">
        <!-- Hide code from older browsers

        document.write("This is dynamic content")

        // Stop hiding code -->
     </script>
     </h1>
</body>
</html>
```

Script 9.4. You can fix Netscape 4.x's dynamic content redraw bug with this script.

```
window.onresize = resizeFix;
if (document.layers) {
     var origWidth = window.innerWidth;
     var origHeight = window.innerHeight;
}

function resizeFix() {
     if (document.layers) {
        if (window.innerWidth != origWidth || window.innerHeight != origHeight) {
           window.location.reload();
        }
     }
}
```

1. `window.onresize = resizeFix;`

   The event handler is attached to the `window` object and calls the `resizeFix` function.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

We only want to do the following if the user has Netscape 4.x, and this is the simplest way of checking that. The `document.layers` object only ever existed in this browser.

3.
```
var origWidth = window.innerWidth;
var origHeight = window.innerHeight;
```

If we're in Netscape 4.x, we want to save the current height and width of the browser window for later use.

4.
```
function resizeFix() {
```

Here's where we actually handle the browser being resized.

5.
```
if (document.layers) {
```

Again, check to make sure that this only happens if they are using Netscape 4.x.

6.
```
if (window.innerWidth != origWidth || window.innerHeight != origHeight) {
```

If they came in here and either the height or the width of the window has changed, the user resized the window, and we want to force the page to reload. If the browser window size hasn't changed, the `onresize` handler was triggered by Netscape drawing the scrollbars, and it can be ignored.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Reload the page if the user actually did resize the window (**Figure 9.2**).

Figure 9.2. The reloaded (but still kind of dull) page.

[View full size image]

The onmove event

The `onmove` event handler is triggered when the window is moved.

The onabort event

The `onabort` event handler is triggered when the user cancels an image loading on the Web page. It's not used very often, and not all browsers seem to fully support it.

The onerror event

The `onerror` event may be triggered when a JavaScript error occurs on the page.

✓ **Tip**

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

line of code on your page, *some* error messages will not be displayed to the user in the unfortunate event that there's a problembut which errors will be hidden depends on the browser.

The onfocus event

The `onfocus` and `onblur` handlers are mirror images of each other. While they may sound like what happens when you've been working on JavaScript too late at night, in reality, the `onfocus` handler triggers when a page becomes the front-most active window. **Scripts 9.5** and **9.6** catch the `onfocus` handler and force the page to always go to the back (**Figure 9.3**).

Script 9.5. This HTML is for the page that's in back.

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN">
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
     <title>Always in Back</title>
     <script type="text/javascript"  language="Javascript" src="script03.js">
     </script>
</head>
<body bgcolor="#FFFFFF">
     <h1>Unimportant content that should never be in front</h1>
</body>
</html>
```

Script 9.6. Using the `onfocus` handler, you can control window stacking.

```
window.onfocus = moveBack;

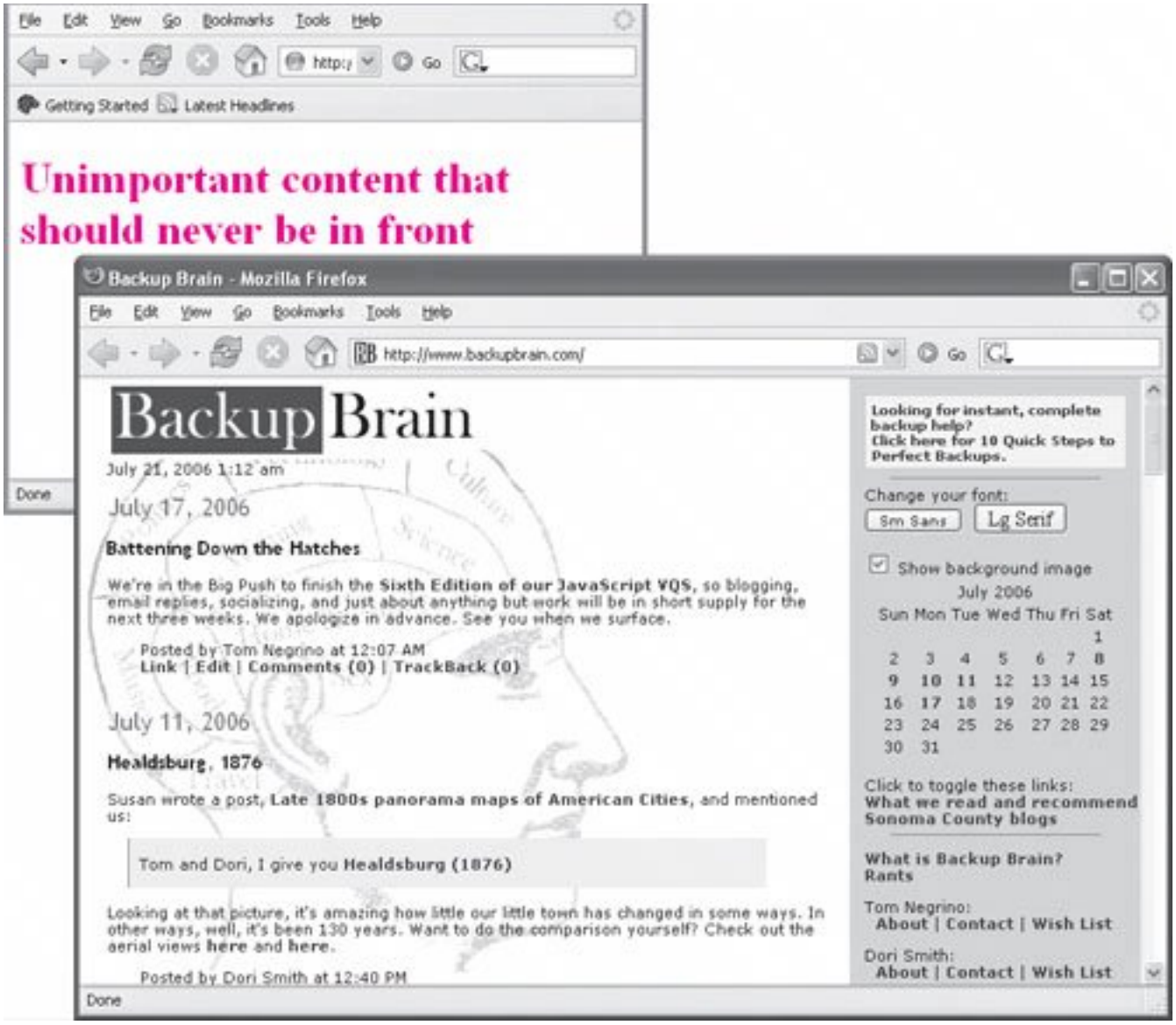
function moveBack() {
     self.blur();
}
```

Figure 9.3. The page in the back will stay there.

[View full size image]

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir




1. ```
   window.onfocus = moveBack;
   ```

Here's another example of the window and event handler object calling a function, in this case `moveBack`.

2. ```
   function moveBack() {
     self.blur();
   }
   ```

If the browser window becomes the active window, this function is triggered and forces the window to be blurred (i.e., inactive).

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

The onblur event

If you have a window that you always want to remain in front of all your other windows (a control panel, for instance, that loads in the content of the main page), **Scripts 9.7** and **9.8** are what you need. Any time the user tries to put this page in the background (triggering the `onblur` handler), it forces its way back up to the front again.

Script 9.7. This HTML is for the page that stays in front.

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN">
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
     <title>Always in Front</title>
     <script type="text/javascript"  language="Javascript" src="script04.js">
     </script>
</head>
<body bgcolor="#FFFFFF">
     <h1>Important content that should always be in front</h1>
</body>
</html>
```

Script 9.8. This script uses `onblur` to keep a window in the front (active) position.

```
window.onblur = moveUp;

function moveUp() {
     self.focus();
}
```

1. `window.onblur = moveUp;`

   Here's another example of the window and event handler object calling a function, in this case `moveUp`.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
  self.focus();
}
```

If the browser window becomes the inactive window, this function is triggered and forces the window to become active.

✓ Tips

- Be very careful not to accidentally open up two windows that both contain this bit of code. Chances are, your browser will not handle the result gracefully!
- Instead of using this script on the control panel, you could use **Script 9.6** on the main window to always make it go to the back, making the control panel always the front-most window.
- You may be more familiar with one of the more nefarious uses of the `onblur` event: advertisers who open ad windows *behind* your current Web page, which you don't discover until you close the window and find a stack of them piled up. Unfortunately, people blame the last Web site they opened, when in fact the ads were likely created by a page browsed much earlier.

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Mouse Event Handling

Many of the user's interactions with your pages come in the form of mouse movements or mouse clicks. JavaScript provides a robust set of handlers for these events.

The onmousedown event

One of the questions most frequently asked by new JavaScripters is, "How do I hide my scripts from anyone coming to my page?" The answer is, simply, you can't. If anyone is determined enough, they can always find out what's in your code.

If you really need to try to hide your code from average surfers, though, **Script 9.9** keeps them from viewing the page source via a mouse-click that would normally bring up the shortcut menu.

Script 9.9. This script will deter some inexperienced users from bringing up the shortcut menu on your pages.

```
if (typeof document.oncontextmenu == "object") {
     if (document.all) {
        document.onmousedown = captureMousedown;
     }
     else {
        document.oncontextmenu = captureMousedown;
     }
}
else {
     window.oncontextmenu = captureMousedown;
}

function captureMousedown(evt) {
     var mouseClick = (evt) ? evt.which : window.event.button;

     if (mouseClick==1 || mouseClick==2 || mouseClick==3) {
        alert("Menu Disabled");
        return false;
     }
}
```

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
if (document.all) {
   document.onmousedown = captureMousedown;
```

This first block checks to see if this browser is Firefox, which uses `window.oncontextmenu` (and so doesn't know about `document.oncontextmenu`). If it isn't Firefox, we next look for `document.all`, which is an easy way of checking to see if the browser is IE. If it is, we want to set `captureMousedown()` to run whenever `onmousedown` is triggered.

2.
```
else {
  document.oncontextmenu = captureMousedown;
```

If we're here, it's because your visitor's got Safari, and that browser needs `oncontextmenu` set on the document object.

3.
```
else {
  window.oncontextmenu = captureMousedown;
```

And finally, if the browser is Firefox, we want `oncontextmenu` events for the window to call the `captureMousedown()` function.

4.
```
function captureMousedown(evt) {
```

The function that handles the `onmousedown` and `oncontextmenu` events begins here. Netscape-based browsers and Safari generate the `evt` parameter being passed in automatically whenever an event is triggered, and this variable contains information about the event.

5.
```
var mouseClick = (evt) ? evt.which : window.event.button;
```

If the `evt` variable exists, we can determine which button the user clicked by checking `evt.which`. If the user has IE, the results of the user's action will be found in `window.event.button`. Either way, store the result in the `mouseClick` variable.

downloaded from: lib.ommolketab.ir

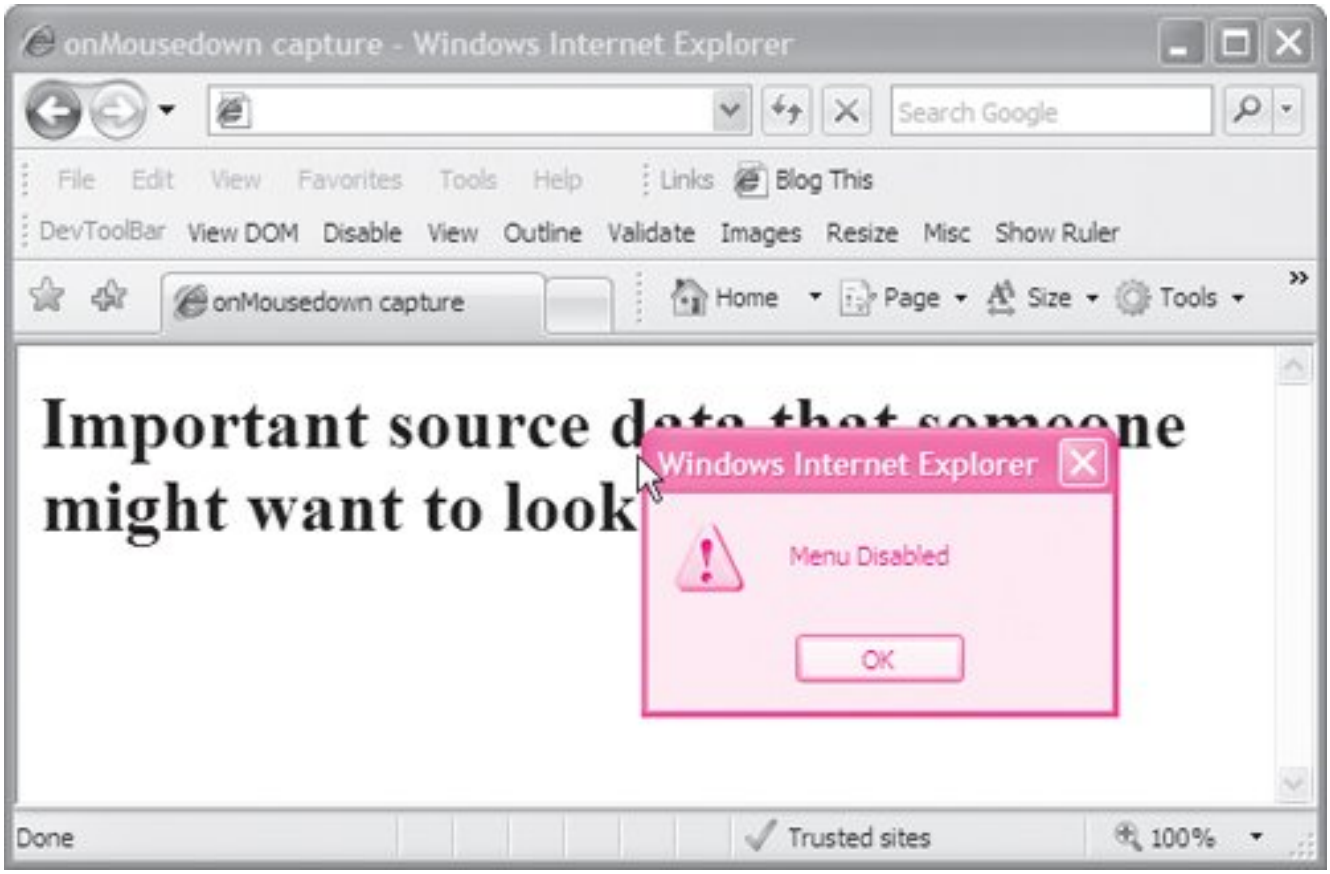
downloaded from: lib.ommolketab.ir

```
  alert("Menu Disabled");
  return false;
}
```

If `mouseClick` is 1, 2, or 3, put up an alert (**Figure 9.4**) saying that that functionality is disabled, and return false. Returning false keeps the menu window from being displayed.

Figure 9.4. This alert box scares off the timid (and annoys the rest).

[View full size image]



✓ Tips

- Why are we checking for three different mouse clicks? Shouldn't one be enough? In theory, yes, but in practice, noas shown in **Table 9.1**. Unfortunately, this approach can backfire: you may successfully block left-click and right-click input (to block people from dragging images off Web pages, for example), but it also means that you might be keeping people from clicking any links on your page.

Table 9.1. Mouse Click Codes

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Code	Browser/Event
1	Internet Explorer/Left-click
	All Mac browsers/Control-left-click
2	Internet Explorer/Right-click
3	Firefox/Right-click
	All Mac browsers/Right-click

- It's very simple for savvy surfers to work around this: all they have to do is turn JavaScript off in their browser, and their clicking ability returns. Putting your JavaScript code into an external `.js` file seems like a tricky workaround, but users can look in their cache folder on their hard disk. Or they can look at the source of your page, find the name of the external file, and then enter the URL of the external file in their browser, which obediently displays the file's contents. If you really worry about your source code being stolen, the only method that's guaranteed to keep it from being looked at is to never put it on the Web.
- IE understands `document.oncontextmenu`, so you'd think that setting it would cause it to handle those eventsbut it doesn't. IE is the only browser that needs `document.onmousedown` to be set. And if you set both `window.oncontextmenu` and `document.onmousedown`, Firefox triggers every event twice, once for each action.

The onmouseup event

Similar to the `onmousedown` event, the `onmouseup` event is triggered when the user clicks the mouse and then releases the button.

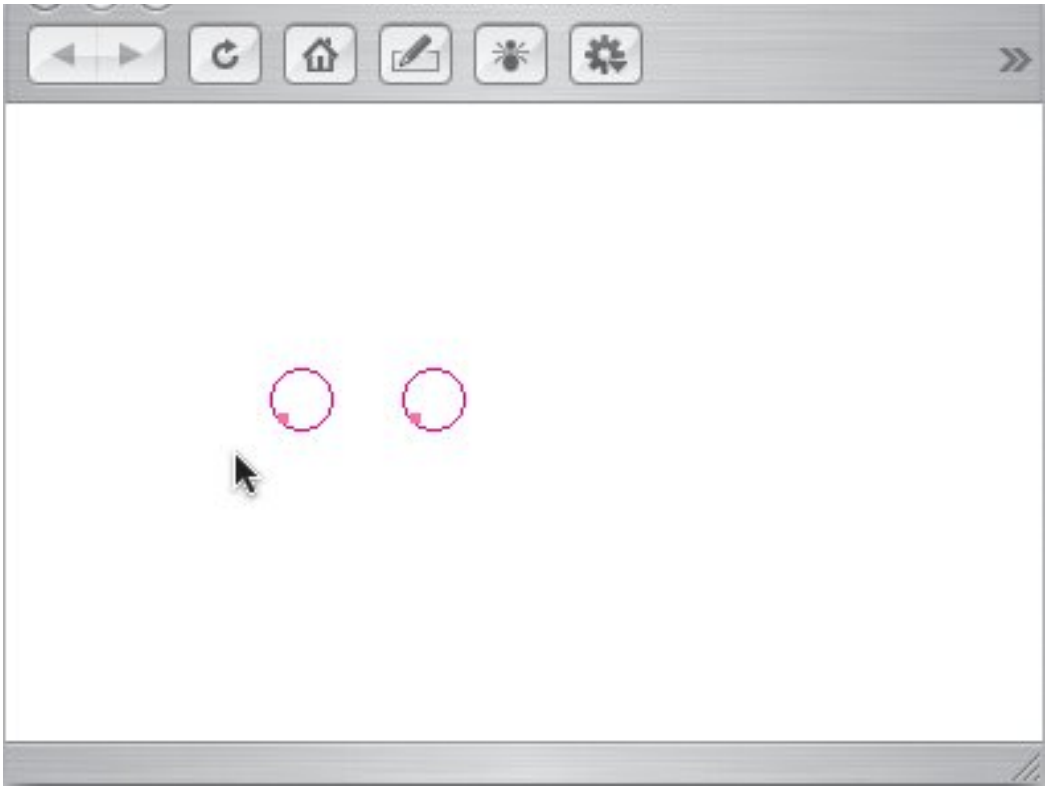
The onmousemove event

The `onmousemove` event is triggered whenever a visitor to your page moves their mouse. In this example, the user gets the feeling that someone's watching their every move (**Figure 9.5**). **Scripts 9.10**, **9.11**, and **9.12** show how to use JavaScript to display eyeballs that follow your visitor around.

Figure 9.5. The eyeballs will follow the cursor, no matter where it goes.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir



Script 9.10. The HTML for the following-eyes example.

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN">
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
     <title>Mouse Movements</title>
     <script language="Javascript"  type="text/javascript" src="script06.js">
     </script>
     <link rel="stylesheet" href="script06.css" />
</head>
<body>
     <img src="images/circle.gif" alt="left eye"  width="24" height="25" id="lEye" />
     <img src="images/circle.gif" alt="right eye"  width="24" height="25" id="rEye" />
     <img src="images/lilRed.gif"  alt="left eyeball" width="4" height="4"  id="lDot" />
     <img src="images/lilRed.gif"  alt="right eyeball" width="4" height="4"  id="rDot" />
</body>
</html>
```

Script 9.11. The CSS for the following eyes example.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
     background-color: #FFF;
}

#lEye, #rEye {
     position: absolute;
     top: 100px;
}

#lDot, #rDot {
     position: absolute;
     top: 113px;
}

#lEye {
     left: 100px;
}

#rEye {
     left: 150px;
}

#lDot {
     left: 118px;
}

#rDot {
     left: 153px;
}
```

Script 9.12. Keep an eye (OK, two eyes) on your users with this script.

```
document.onmousemove = moveHandler;
function moveHandler(evt) {
     if (!evt) {
        evt = window.event;
     }
     animateEyes(evt.clientX,evt.clientY);
}
function animateEyes(xPos,yPos) {
     var rightEye = document.getElementById ("rEye");
     var leftEye = document.getElementById ("lEye");
     var rightEyeball = document.getElementById ("rDot").style;
     var leftEyeball = document.getElementById ("lDot").style;

     leftEyeball.left = newEyeballPos (xPos,leftEye.offsetLeft);
     leftEyeball.top = newEyeballPos (yPos,leftEye.offsetTop);
     rightEyeball.left = newEyeballPos (xPos,rightEye.offsetLeft);
     rightEyeball.top = newEyeballPos (yPos,rightEye.offsetTop);

     function newEyeballPos(currPos,eyePos) {
```

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
}
```

1. `document.onmousemove = moveHandler;`

For all browsers, if a `mousemove` event is triggered, call the `moveHandler()` function.

2.
```
function moveHandler(evt) {
  if (!evt) {
    evt = window.event;
  }
  animateEyes(evt.clientX,evt. clientY);
}
```

The `moveHandler()` function will be triggered whenever a `mousemove` event occurs. If the visitor has Internet Explorer, we need to initialize `evt`, and then for all browsers, we call the `animateEyes()` function and pass it the X and Y cursor coordinates.

3. `function animateEyes(xPos,yPos) {`

Here's where the actual eyeball movement is done, based on the X and Y coordinates passed in.

4.
```
var rightEye = document.getElementById("rEye");
var leftEye = document.getElementById("lEye");
var rightEyeball = document.getElementById("rDot").style;
var leftEyeball = document.getElementById("lDot").style;
```

This section assigns variables that match up with the `id`s of the images of the circles of the eyeballs and the dots of the eyeballs.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
leftEyeball.top = newEyeballPos (yPos,leftEye.offsetTop);
rightEyeball.left = newEyeballPos (xPos,rightEye.offsetLeft);
rightEyeball.top = newEyeballPos (yPos,rightEye.offsetTop);
```

This block draws the eyeballs based on the mouse pointer's position, using the results of the `newEyeballPos()` function defined in the next step.

6.
```
function newEyeballPos (currPos,eyePos) {
  return Math.min(Math.max(currPos, eyePos+3), eyePos+17) + "px";
}
```

We never want the eyeball to go outside the eye, do we? So, for each eyeball, we check to make sure that it gets as close to the cursor as possible, while still appearing within the circle of the eye.

✓ Tips

- There's a common JavaScript widget on the Web where the page has a bunch of dots (or whatever the designer wanted) follow the cursor around the page. We didn't want to re-create an already existing effect, so we did the eyeballs instead; but if you want to put tag-along dots on your page, you should be able to just tweak this script.
- Netscape 6 had a bug where both eyeballs were always placed 10 pixels too low. This bug was fixed in Netscape 7.

The onmouseover event

By now, you should be familiar with this event: it's our good buddy from image rollovers. This event will be triggered whenever the mouse is moved into any area for which the `onmouseover` has been registered.

The onmouseout event

And unsurprisingly by now, where there's an `onmouseover`, there's usually an `onmouseout`. This is triggered when the user moves the mouse out of an area for which the event has been registered.

The ondblclick event

One of the drawbacks of the Web is that user interface elements that computer users learned how to interact with have all changed on the Web. For instance, one of the first things that new computer users learn how to do is double-click with the mouse, but there's no double-clicking on the Web. Or at least, there hasn't been, but now with **Scripts 9.13** and **9.14**, you'll be able to check for double mouse clicks.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

[View full width]

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN">
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
     <title>Image Popup</title>
     <script language="Javascript"  type="text/javascript" src="script07.js">
     </script>
</head>
<body bgcolor="#FFFFFF">
<h3>Double-click on an image to see the full-size version</h3>
     <img src="images/Img0_thumb.jpg"  width="160" height="120" hspace="10"  border="3"
  alt="Thumbnail 0" id="Img0" />
     <img src="images/Img1_thumb.jpg"  width="160" height="120" hspace="10"  border="3"
  alt="Thumbnail 1" id="Img1" />
     <img src="images/Img2_thumb.jpg"  width="160" height="120" hspace="10"  border="3"
  alt="Thumbnail 2" id="Img2" />
</body>
</html>
```

Script 9.14. Capture and handle double clicks with this script.

```
window.onload = initImages;

function initImages() {
     for (var i=0; i<document.images.length; i++) {
        document.images[i].ondblclick = newWindow;
     }
}

function newWindow() {
     var imgName = "images/" + this.id + ".jpg"
     var imgWindow = window.open(imgName, "imgWin", "width=320,height=240, scrollbars=no")
}
```

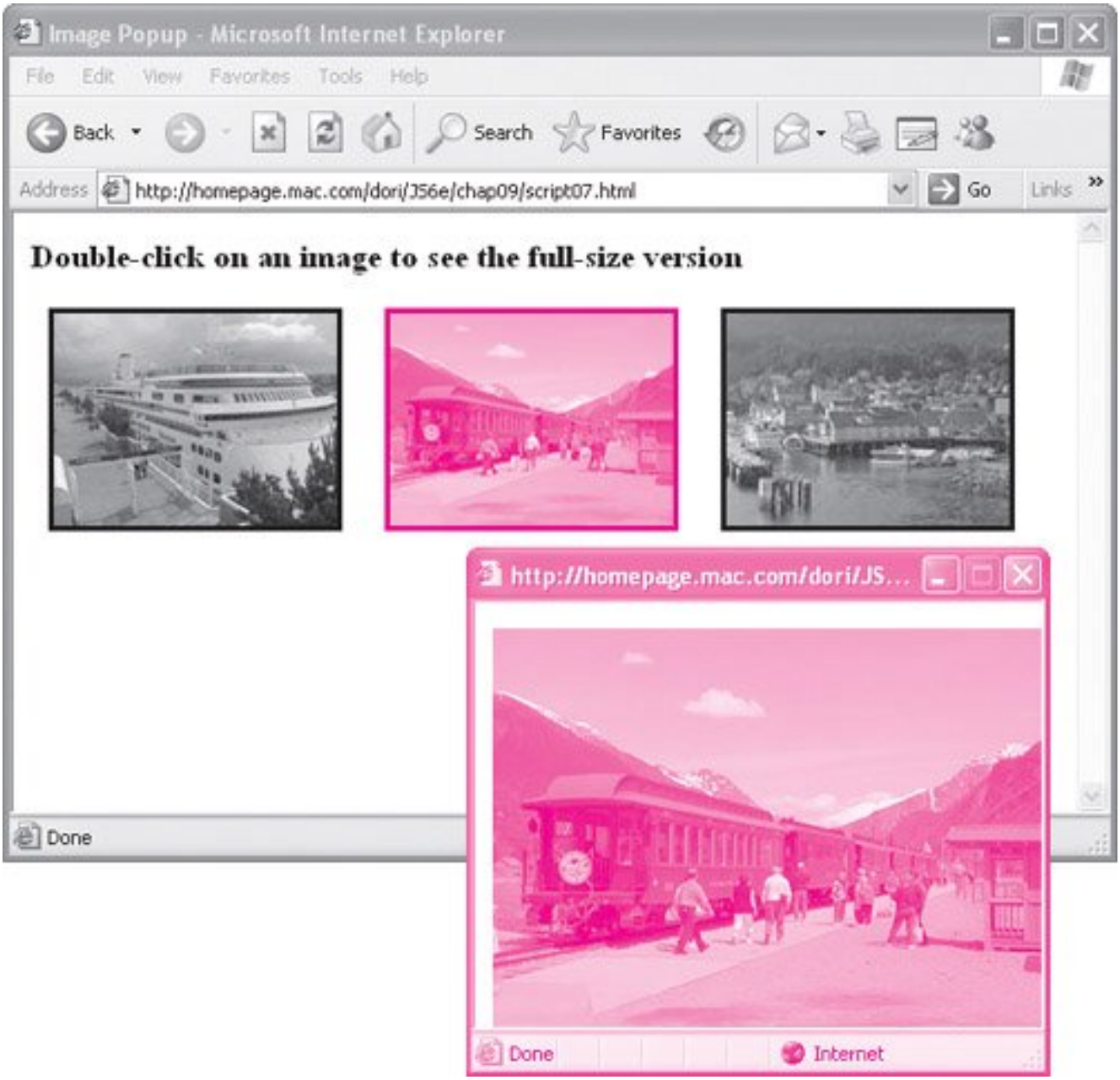
- `document.images[i].ondblclick = newWindow;`

  The `newWindow()` event handler gets triggered when a user double-clicks one of the thumbnail images. In that case, a new window pops up (**Figure 9.6**), showing the same image in a larger format.

Figure 9.6. A double-click on a thumbnail opens the larger version of the image.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir



The onclick event

The `onclick` handler works in a similar fashion to the `ondblclick` handler, except that a single click triggers it instead of a double click. The `onmouseup` handler is also similar, except that the `onclick` requires that the user press the mouse button both down and up in order to be triggered, while the `onmouseup` requires just the latter.

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Form Event Handling

You'll want to use form event handling mainly for validating forms. With the events listed below, you can deal with just about any action the user takes with forms.

The onsubmit event

The `onsubmit` handler (as seen in Chapter 7) is triggered when the user clicks the Submit button to complete a form. In addition, depending on the browser, it can also be triggered when a user exits the last text entry field on a form. If a script contains an `onsubmit` handler, and the result of the handler is false, the form will not be sent back to the server.

The onreset event

The `onreset` handler is triggered when the user clicks the Reset button (if one is present) on a form. This can be handy if your form has default values that are set when the page loadsif the user clicks Reset, you'll need to handle this situation with a script that resets the default values dynamically.

The onchange event

As shown in Script 7.2, the `onchange` event handler is triggered when the user changes a form field. This can be used to verify they entered information immediately, or to respond to the user's choice before they click the Submit button.

The onselect event

The `onselect` handler is triggered if the user selects text in either an `input` or a `textarea` form field.

The onclick event

While the `onclick` handler is mentioned above under "Mouse Events," it's listed here again because it's most commonly used when dealing with forms. This event is triggered when the user clicks a check box or radio button, as in Script 7.13. Script 2.10 also uses the `onclick` handler; in that case, it allows a single link to do one action for JavaScript-enabled browsers and another, entirely different action, for browsers without JavaScript.

The onblur event

While `onblur` can be used for browser windows (as shown above), it's more common for it to be used in forms. Scripts 9.15 and 9.16 show the `onblur` handler being used to force the user to enter data into a field.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN">
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
     <title>Requiring an entry</title>
     <script language="Javascript"  type="text/javascript" src="script08.js">
     </script>
</head>
<body bgcolor="#FFFFFF">
     <form action="#">
     <h3>
        Email address: <input type="text"  class="reqd" /><br /><br />
        Name (optional): <input type="text" />
     </h3>
     </form>
</body>
</html>
```

Script 9.16. The `onblur` handler can be used in forms to trigger actions when the user leaves a field.

```
window.onload = initForm;

function initForm() {
     var allTags = document.getElementsByTagName ("*");

     for (var i=0; i<allTags.length; i++) {
        if (allTags[i].className.indexOf ("reqd") > -1) {
           allTags[i].onblur = fieldCheck;
        }
     }
}

function fieldCheck() {
     if (this.value == "") {
        this.style.backgroundColor = "#FFFF99";
        this.focus();
     }
     else {
        this.style.backgroundColor = "#FFFFFF";
     }
}
```

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

We're using a class attribute (of `reqd`) to decide on the fly when the `onblur` event handler should be used. Simply adding `class="reqd"` to an input tag triggers the event, instead of having to put the `onblur` handler on fields individually.

2.
```
allTags[i].onblur = fieldCheck;
```

This event handler on the field causes the `fieldCheck()` function to be called whenever the user leaves a required field.

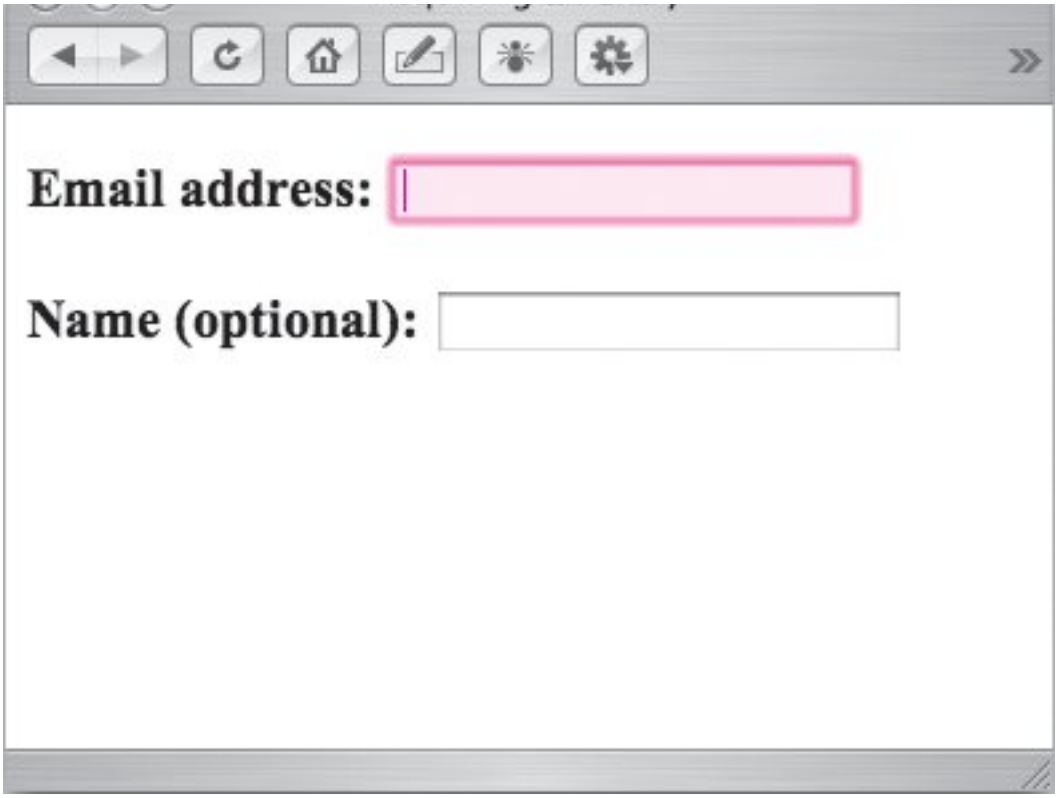
3.
```
function fieldCheck() {
  if (this.value == "") {
     this.style.backgroundColor = "#FFFF99";
     this.focus();
  }
  else {
     this.style.backgroundColor = "#FFFFFF";
  }
}
```

The `fieldCheck()` function checks to make sure that something (anything) was entered in the current field. If the field has no value, the field's background is colored pale yellow (**Figure 9.7**), and the cursor gets put back into the form field with `focus()`. When the error is corrected, the background gets reset to white.

Figure 9.7. When the user tabs out of the Email address field without entering anything, the field turns yellow and remains active until data is present.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir



✓ Tips

- Both the `onblur` and `onchange` events are triggered when the user leaves a field after changing it. If the user leaves a field without changing it, just the `onblur` handler is triggered.
- Currently shipping versions of Firefox have a problem with `focus()`: even though you tell the browser to stay in a field, it doesn't. Changing the background color gives the user a visual cue that something's wrong, though, so they'll still know that there was a problem.

The onfocus event

Sometimes you'll have a form field on a page with data that you want to display as part of the form, without the user being able to modify that field. You can use the `readonly` HTML attribute to try to keep users out, but not all browsers support it. **Scripts 9.17** and **9.18** show how to use the `onfocus` event to bump users right back out of this field, on the off chance they made it to where they shouldn't be.

Script 9.17. The HTML creates the form, which won't allow entries in the email field.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN">
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
     <title>Forbidding an entry</title>
     <script src="script09.js"  type="text/javascript"  language="javascript">
     </script>
</head>
<body bgcolor="#FFFFFF">
     <form action="#">
     <h3>
        Your message: <textarea rows="5"  cols="30">Enter your message here</
textarea><br
 /><br />
        Will be sent to: <input type="text"  value="js6@javascriptworld.com"
  readonly="readonly" />
     </h3>
     </form>
</body>
</html>
```

Script 9.18. Prevent wayward field entries with the `onfocus` handler in a form.

```
window.onload = initForm;

function initForm() {
     var allTags = document.getElementsByTagName ("*");

     for (var i=0; i<allTags.length; i++) {
        if (allTags[i].readOnly) {
           allTags[i].onfocus = function() {this.blur()};
        }
     }
}
```

- `allTags[i].onfocus = function() {this.blur()};`

  When the user attempts to enter this field, the focus (in this case the active field) will automatically be kicked right back out again (**Figure 9.8**). This happens because the `onfocus` event handler is set to call an anonymous function (one without a name) that does just one thing: call `blur()` on the current field, bouncing the user out.

Figure 9.8. The user can't type anything into the bottom field.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Key Event Handling

Besides the mouse, the other main input device is the keyboard, at least until they get that cool computer thought-control device working. Just as with the mouse, JavaScript has the mojo to handle the keyboard.

The onkeydown event

It's handy to allow users to control your Web page via their keyboard as well as via their mouse. With the key event handlers, you can trigger events to happen when the appropriate keys are pressed. In **Scripts 9.19** and **9.20**, a standard slideshow (otherwise identical to the one in Script 4.17) can be viewed by pressing the left and right arrow keys on the keyboard (**Figure 9.9**).

Script 9.19. The HTML for the slideshow.

[View full width]

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN">
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
     <title>Image Slideshow</title>
     <script language="Javascript"  type="text/javascript" src="script10.js">
     </script>
</head>
<body bgcolor="#FFFFFF">
     <h3 align="center">
        <img src="images/callisto.jpg"  id="myPicture" width="262"  height="262"
  alt="Slideshow" /><br />
        Use the right and left arrows on your keyboard to view the slideshow
     </h3>
</body>
</html>
```

Script 9.20. Use the `onkeydown` handler in this script to trigger a slide change.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
document.onkeydown = keyHit;
var thisPic = 0;

function keyHit(evt) {
     var myPix = new Array("images/callisto.jpg", "images/europa.jpg","images/io.jpg",
  "images/ganymede.jpg");
     var imgCt = myPix.length-1;
     var ltArrow = 37;
     var rtArrow = 39;

     var thisKey = (evt) ? evt.which : window.event.keyCode;

     if (thisKey == ltArrow) {
        chgSlide(-1);
     }
     else if (thisKey == rtArrow) {
        chgSlide(1);
     }
     return false;

     function chgSlide(direction) {
        thisPic = thisPic + direction;
        if (thisPic > imgCt) {
           thisPic = 0;
        }
        if (thisPic < 0) {
           thisPic = imgCt;
        }
        document.getElementById("myPicture"). src = myPix[thisPic];
     }
}
```

Figure 9.9. This slideshow is controlled with keypresses, rather than mouse clicks on navigation buttons.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

1. `document.onkeydown = keyHit;`

Here we register the `keyHit()` function as the one to handle `onkeydown` events.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

The variable `thisPic` is initialized and set globally, so that it's stored and available for use every time `keyHit()` is called.

3.
```
function keyHit(evt) {
```

The `keyHit()` function handles the event when keys are hit.

4.
```
var ltArrow = 37;
var rtArrow = 39;
```

We need to store the appropriate values for when a key is hit. The left arrow key generates a 37, and the right arrow triggers a 39.

5.
```
var thisKey = (evt) ? evt.which : window.event.keyCode;
```

How we know which key the user hit depends on which browser they're using. If it's Firefox or Safari, we look at `evt.which`, which contains the code for the key hit. If it's IE, that same value will be in `window.event.keyCode`. Either way, the result is saved in `thisKey`.

6.
```
if (thisKey == ltArrow) {
  chgSlide(-1);
}
else if (thisKey == rtArrow) {
  chgSlide(1);
}
```

If the user pressed the left arrow, then go backward through the slideshow. If they pressed the right arrow, go forward. If they chose any other key, don't do anything at all.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

This line is there to work around a bug in a single browser: Safari. Other browsers handle this just fine, but Safari triggers two keystrokes instead of one (causing `onkeydown` to be triggered twice) every time you press an arrow. If you return a value of false, Safari knows that it should stop handling these events, and other browsers don't care one way or another.

The onkeyup event

The `onkeyup` event handler is identical to the `onkeydown` handler, except that (big surprise) it gets called when the user has completed pressing the key down and is now letting it come back up again.

The onkeypress event

The `onkeypress` event is triggered when the user both presses a key down and also lets the key back up againjust for completeness's sake.

✓ Tip

- If you're not sure what the key values are for a particular key, you can find out by putting the line `alert(thiskey);` in between the lines of code in steps 5 and 6; then, press the key for which you want to find the value. The alert box contains the numeric key value.

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Chapter 10. JavaScript and Cookies

In Web terms, a *cookie* is a unique nugget of information that a Web server gives to your browser when the two first meet and which they then share with each return visit. The remote server saves its part of the cookie and the information it contains about you; your browser does the same, as a plain text file stored on your computer's hard disk.

As a JavaScript author, you can do many useful things with cookies. If your site requires registration, you can set cookies to store your readers' user names and passwords on their hard drives, so they don't need to enter them every time they visit. You can keep track of which parts of your site the user has visited and count the number of visits from that user.

There are many common misconceptions about cookies, so it's important to note what you can't do with them: you can't get any real information about the user such as their email address; you can't use cookies to check out the contents of their hard disks; and cookies can't transmit computer viruses. A cookie is just a simple text file on the user's hard disk where you, the JavaScript programmer, can store some information.

A cookie always includes the address of the server that sent it. That's the primary idea behind cookie technology: identification. Think of it as Caller ID for the Web, with variations on the themeeach Web site using cookies gives your browser a personalized ID of some sort, so that it can recognize you on the next visit. When you return to the Web server that first passed you a particular cookie, the server can query your browser to see if you are one of its many cookie holders. If so, the server can then retrieve the information stored in the cookie the two of you originally exchanged. Keep in mind that cookies just identify the computer being used, not the individual using the computer.

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Baking Your First Cookie

A cookie is a text string with a particular format:

```
cookieName=cookieValue; expires= expirationDateGMT; path=URLpath; domain=siteDomain
```

Breaking this down, the first part of the string gives the cookie a name and assigns it a value. This is the only mandatory part of a cookie; the rest of the string is optional. Next is the expiration date of the cookie; when this date is reached, the browser automatically deletes the cookie. The expiration date is followed by a URL path, which lets you store a URL in the cookie. Finally, you can store a domain value in the cookie.

Script 10.1, the HTML file, calls the JavaScript in **Script 10.2**, which sets a cookie from a value entered by the user into a form. When you try this one out, it won't appear to do that much (as in **Figure 10.1**), but the cookie is actually being created. Later examples in this chapter build on this one.

Script 10.1. The HTML for our first cookie page.

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN">
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
     <title>Set a cookie based on a form</title>
     <script language="Javascript"  type="text/javascript"  src="script01.js">
     </script>
</head>
<body bgcolor="#FFFFFF">
     <form action="#">
        <h1>Enter your name: <input type="text" id="nameField" /></h1>
     </form>
</body>
</html>
```

Script 10.2. Use this script to set a browser cookie.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
function nameFieldInit() {
     var userName = "";
     if (document.cookie != "") {
        userName = document.cookie.split ("=")[1];
     }

     document.getElementById("nameField"). value = userName;
     document.getElementById("nameField"). onblur = setCookie;
}

function setCookie() {
     var expireDate = new Date();
     expireDate.setMonth(expireDate. getMonth()+6);

     var userName = document.getElementById ("nameField").value;
     document.cookie = "userName=" + userName + ";expires=" + expireDate.toGMTString();
}
```

Figure 10.1. It doesn't look like much, but the content of the form's text field has just been written to a cookie.

[View full size image]

To set a cookie:

1. `function nameFieldInit() {`

   First, set up the function `nameFieldInit()` to define the value of the cookie. This function is called when the window has completed loading.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Next, we initialize the variable `userName` with a null value.

3.
```
if (document.cookie != "") {
  userName = document.cookie. split("=")[1];
```

We begin a conditional test by first checking that the object `document.cookie` does not contain a null value. The method `split("=")` splits a cookie into an array, where `cookieField[0]` is the cookie name and `cookieField[1]` is the cookie value. Note that `cookieField` can be any variable that you want to use to store a particular cookie's fields. So you assign `userName` the value returned by `document.cookie.split("=")[1]`, that is, the cookie value.

4.
```
document.getElementById("nameField") .value = userName;
```

Setting `getElementById("nameField").value` puts the user's name into the text field when the page loads if there's a name stored in the cookie file.

5.
```
document.getElementById("nameField") .onblur = setCookie;
```

The `onblur` event handler (see Chapter 1) calls the `setCookie()` function when the user leaves the text field.

6.
```
function setCookie() {
```

Now begin a new function, called `setCookie()`.

7.
```
var expireDate = new Date();
```

Get the current date, and put it into the new variable `expireDate`.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

This line gets the month portion of `expireDate`, adds 6 to the month, and then sets the month portion of `expireDate` to the new value. In other words, it sets the expiration date of the cookie we're creating to six months in the future.

9. `var userName = document.getElementById("nameField").value;`

This line creates a new `userName` variable and assigns it whatever the user typed into the text field. The `userName` variable has to be created twice (once inside each function) because it's not a global; that is, we're using it inside each function, but we're not expecting it to keep its value across functionsit's new each time.

10. `document.cookie = "userName=" + userName + ";expires=" + expireDate.toGMTString();`

Here's where we write the cookie. We're setting `document.cookie` (remember, a cookie is just a text string, so you can use the same text string techniques to build it, like using the `+` sign to combine things) to contain the user's name and the cookie expiration date. The `toGMTString()` method converts the `expireDate Date` object into a text string so that it can be written into the cookie.

A Fistful of Cookies

You can have multiple cookies on a page, and the format for this is:

[View full width]

```
"cookieName1=cookieValue1; expires1=expirationDateGMT1;
 path1=sitePath1; domain1=siteDomain1"; "cookieName2=cookieValue2;
 expires2=expirationDateGMT2; path2=sitePath2; domain2=siteDomain2"
```

Again, the only mandatory fields are the name and value pair.

The `split("; ")` command splits the multiple cookie record into an array, with each cookie in a cookie record numbered from 0 on. Note that there is a space after the semicolon in this command. So `cookieArray[0]` would be the first cookie in the multiple cookie record, `cookieArray[1]` would be next, and so on. For more, see the "Handling Multiple Cookies" example later in this chapter.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

✓ Tips

- This script assumes that the first cookie contains the user name. Later scripts show how to handle multiple cookies and get a cookie by name instead of number.
- The scripts in this chapter are ordered in such a way that they'll work fine if you run them in the order they appear. If you skip around, though, you may encounter some weird results (such as the browser thinking that your name is a number). If you want to run them out of sequence, try running Script 10.7 ("Deleting Cookies") in between scripts.

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Reading a Cookie

Once you've set a cookie, you'll need to retrieve it in order to do anything useful. The last example set the cookie with the text string "Tom". The very simple **Scripts 10.3** and **10.4** show you how to get that value from the cookie and display it on the screen (of course, you normally would not show off your cookies; this script just displays the cookie as an example).

Script 10.3. JavaScript uses the `id` in this HTML page to insert the cookie result.

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN">
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
     <title>I know your name!</title>
     <script language="Javascript"  type="text/javascript" src="script02.js">
     </script>
</head>
<body bgcolor="#FFFFFF">
     <h1 id="nameField"> </h1>
</body>
</html>
```

Script 10.4. This short script reads a previously set cookie and sends it to the document window.

[View full width]

```
window.onload = nameFieldInit;

function nameFieldInit() {
     if (document.cookie != "") {
        document.getElementById ("nameField").innerHTML = "Hello, " +  document.cookie.
split("=")[1];
     }
}
```

To read a cookie:

1. `if (document.cookie != "") {`

   Make sure that the value in the object `document.cookie` isn't null.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

If the cookie isn't empty, then write a text string (the "Hello," and note the extra space after the comma) and combine it with the split of the cookie value (**Figure 10.2**).

Figure 10.2. This cookie had my name on it.

[View full size image]

✓ Tip

- Did you notice that you don't need to specify which of the cookies in the cookie file you are reading? That's because a cookie can only be read by the server that wrote it in the first place. The internal cookie mechanisms in the browser won't let you read or write cookies written by someone else. You only have access to your own cookies.

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Showing Your Cookies

In the previous example, we read the value of one cookie from the server. Now we'll see how to write a script that reads all the cookies that came from your server and displays their names and values. If there are no cookies, the script says "There are no cookies here" (**Figure 10.3**). If there are cookies, it displays a line per cookie showing what's in the cookie (**Figure 10.4**). **Script 10.5** shows you how.

Figure 10.3. If there are no cookies from the server your Web page is on, you'll see this result.

[View full size image]

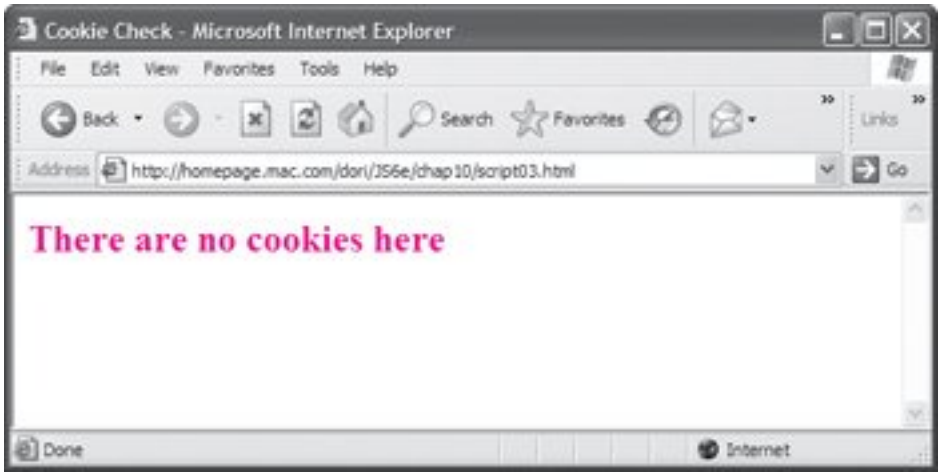
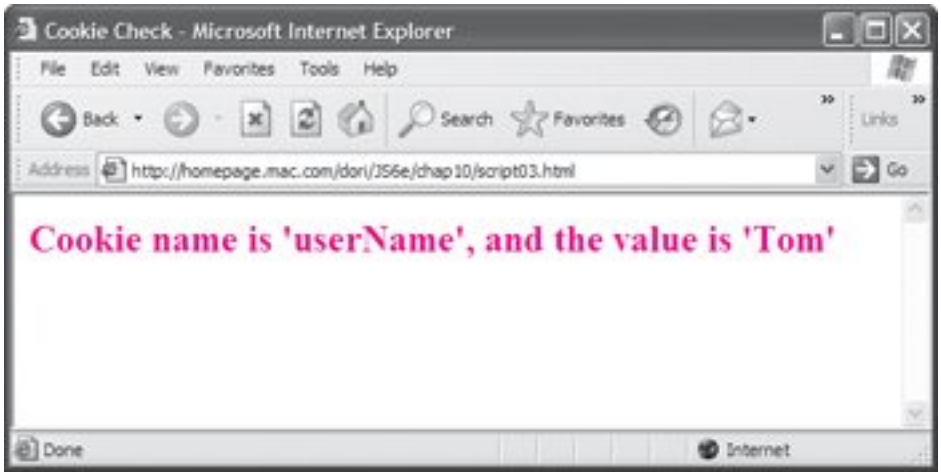


Figure 10.4. If there are one or more cookies, then the script writes them into the document window.

[View full size image]



downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

machine that have been set by a particular server.

```
window.onload = showCookies;

function showCookies() {
     var outMsg = "";

     if (document.cookie == "") {
        outMsg = "There are no cookies here";
     }
     else {
        var thisCookie = document.cookie. split("; ");

        for (var i=0; i<thisCookie.length; i++) {
           outMsg += "Cookie name is '" + thisCookie[i].split("=")[0];
           outMsg += "', and the value is '" + thisCookie[i].split("=")[1] + "'<br />";
        }
     }
     document.getElementById("cookieData"). innerHTML = outMsg;
}
```

To show all your cookies:

1. `var outMsg = "";`

   Start by initializing the variable `outMsg`, which will contain the message we want to display.

2. `if (document.cookie == "") {`
   `  outMsg = "There are no cookies here";`

   This conditional test is read "If the `outMsg` object is null (that is, empty), then write, "There are no cookies here" into the document window.

3. `var thisCookie = document.cookie. split("; ");`

   If the previous test failed (i.e., if there was at least one cookie present), then get the values of all of the cookies using `document.cookie.split("; ")` and stuff those values into a array called `thisCookie`. Remember that the `split("; ")` command creates an array of all of the cookies. Later, the script will be able to reference each of the values in that array.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

This line starts a loop by first setting the value of `i`, the counter variable, to 0. Then, if `i` is less than the number of cookies in the `thisCookie` array, increment the value of `i` by 1.

5.
```
outMsg += "Cookie name is '" + thisCookie[i].split("=")[0]);
outMsg += "', and the value is '" + thisCookie[i].split("=")[1] + "'<br />");
```

As the script moves through the array, it puts the text string `"Cookie name is '"` into `outMsg`, followed by the name of the cookie. Then it concatenates the text string `"', and the value is '"` and the value of the cookie. And at the end of each line, we add an HTML break.

6.
```
document.getElementById. ("cookieData").innerHTML = outMsg;
```

After setting the variable `outMsg`, it gets dumped out to the page via `innerHTML` when all the cookies have been gone through.

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Using Cookies as Counters

Because cookies are persistent, that is, because they are available across multiple sessions between a Web server and browser, you can use cookies to store how many times a particular user has accessed a page. But this isn't the same thing as the page counters you see on many Web pages. Because a cookie is specific to a user, you can only tell *that* user how many times he or she has visited; you can't use cookies to tell all users how many times the page has been hit. Still, it's useful to know how to create such an individual counter, and you can adapt **Script 10.6** for other purposes, too (see Tips).

Script 10.6. This script counts your cookies.

[View full width]

```
window.onload = initPage;

function initPage() {
     var expireDate = new Date();
     expireDate.setMonth(expireDate.getMonth()+6);

     var hitCt = parseInt(cookieVal("pageHit"));
     hitCt++;

     document.cookie = "pageHit=" + hitCt + ";expires=" + expireDate.toGMTString();
     document.getElementById("pageHits"). innerHTML = "You have visited this page "
+
 hitCt + " times.";
}

function cookieVal(cookieName) {
     var thisCookie = document.cookie.split("; ");

     for (var i=0; i<thisCookie.length; i++) {
        if (cookieName == thisCookie[i]. split("=")[0]) {
           return thisCookie[i].split("=")[1];
        }
     }
     return 0;
}
```

To use a cookie as a counter:

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
expireDate.setMonth(expireDate. getMonth()+6);
```

These two lines are the same as in steps 7 and 8 of the "Baking Your First Cookie" example. Refer there for an explanation.

2. `var hitCt = parseInt(cookieVal ("pageHit"));`

The string `pageHit` is the name of the cookie. In a few steps, you'll see the function `cookieVal()`. This line takes the name of the cookie from `cookieVal()`, turns it into a number using the `parseInt()` method, and then stores the result in the variable `hitCt`. The `parseInt()` method changes a string (which is what is in the cookie) into a number (which is what the variable needs to use it as a counter).

3. `hitCt++;`

Now take the value of `hitCt` and add 1 to it, incrementing the counter.

4. `document.cookie = "pageHit=" + hitCt + ";expires=" + expireDate. toGMTString();`

This writes back the updated information to the cookie for future use. What's being written is a text string that combines the string `"pageHit="` with the incremented value of `hitCt` and adds `";expires="` with the expiration date, which was incremented by six months back in step 1.

5. [View full width]
```
document.getElementById("pageHits"). innerHTML = "You have visited this page " + hitCt + "
 times.";
```

This line displays the user message in the document (**Figure 10.5**). There are extra spaces after "page" and before "times" to make the line look right on screen.

Figure 10.5. Hard to believe we've visited this dull page this often.

[View full size image]

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

6. `function cookieVal(cookieName) {`

This line begins a new function called `cookieVal()`. It is passed some data, which can then be referenced inside the function as the variable `cookieName`.

7. `var thisCookie = document.cookie. split("; ");`

The variable `thisCookie` is set to the array generated by the `split("; ")` method.

8. `for (var i=0; i<thisCookie.length; i++) {`

Here we're beginning a loop, just as in step 4 of the "Showing Your Cookies" example.

9. `if (cookieName == thisCookie[i]. split("=")[0]) {`

This conditional checks to see if `cookieName` is the same as the `i`th element of the cookie array.

10. `return thisCookie[i].split("=")[1];`

If the test in step 9 succeeded, then return the cookie's value.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

If we've looked at all the items in the array and found no match, return a 0 value.

✓ Tips

- When you load the HTML page that calls this script, press the Reload button in your browser to see the counter increment.
- As mentioned earlier, you can adapt Script 10.6 for other purposes. One possibility would be to use a cookie to track when a particular user had last visited your site and display different pages depending on when that was. For example, some online magazines have a cover page with artwork and the names of the stories in the day's issue. If the user visits the site more than once in a 24-hour period, they only see the cover page the first time; subsequent visits jump the user directly to the site's Table of Contents page.
- If you want a true page hit counter, one that tells how many times a page has been loaded by all users, you'll need to use a counter program that is installed on your Web server. Check with your Web hosting company to see if they have counters available, or put "Web page hit counter" into your favorite search engine.

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Deleting Cookies

At some point, you're going to want to delete a cookie or many cookies in a cookie record. It's fairly easy to do; one technique that works well is to simply set the cookie's expiration date to a date in the past, which causes the browser to delete it automatically. **Script 10.7** shows how to force your cookies to become stale.

Script 10.7. This script deletes cookies.

[View full width]

```
window.onload = cookieDelete;

function cookieDelete() {
     var cookieCt = 0;

     if (document.cookie != "" && confirm ("Do you want to delete the cookies?")) {
        var thisCookie = document.cookie.split ("; ");
        cookieCt = thisCookie.length;

        var expireDate = new Date();
        expireDate.setDate(expireDate. getDate()-1);

        for (var i=0; i<cookieCt; i++) {
           var cookieName = thisCookie[i]. split("=")[0];
           document.cookie = cookieName + "=;expires=" + expireDate. toGMTString();
        }
     }
     document.getElementById("cookieData"). innerHTML = "Number of cookies deleted: "
+
 cookieCt;
}
```

To delete cookies:

1. `var cookieCt = 0;`

   This script is going to keep track of how many cookies we've deleted, so we start off by creating the `cookieCt` variable and setting it to zero.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

This test first checks to make sure that the cookie doesn't contain a null value, that is, there are some cookies. If the test shows that the cookie is empty, then the script will do nothing. The second part of the test tells the browser to put up a confirmation dialog with the included text (**Figure 10.6**). If `confirm()` returns `true`, then we know the user wants to delete their cookies. If `false`, then we skip down to step 9.

Figure 10.6. It's good interface design to confirm with the user whenever you are going to erase or delete anything.

[View full size image]

3. `var thisCookie = document.cookie. split("; ");`

This line splits the contents of the cookie into an array with the `split("; ")` method and assigns that array to the variable `thisCookie`.

4. `cookieCt = thisCookie.length;`

We now know how many cookies we're going to be deleting, so that's stored in `cookieCt`.

5.
```
var expireDate = new Date();
expireDate.setDate(expireDate. getDate()-1);
```

Here we create a new date object, `expireDate`, which is then set to the current date minus 1in other words, to yesterday.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Now begin a `for` loop, so that we can delete all the cookies, not just one. First set the value of `i` to 0; then, as long as `i` is less than the number of cookies, increment `i` by 1.

7. `var cookieName = thisCookie[i]. split("=")[0];`

Use `split("=")[0]` to get the name of the `i` th cookie in the array, which is then stored in the variable `cookieName`.

8. `document.cookie = cookieName + "=;expires=" + expireDate. toGMTString();`

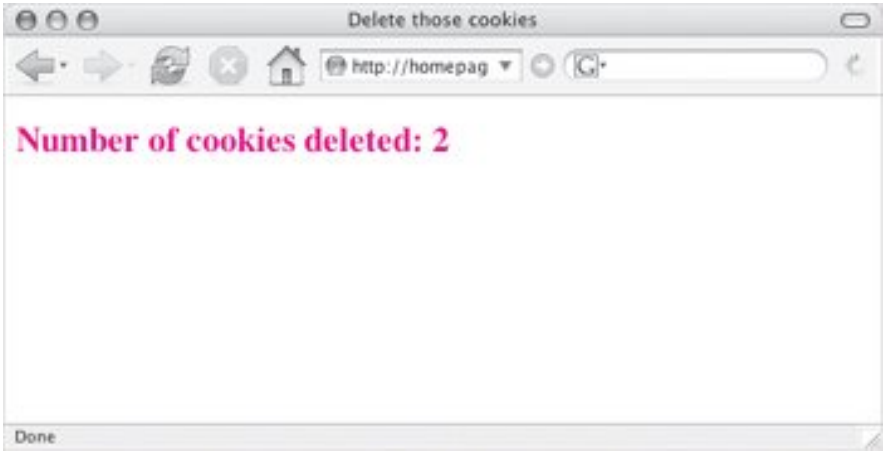
Here's where the cookie with the changed expiration date gets written back out.

9. `document.getElementById ("cookieData").innerHTML = "Number of cookies deleted: " + cookieCt;`

The script is out of the `for` loop now, and this line sets the number of cookies deleted in the HTML document (**Figure 10.7**).

Figure 10.7. Users should also get feedback that events have occurred as expected.

[View full size image]



✓ Tip

- In previous editions of this book, this script showed nothing at all if no cookies existed, or if the user cancelled the deletion. Setting `innerHTML` to a value will now show the actual number

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Handling Multiple Cookies

You will often want to deal with more than one cookie at a time, and **Script 10.8** shows you how to read from more than one cookie and display the information. This example shares a fair amount of code with the "Using Cookies as Counters" example.

Script 10.8. Use an array to deal with multiple cookies in a single script.

```
window.onload = initPage;

function initPage() {
     var now = new Date();
     var expireDate = new Date();
     expireDate.setMonth(expireDate.getMonth()+6);

     var hitCt = parseInt(cookieVal("pageHit"));
     hitCt++;

     var lastVisit = cookieVal("pageVisit");
     if (lastVisit == 0) {
        lastVisit = "";
     }

     document.cookie = "pageHit=" + hitCt + ";expires=" + expireDate.toGMTString();
     document.cookie = "pageVisit=" + now + ";expires=" + expireDate.toGMTString();

     var outMsg = "You have visited this page " + hitCt + " times.";
     if (lastVisit != "") {
        outMsg += "<br />Your last visit was " + lastVisit;
     }
     document.getElementById("cookieData"). innerHTML = outMsg;
}

function cookieVal(cookieName) {
     var thisCookie = document.cookie.split("; ");

     for (var i=0; i<thisCookie.length; i++) {
        if (cookieName == thisCookie[i]. split("=")[0]) {
           return thisCookie[i].split("=")[1];
        }
     }
     return 0;
}
```

To handle multiple cookies:

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

We start off by looking for a cookie named `pageVisit` by passing that string to the `cookieVal()` function. It returns a value, which is then stored in `lastVisit`.

2.
```
if (lastVisit == 0) {
  lastVisit = "";
}
```

If the value of `lastVisit` is zero, then put a null value into `lastVisit`. We now know the user has never been here before.

3.
```
document.cookie = "pageHit=" + hitCt + ";expires=" + expireDate.toGMTString();
document.cookie = "pageVisit=" + now + ";expires=" + expireDate.toGMTString();
```

These two lines write the two cookies back to disk with an updated hit number and visit date.

4.
```
var outMsg = "You have visited this page " + hitCt + " times.";
if (lastVisit != "") {
  outMsg += "<br />Your last visit was " + lastVisit;
}
```

The `outMsg` variable stores the outgoing message to our site's visitor and starts off by being set to tell them how many times they've been here. The next lines check if the user has been here before (in code: if `lastVisit` isn't null) and if they have, we remind them when.

5.
```
document.getElementById ("cookieData").innerHTML = outMsg;
```

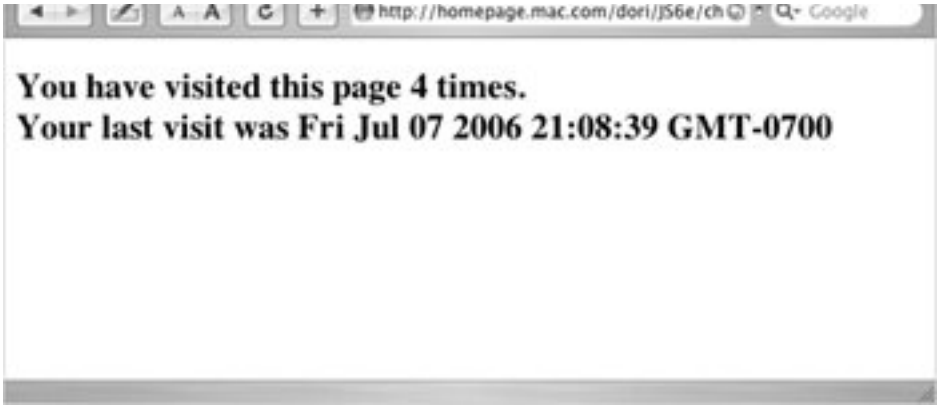
And finally, `outMsg` is displayed on the screen, telling the user what they've done before. The result of this script is shown in **Figure 10.8**.

Figure 10.8. The two cookies, written to the screen (along with some other text).

[View full size image]

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir



PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Displaying "New to You" Messages

You can use cookies and JavaScript to alert frequent visitors to your site to items that are new to them. This gives the user a more personalized experience when they visit your site, making it a smarter and friendlier place. **Script 10.9** and **Script 10.10** add a little "New!" image to the beginning of lines when the cookie says that a line has been added since the last time the visitor was there (**Figure 10.9**). Again, you'll see familiar code from previous examples in this chapter.

Script 10.9. The CSS used in the HTML of this page applies the next script's results to the page.

[View full width]

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN">
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
     <title>New for You</title>
     <script language="Javascript"  type="text/javascript"  src="script07.js">
     </script>
     <style type="text/css">
        p.newImg {
           padding-left: 35px;
           background-image: url(images/new.gif);
           background-repeat: no-repeat;
       }
      </style>
</head>
<body bgcolor="#FFFFFF">
     <p>Negrino and Smith's most recent books:</p>
     <p id="New-20060901"><a href="http://www. javascriptworld.com/">JavaScript &&
Ajax
for the Web: Visual QuickStart Guide, 6th Edition</a></p>
     <p id="New-20051221"><a href="http://www. dreamweaverbook.com/">Dreamweaver 8 for
Windows &amp; Macintosh: Visual QuickStart Guide</a></p>
</body>
</html>
```

Script 10.10. This script can help you personalize your site by alerting the user to new content.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
window.onload = initPage;

function initPage() {
     var now = new Date();
     var lastVisit = new Date(cookieVal ("pageVisit"));
     var expireDate = new Date();
     expireDate.setMonth(expireDate.getMonth()+6);

     document.cookie = "pageVisit=" + now + ";expires=" + expireDate.toGMTString();
     var allGrafs = document.getElementsByTagName("p");

     for (var i=0; i<allGrafs.length; i++) {
        if (allGrafs[i].id.indexOf("New-") != -1) {
           newCheck(allGrafs[i],allGrafs[i]. id.substring(4));
        }
     }

     function newCheck(grafElement,dtString) {
        var yyyy = parseInt(dtString.substring (0,4),10);
        var mm = parseInt(dtString.substring (4,6),10);
        var dd = parseInt(dtString.substring (6,8),10);
        var lastChgd = new Date(yyyy,mm-1,dd);

        if (lastChgd.getTime() > lastVisit. getTime()) {
           grafElement.className = (grafElement.className == "") ? "newImg" : "newImg "
+
  grafElement.className;
        }
     }
}

function cookieVal(cookieName) {
     var thisCookie = document.cookie.split("; ");

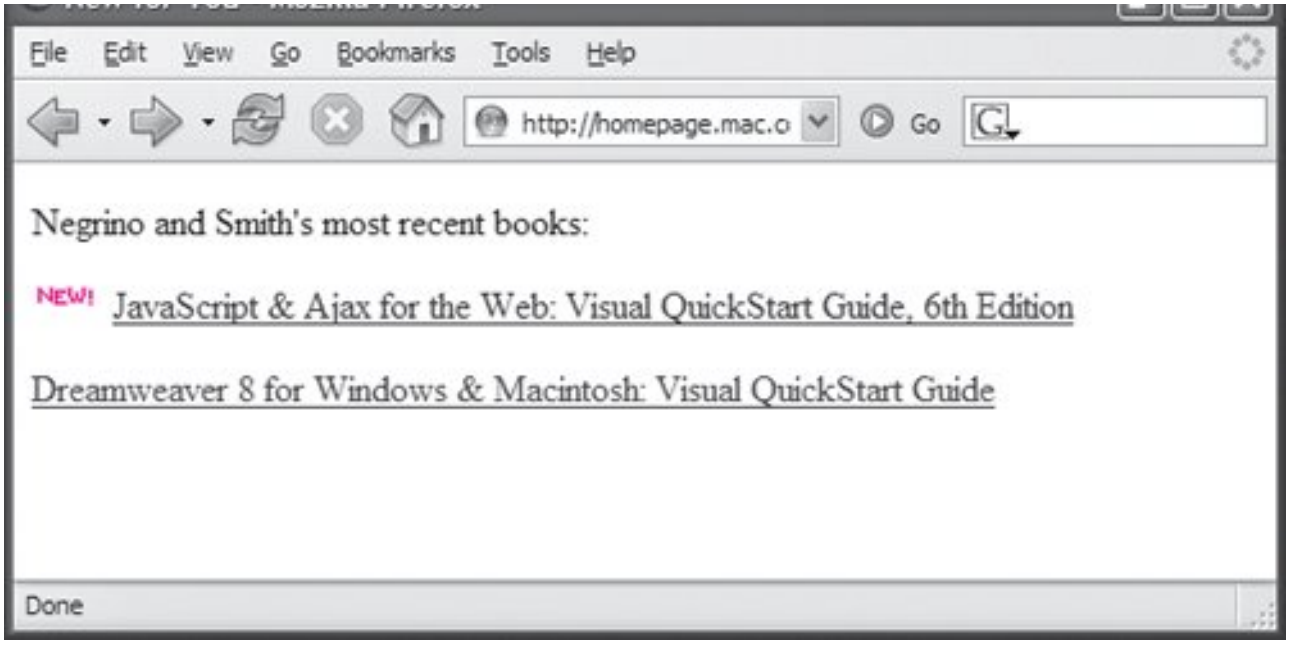
     for (var i=0; i<thisCookie.length; i++) {
        if (cookieName == thisCookie[i].split ("=")[0]) {
           return thisCookie[i].split("=")[1];
        }
     }
     return "1 January 1970";
}
```

Figure 10.9. JavaScript can ask a cookie when you've last visited a site and flag new items for you.

[View full size image]

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir



To display a "New to You" message:

1.
```
p.newImg {
  padding-left:
  35px; background-image: url(images/new.gif);
  background-repeat: no-repeat;
}
```

In Script 10.9, we use CSS to specify that anything on the page marked as a paragraph (within a `<p>` tag) which also has a class of `newImg` will have 35 pixels of padding added to the left and a "New!" image put in the background. However, since the padding ensures that nothing appears in front of the paragraph contents, the image won't look like a background pattern.

2. [View full width]
```
<p id="New-20060901"><a href= "http://www.javascriptworld.com/">JavaScript &amp; Ajax for
the Web: Visual QuickStart Guide, 6th Edition</a></p>
<p id="New-20051221"><a href= "http://www.dreamweaverbook.com/">Dreamweaver 8 for Windows
&amp; Macintosh: Visual QuickStart Guide</a></p>
```

The `id` attributes on these two paragraphs will signal to the JavaScript (as we'll see shortly) that they contain dates that get compared against the information set up in the following steps.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
var expireDate = new Date();
expireDate.setMonth(expireDate. getMonth()+6);
```

In Script 10.10, this section initializes the `now`, `lastVisit`, and `expireDate` dates. The first is the current date, the second is the saved date of the surfer's last visit to the site, and the last will be the expiration date of the cookie when it's rewritten.

4. `document.cookie = "pageVisit=" + now + ";expires=" + expireDate. toGMTString();`

This line writes the cookie, putting the current date into the `pageVisit` value and the value of `expireDate` into `expires`.

5. `var allGrafs = document.getElementsByTagName("p");`

This line creates an array of all the `<p>` elements on the page, which allows us to go through each of them one by one looking for just the ones we care about.

6. `for (var i=0; i<allGrafs.length; i++) {`

Here, we start a loop to go through the array, looking at each paragraph element in turn.

7. `if (allGrafs[i].id.indexOf("New-") != -1) {`

If this paragraph has an `id` attribute that contains the text "New-", then we know that this is a paragraph we care about, so do the following.

8. `newCheck(allGrafs[i], allGrafs[i]. id.substring(4));`

We want to check to see if this paragraph has something in it that will be new to the visitor. The `newCheck()` function will do that, and it's passed two parameters: the current paragraph element (`allGrafs[i]`) and the second part of the `id` attribute. The `substring()` grabs the part of the string from the fifth character on to the end, and as that's all we care about here, that's all we'll pass. (Remember that JavaScript strings are zero-relative, which is why the fifth character of the string is found at position 4.)

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

This function is expecting two parameters to be passed in, which will be referred to internally as `grafElement` (that paragraph element) and `dtString` (the second part of the `id` attribute).

10.
```
var yyyy = parseInt(dtString. substring(0,4),10);
var mm = parseInt(dtString. substring(4,6),10);
var dd = parseInt(dtString. substring(6,8),10);
```

Here, the date is parsed out of a string; so, for example, "20060901" is 1 September 2006.

The `yyyy` variable gets the first 4 digits (starting at digit 0 and ending just before digit 4), with the result of "2006". The `mm` variable gets the fourth and fifth digits, and the `dd` variable gets the sixth and seventh digits. In each case, we also do a `parseInt()` on the result, which forces the value returned by `substring()` into an integer.

More about substring()

The command `substring(to,from)` returns the characters in a string, starting with the `to` position and ending with the character just before the `from` position, zero-relative. So, if the string contains "20060807", and you want characters 5 and 6, you want to use `substring(4,6)`. Your result is the string "08".

The `from` parameter is optional; leaving it off means you'll get the string starting from the `to` position all the way to the end.

11.
```
var lastChgd = new Date(yyyy, mm-1, dd);
```

Finally, we can set `lastChgd`, because we've got a year, month, and day. But wait! JavaScript and its bizarre dates now hit us, and we have to subtract 1 from the month to get the correct resultjust the month, mind you, not the year or day. Really. Months are zero-relative, years and days are one-relative. (See Chapter 13, "Making Your Pages Dynamic," for more on dates and their oddities.)

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Now we can compare the two dates, and only do the following line if the date that the information last changed is after the date the surfer last visited.

13. [View full width]

```
grafElement.className = (grafElement.className == "") ? "newImg" : "newImg " + grafElement
.className;
```

Now, here's the slick part: we know that this is a paragraph that should display the "New!" image. So, if we add a class attribute of `newImg` to the `<p>` tag, that style (declared on the HTML page) automatically then applies to that paragraph, resulting in the display of the image.

That is, we can use JavaScript to add an attribute (and its associated value) to an element. In this case, the element is a `<p>`, the attribute is `class`, and the value of the attribute is `newImg`. As the element may already have an existing class, this code takes care to add the value and not just overwrite what's currently there.

Once this new attribute has been added, it triggers the browser's rendering engine to immediately and automatically apply the style to the element, causing the image to appear.

grafElement Alternative

By the way, the `grafElement` code could have been written as:

```
if (grafElement.className == "") {
   grafElement.className = "newImg";
}
else {
   grafElement.className = "newImg " + grafElement.className;
}
```

However, the shorthand style included in the script is not only more like what's being used on the Web, it's cleaner and more compact. (See the sidebar "There's No One Right Way," in Chapter 2, for more information.)

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
  var thisCookie = document.cookie. split("; ");

  for (var i=0; i<thisCookie. length; i++) {
     if (cookieName == thisCookie[i].split("=")[0]) {
        return thisCookie[i]. split("=")[1];
     }
  }
  return "1 January 1970";
}
```

This is the now-familiar `cookieVal()` function. The only difference here is that it has been changed to return "1 January 1970" instead of zero if no cookie with that name was found, which makes the code a bit simpler elsewhere. The oddity of that date is that JavaScript thinks that is when time began, so everything should be after that. That date won't appear to the user; it's just an internal reference date for JavaScript.

✓ Tip

- You're probably more familiar with `parseInt()` being passed only a single parameter. Here, two are passed: the string to be converted, and 10. That last parameter tells `parseInt()` to always return a decimal number. Otherwise, when `parseInt()` is passed a string starting with 0, it may try to turn the result into octal (base 8 numbering), with incorrect results. In this case, a call to `parseInt("09")` doesn't return the same result as `parseInt("09",10)`, and the latter is what we want. It's just a weird JavaScript thing that you need to be aware of.

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Chapter 11. Introducing CSS

Back in the dark ages of the Web, the favorite sport of designers was to bemoan their lack of control over the appearance of Web pages. Suddenly, their most basic assumptions about their abilities were called into question. They were unable to precisely position objects on Web pages, and they had little control over the look and specifications of type on those pages. In fact, the whole concept of a "Web page" was annoyingly fuzzy; in the print world, a designer always knows the dimensions of the piece of paper for which they're designing. But on the Web, there are no fixed page sizes.

The Cascading Style Sheets specifications from the World Wide Web Consortium (aka the W3C, which develops Internet standards; http://www.w3.org) allows designers to specify the look of page elements, including type, as well as position those elements precisely on the Web page. Besides these abilities, CSS allows designers to easily do something at which they excel: change their minds. If the look of the elements of your site is defined according to a style sheet, in order to change the look of the site, you simply need to change the definitions in the style sheet, and the changes are automatically applied. Using CSS allows Web designers to spend more time designing, rather than wrestling with HTML's limitations.

You'll note that there isn't any JavaScript in this chapter; we're taking this brief detour because you must know some CSS in order to understand the concepts behind later chapters. In this chapter, you'll be introduced to CSS. You'll see how to use CSS for text formatting and also for positioning page elements.

About the CSS Specs

There are three CSS specifications altogether. CSS1, which specifies text formatting, was standardized in December 1996. CSS-P (where the "P" stands for "positioning") was first introduced in January 1997. CSS2 was standardized in May 1998 as a fusion of the previous two standards, encompassing both formatting and positioning. As of this writing, over eight years after CSS2 was adopted, no shipping browser fully and completely supports all of these standards. But most modern browsers do a pretty-good-to-excellent job of displaying CSS, including Microsoft Internet Explorer 6 and later, and Firefox 1.0 and later. Apple's browser, Safari, has very good CSS2 support.

As of August 2006, the W3C is putting the final touches on CSS 2.1, which serves as a "snapshot" of the CSS features that have actually been implemented by the major browser makers. It also removes CSS2 features that the community's consensus agrees will not ever be widely implemented. The W3C started work on CSS 2.1 in 2002, which should give you an idea of how quickly they work.

The specification that will be CSS3 has been in progress since 1999, so we're not holding our breath on the W3C making any final decisions shortly here, either. If you want to see the current status of CSS 2.1 or CSS3, check http://www.w3.org/Style/CSS/current-work.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Saying It with Style

Script 11.1 shows part of a scene from Shakespeare's *The Taming of the Shrew* marked up as an HTML page with `<div>` tags. Without an attached style sheet, the text appears plain with no styles at all, as in **Figure 11.1**. If we want to display the entire play, we'll need a style sheet: something to get the browser to display that stage directions are emphasized and all dialog is indented. CSS-compliant browsers can use that style sheet to change the way that the text is displayed, according to the style sheet's directions.

Script 11.1. Adding a style sheet makes the difference between Figure 11.1 and Figure 11.2.

[View full width]

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN">
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
     <title>Taming of the Shrew</title>
     <style type="text/css">@import "script02.css";</style>
</head>
<body>
     <div class="menu">
        <a href="act1.html">Act I</a> | <a href="act2.html">Act II</a> | <a href="act3.
html">Act III</a> | <a href="act4.html">Act IV</a> | <a href="act5.html">Act V</a>
     </div>
     <p class="directions">Enter <span class= "character">Katharina</span></p>
     <img src="images/shrew.gif" alt="Shrew folio" width="242" height="402" align="left" />
     <div class="character">Petruchio</div>
     <div class="dialog">
        Good morrow, Kate; for that's your name, I hear.
     </div>
     <div class="character">Katharina</div>
     <div class="dialog">
        Well have you heard, but something hard of hearing:<br />
        They call me Katharina that do talk of me.
     </div>
     <div class="character" id="week1"> Petruchio</div>
     <div class="dialog">
        You lie, in faith; for you are call'd plain Kate,<br />
        And bonny Kate and sometimes Kate the curst;<br />
        But Kate, the prettiest Kate in
        Christendom<br />
        Kate of Kate Hall, my super-dainty Kate,<br />
        For dainties are all Kates, and therefore, Kate,<br />
        Take this of me, Kate of my consolation;<br />
        Hearing thy mildness praised in every town,<br />
        Thy virtues spoke of, and thy beauty sounded,<br />
        Yet not so deeply as to thee belongs, <br />
        Myself am moved to woo thee for my wife.
     </div>
     <div class="character">Katharina</div>
     <div class="dialog" id="week2">
```

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
        Remove you hence: I knew you at the first<br />
        You were a moveable.
    </div>
</body>
</html>
```

Figure 11.1. A scene from Shakespeare's *The Taming of the Shrew*, using plain old HTML markup with no attached style sheet.

[View full size image]

The nice thing about using an external style sheet is that you can completely change the look of a site just by changing the style definitions in the style sheet, and without having to make any change to the HTML pages themselves. In this chapter, all the examples will use the same HTML page (Script 11.1); all we'll change for each example will be the style sheet. **Script 11.2** adds a little style and **Figure 11.2** shows the result.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

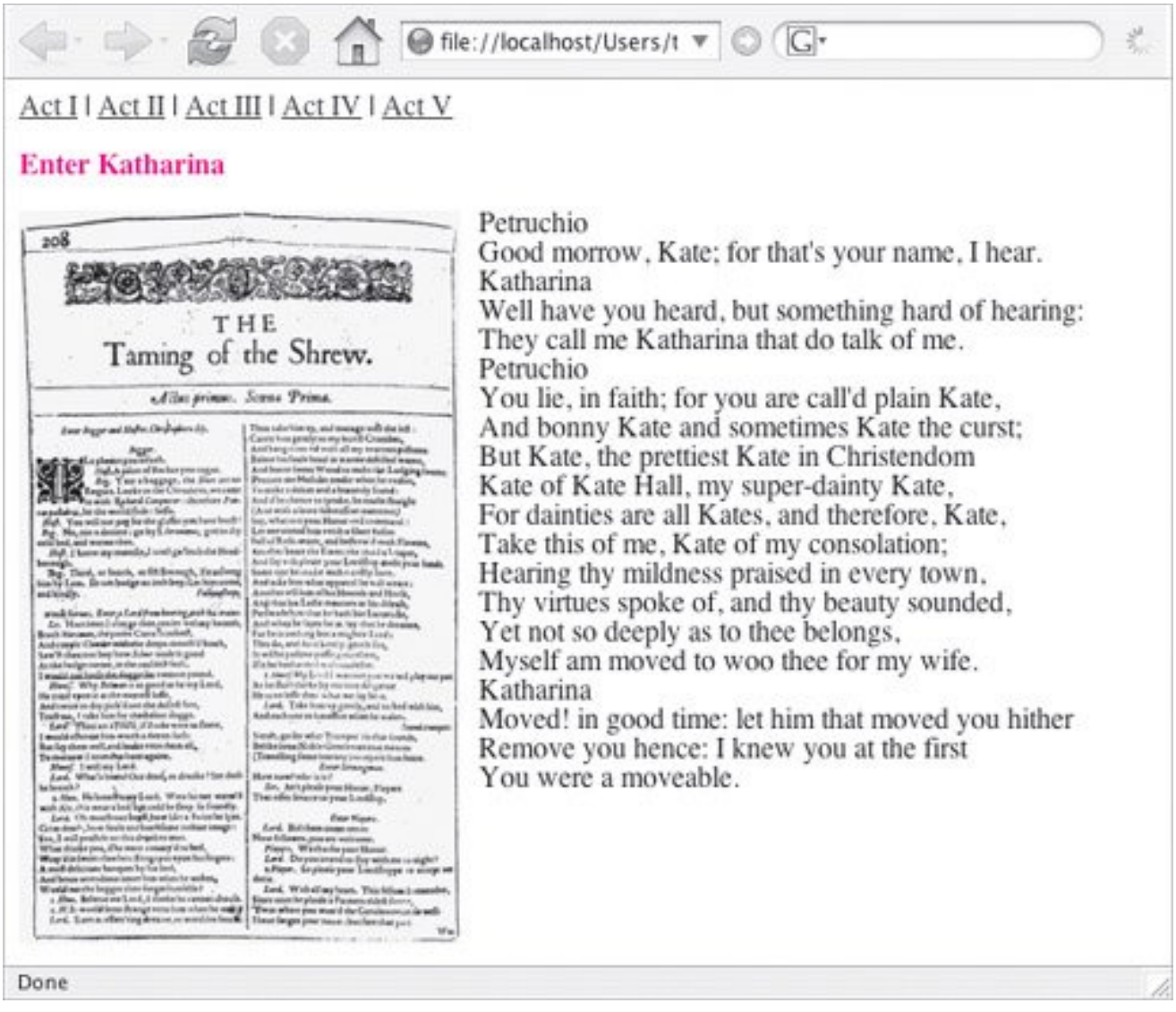
```
body {
     background-color: white;
     color: black;
     font-weight: bold;
}
div {
     font-weight: normal;
}
img {
     margin-right: 10px;
}
```

Figure 11.2. Using CSS, the stage direction is now in boldface, and there is a margin on the right side of the image.

[View full size image]

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir



To add a style sheet and some styles to your page:

1. `<style type="text/css">@import "script02.css";</style>`

In Script 11.1, the `<style>` tag is similar to the `<script>` tag: both go in the `head` section, and both require the `type` attribute. For styles, the type is always set to `"text/css"`. The `@import` command is followed by the name (and if necessary, the directory path) of the external style sheet.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
  background-color: white;
  color: black;
  font-weight: bold;
}
```

Now we move to Script 11.2, which shows how to apply styles to tags. This line (called a *rule*) says that all text within the `<body>` tag should be displayed with a background color of white, a text color of black, and in bold. A rule is made up of a *selector* usually an HTML element (in this case it's `body`)and the style (always surrounded by braces) to be applied to the selector.

3.
```
div {
  font-weight: normal;
}
```

This line demonstrates why the word "cascading" is in the name of CSS. While the previous step said that everything within the `<body>` should be bold, this step overrides that and says that everything within a `<div>` should be displayed normally. This ability to override what's been previously set gives a cascading effect to the formatting commands. The result is that the only text in bold in Figure 11.2 is the one line of Script 11.1 that isn't inside a `div`.

4.
```
img {
  margin-right: 10px;
}
```

This adds a 10-pixel margin to the right side of the folio image, giving it some breathing room, as you can also see in Figure 11.2.

✓ Tips

- If you are targeting quite old browsers, you should add HTML comments around the contents of the `<style>` tag, similar to the ones for the `<script>` tag, so that older browsers don't get confused by tags they don't understand. We're aiming at modern browsers in this book, so we've left the comments off the examples in this chapter, but if you need them, you should have a line starting with `<!--` just after your `<style>` tag and a line ending with `-->` just before your `</style>` tag.
- There are two ways to bring an external style sheet into your Web page: the `<style>` tag shown in this task, and the `<link>` tag, which uses the format:

  ```
  <link type="text/css" rel= "stylesheet" href="script02.css">
  ```

  Each has its advantage and disadvantage; for example, the `<link>` method takes a few

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

`@import` syntax here is that it's ignored by Netscape 4.x, allowing that browser to render pages plainly so that it won't crash (as it tends to do with some complex style sheets). Sites can use both the `<link>` and `<style>` tags, such that the combination results in a simple style applying to older browsers, while the newer, more capable browsers get the latest, greatest, and coolest effects.

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Styles with Class

One of the main reasons for using style sheets is to get rid of formatting tags like `<i>` and `<b>`. On pages that use these tags, the tags are just being used to make the page appear the way the designer wanted it to appear. Using CSS instead, as in **Script 11.3**, we get rid of these sorts of formatting tags and instead define precisely how we want the text to display. We've added four new CSS rules to Script 11.2 to add some real style to the text. The result is shown in **Figure 11.3**.

Script 11.3. This addition to the CSS introduces classes such as `.character`.

```
body {
     background-color: white;
     color: black;
}
img {
     margin-right: 10px;
}
.character {
     font-weight: bold;
     text-transform: uppercase;
}
div.character {
     margin: 1.5em 0em 1em 17em;
}
.directions {
     font-style: italic;
}
.dialog, .directions {
     margin-left: 22em;
}
```

Figure 11.3. The modified style sheet has made the character names bold and uppercase, italicized the stage directions, and added the various indenting for the text elements.

[View full size image]

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

http://homepage.mac.com/dori/JS6e/chap11/script02.html
Search Google
File Edit View Favorites Tools Help Links Blog This BlogRoll It! Customize Links ch17
Taming of the Shrew

208
THE
Taming of the Shrew.
Actus primus. Scena Prima.

Enter ***KATHARINA***

PETRUCHIO

Good morrow, Kate; for that's your name, I hear.

KATHARINA

Well have you heard, but something hard of hearing:
They call me Katharina that do talk of me.

PETRUCHIO

You lie, in faith; for you are call'd plain Kate,
And bonny Kate and sometimes Kate the curst;
But Kate, the prettiest Kate in Christendom
Kate of Kate Hall, my super-dainty Kate,
For dainties are all Kates, and therefore, Kate,
Take this of me, Kate of my consolation;
Hearing thy mildness praised in every town,
Thy virtues spoke of, and thy beauty sounded,
Yet not so deeply as to thee belongs,
Myself am moved to woo thee for my wife.

KATHARINA

Moved! in good time: let him that moved you hither
Remove you hence: I knew you at the first
You were a moveable.

Done Internet 100%

To format text with CSS:

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
   font-weight: bold;
   text-transform: uppercase;
}
```

This rule applies to a named `character`. Within the page, we can say that some text is of this class (for example, like this: `<div class="character">Petruchio</div>`), and that the text will display using this rule. In this rule, all character names end up being bold and uppercase. Note that to define a class rule, it must be preceded by a period.

In Script 11.1, `class="character"` is used in two different ways, both as an attribute for multiple `divs` and as an attribute for a `span`. This rule applies to both.

2.
```
div.character {
  margin: 1.5em 0em 1em 17em;
}
```

However, `div.character` applies *only* to those places where `class="character"` is an attribute of a `div`. Those `divs` will have a top margin of 1.5 ems, a zero right margin, a bottom margin of 1 em, and a left margin of 17 ems. Note that rules with four values go clockwise starting from the top, and that the big left margin is required to work around the image.

3.
```
.directions {
  font-style: italic;
}
```

Here's another rule and class; this one is named `directions`. Every class specified as being of type `directions` (i.e., all stage directions) will be shown in italics.

4.
```
.dialog, .directions {
  margin-left: 22em;
}
```

The last rule applies to both the `dialog` and `directions` classes. Classes can be separated with a comma, and the rule then applies to both.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

What's an Em?

CSS sizes come in two flavors: relative and absolute. Relative sizes (shown in **Table 11.1**) are those that are defined in terms of their relationship to some element on the page, while absolute sizes (shown in **Table 11.2**) are, well, absolute; they are fixed to a particular size.

Table 11.1. Relative Sizes

Size	Definition
em	The width of the letter M in the chosen font
ex	The height of the letter x in the chosen font
px	Pixels

Table 11.2. Absolute Sizes

Size	Definition
pt	Point size, where 1 pt = 1/72 of an inch
in	Inches
mm	Millimeters
cm	Centimeters
pc	Picas, where 1 pc = 1/6 of an inch

Overall, the W3C strongly recommends that you use relative sizes on your pages instead of absolute, unless you are absolutely certain of the dimensions of the display device (and that's darned rare for a Web page).

Note that points and pixels are not the same thing at all! While Macs started out with 1pt=1px, things have changed since the days of the 9" black and white screen. And on PCs, points and pixels have never been equivalent.

However, as the saying goes, in theory, there's no difference between theory and practice.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Changing Fonts with CSS

One of the best-known abilities of CSS is that of being able to change fonts throughout a page by changing one rule. In other words, you can change the display of all of the text assigned to a class simply by changing the class's definition. In **Script 11.4**, adding font information to the body rule causes the entire page to display as you like it, as shown in **Figure 11.4**.

Script 11.4. Note the differences to the body selector compared to Script 11.2.

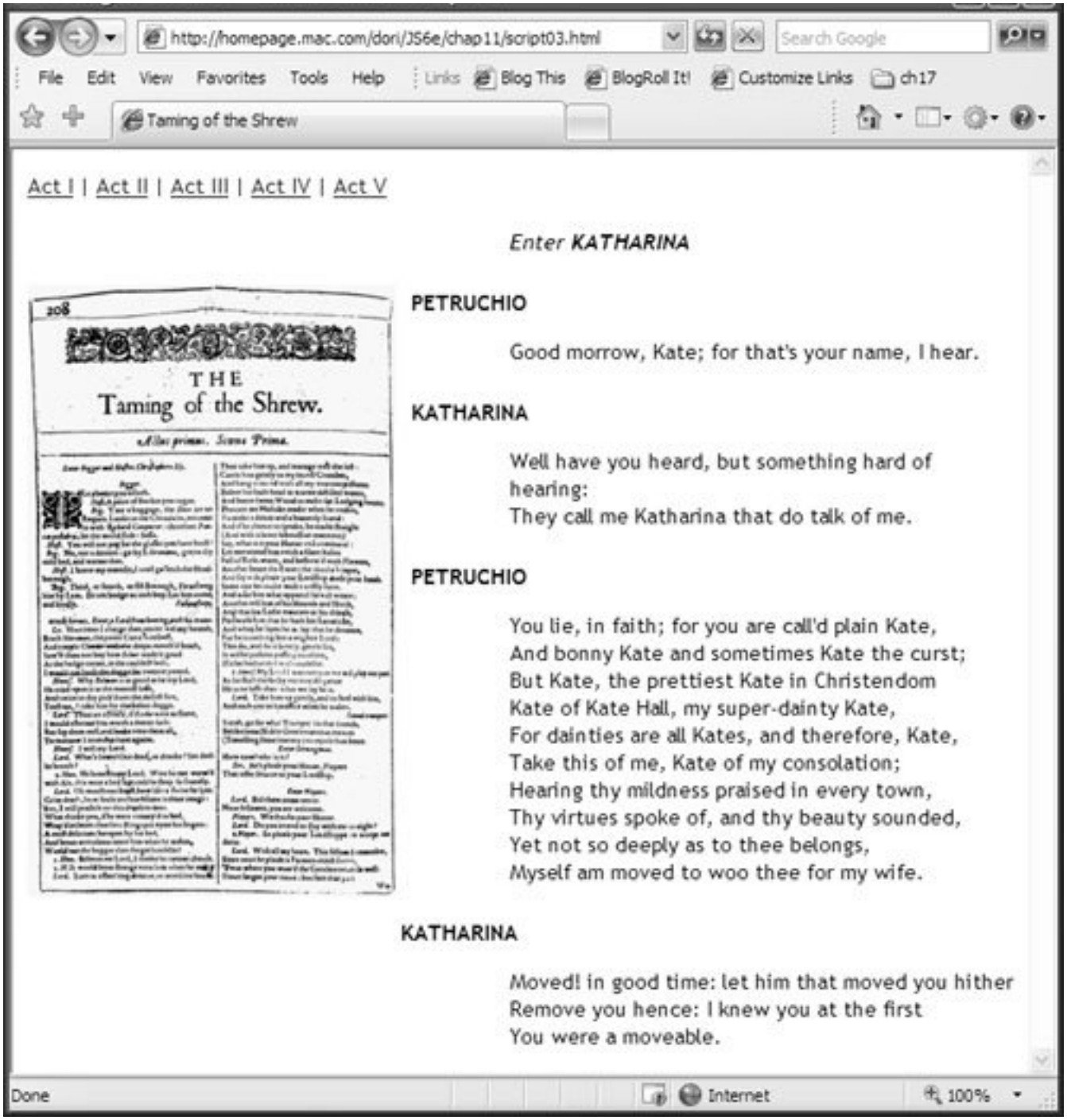
```
body {
     background-color: white;
     color: black;
     font-family: "Trebuchet MS", verdana, helvetica, arial, sans-serif;
     font-size: 0.9em;
}
img {
     margin-right: 10px;
}
.character {
     font-weight: bold;
     text-transform: uppercase;
}
div.character {
     margin: 1.5em 0em 1em 17em;
}
.directions {
     font-style: italic;
}
.dialog, .directions {
     margin-left: 22em;
}
```

Figure 11.4. Changing the body selector changed the font and font size on the whole page.

[View full size image]

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir



To change fonts with CSS:

-

```
body {
  background-color: white;
  color: black;
  font-family: "Trebuchet MS", verdana, helvetica, arial, sans-serif;
  font-size: 0.9em;
}
```

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

We've added two attributes to the `body` selector: `font-family` and `font-size`. The former, like the old `<font>` tag, takes a list of fonts, and the browser displays the first one it has available, going through the list from left to right. The last font given is the generic font `sans-serif`, which tells the browser (if this feature is supported) that if it can't find any of the listed fonts, to use any sans-serif font as a fallback. The `font-size` attribute, in this case, is set to display all the text at 0.9 em.

✓ Tip

- The first font in the list has to have quotes around it because it has a multiword name. That's true of all fonts, not just the first in a list.

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Checking Your ID

Along with rules based on tags and classes, there's another type of selector called `id`. An `id` is a unique identifier that allows you to be specific in your formatting. You can apply both a class and an `id` at the same time, as shown in **Script 11.5**. This allows you to both use the formatting for the class and augment it with the more-specific `id` formatting that you've defined. If you prefer, you can also use an `id` selector by itself, without a `class`.

Script 11.5. Applying an `id` selector to the style.

```
body {
     background-color: white;
     color: black;
     font-family: "Trebuchet MS", verdana, helvetica, arial, sans-serif;
     font-size: 0.9em;
}
img {
     margin-right: 10px;
}
.character {
     font-weight: bold;
     text-transform: uppercase;
}
div.character {
     margin: 1.5em 0em 1em 17em;
}
.directions {
     font-style: italic;
}
.dialog, .directions {
     margin-left: 22em;
}
#week2 {
     background-color: #FFFF00;
}
```

When an `id` is used, it's because you need a unique way of identifying a particular object on a page. You've seen `id`s used throughout this book, as `id`s are also how JavaScript knows which precise object on the page to manipulate.

In this example, a teacher wants to assign a particular character's speech to the students to translate into modern language and so, gives a unique `id` to each speech. In order to highlight a particular section, all the teacher has to do is to change the `id` of the selector within the style tag.

To add an ID to your style sheet:

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
  background-color: #FFFF00;
}
```

This rule creates a selector named `week2`. Any area that uses this rule will have a background color of yellow (yellow has a hex value of #FFFF00). Note that `id` selectors must be defined with a leading `#` character.

2. `<div class="dialog" id="week2">`

You'll find this line in Script 11.1. The text inside this `<div>` tag uses both the `class` "dialog" and the `id` "week2". This causes both rules to apply. If they conflicted with each other, the `id` would take precedence.

✓ Tips

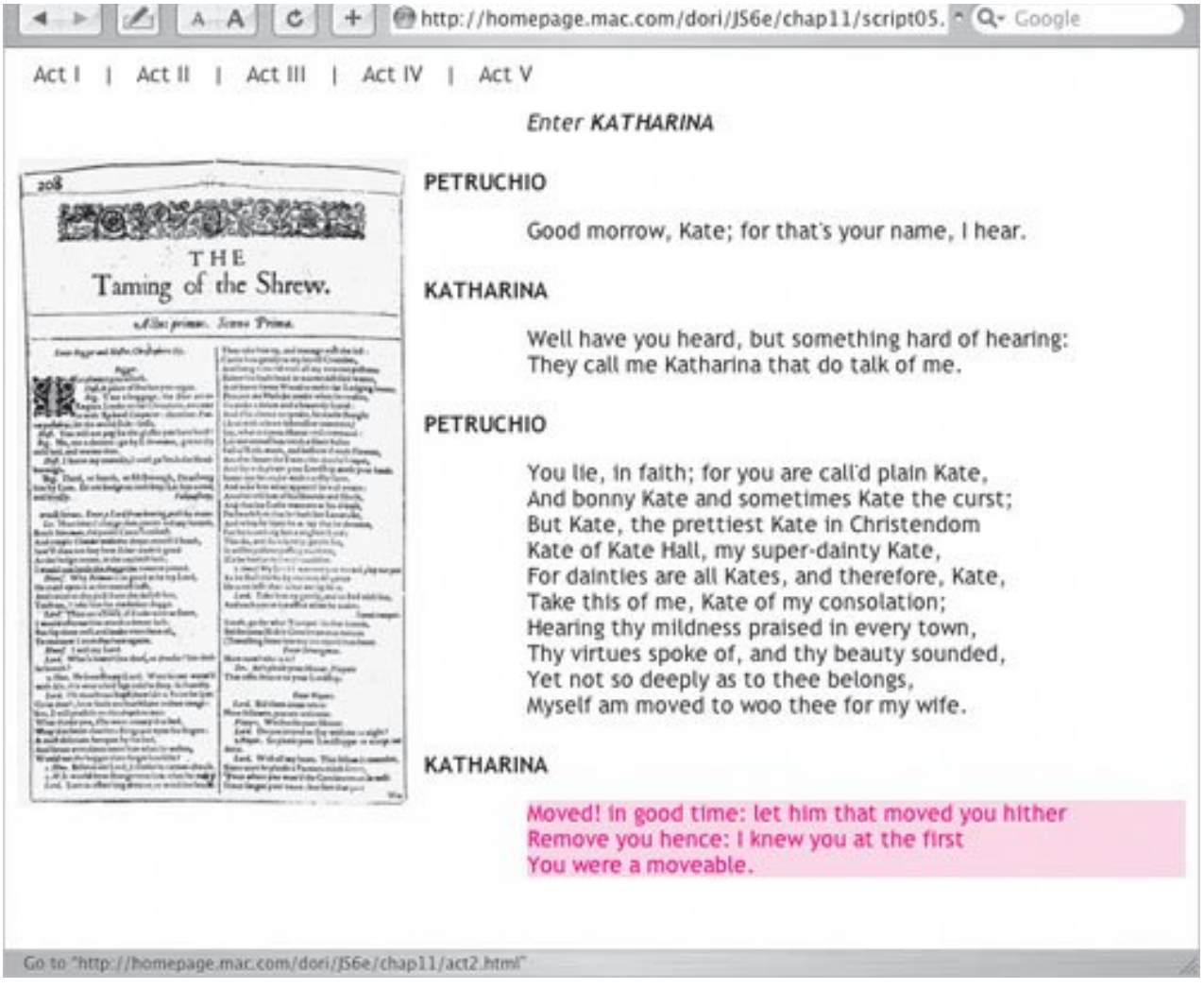
- As shown in **Figure 11.5**, the background color is changed not just behind the text, but all the way over to the right margin. If you want just the background behind the text to be changed, you'll want to use a `<span>` instead of a `<div>`.

Figure 11.5. This CSS changes the background color of the `id` selector; the colored bar extends across the width of the page.

[View full size image]

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir



- Another way to define a color such as #FFFF00 is as #FF0. Because the hex characters are repeated, the shorthand version is equivalent and gives the same results.

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Distinguished Links

A common use of CSS is to create fancier effects on links than you get with just plain old HTML. In **Script 11.6**, we take the act numbers at the top of the page and make them stand out, as shown in **Figure 11.6**.

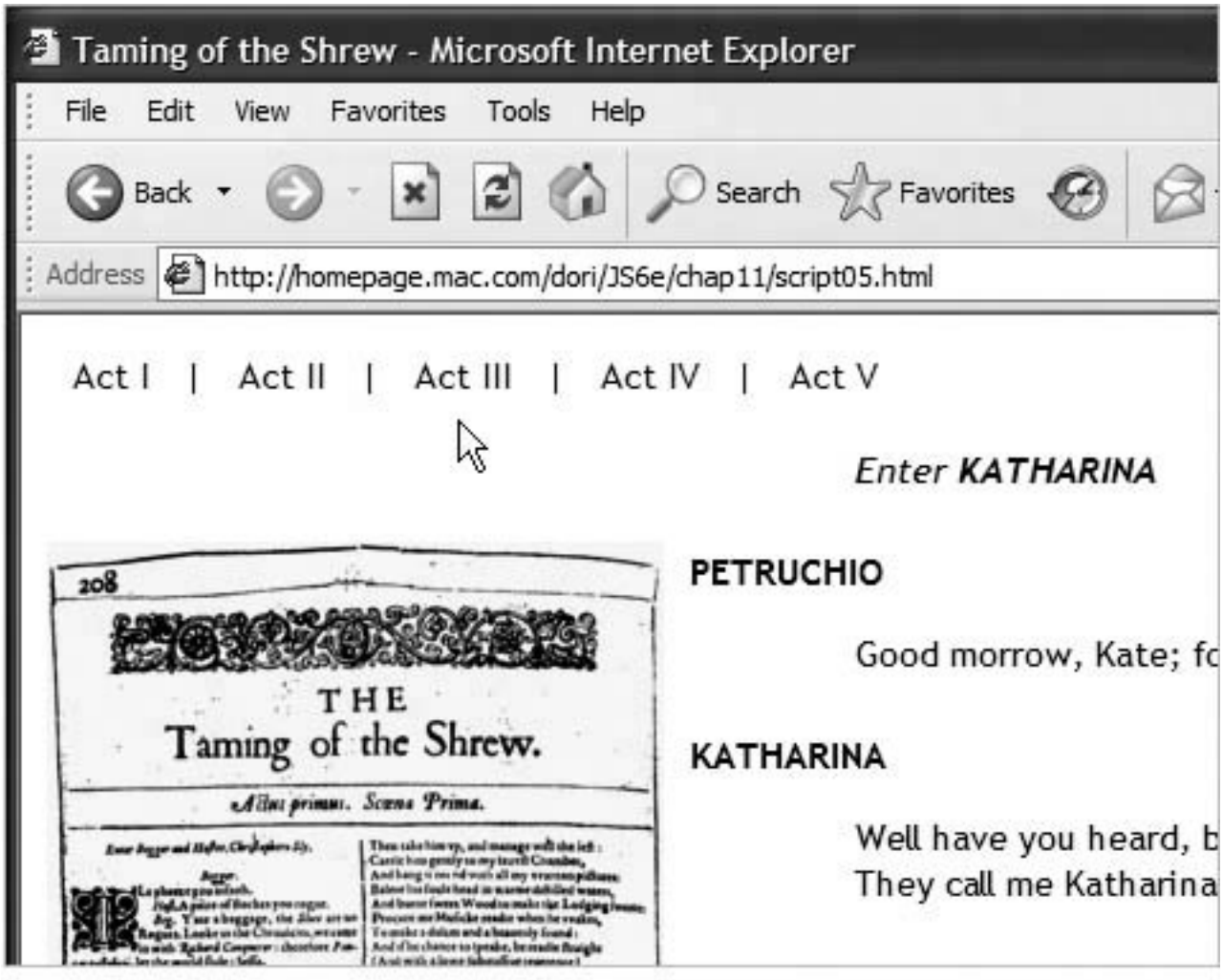
Script 11.6. Changing the color and behavior of links within text.

```
body {
     background-color: white;
     color: black;
     font-family: "Trebuchet MS", verdana, helvetica, arial, sans-serif;
     font-size: 0.9em;
}
img {
     margin-right: 10px;
}
.character {
     font-weight: bold;
     text-transform: uppercase;
}
div.character {
     margin: 1.5em 0em 1em 17em;
}
.directions {
     font-style: italic;
}
.dialog, .directions {
     margin-left: 22em;
}
#week2 {
     background-color: #FFFF00;
}
a {
     text-decoration: none;
     padding: 5px 10px 5px 10px;
}
a:link {
     color: #0000FF;
}
a:visited {
     color: #000000;
}
a:hover {
     color: #FFFFFF;
     background-color: #000000;
     text-decoration: underline;
}
a:active {
```

downloaded from: lib.ommolketab.ir

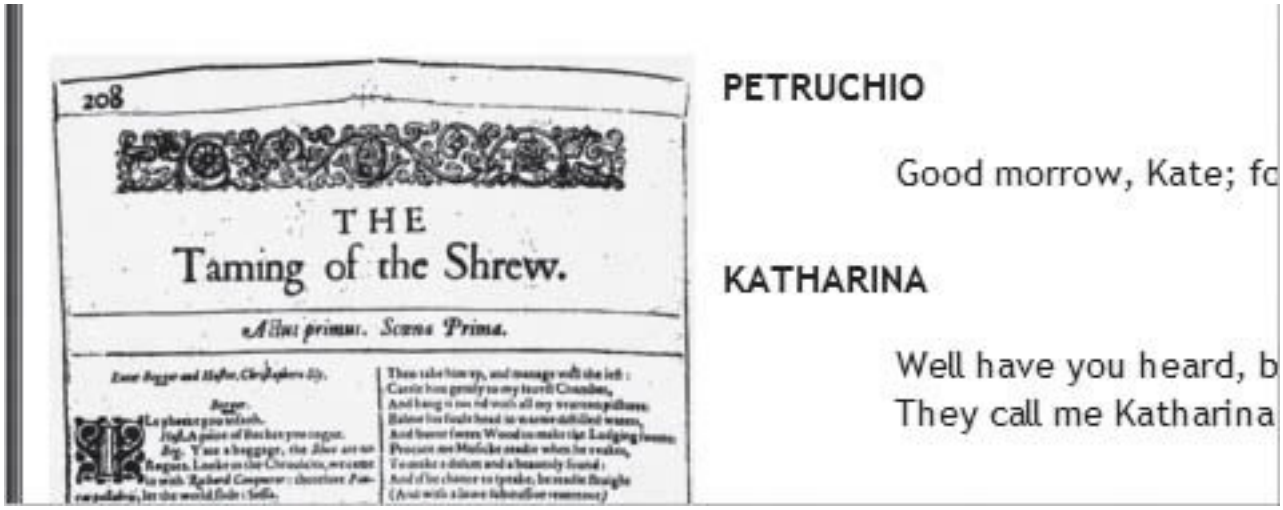
downloaded from: lib.ommolketab.ir

Figure 11.6. Using the `a:hover` pseudo-class allows you to add a rollover-like effect to links. Links appear without decoration (top) until you place the mouse over them. Then the link color and the background color change, and an underline appears (bottom).



downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir



To enhance your links:

1.
```
a {
  text-decoration: none;
  padding: 5px 10px 5px 10px;
}
```

This rule applies to all anchor tags and says that we want links to appear without underlines. The links should also have 5 pixels of space above, 10 pixels to the right, 5 pixels below, and 10 pixels to the left.

2.
```
a:link {
  color: #0000FF;
}
```

This rule turns all links blue (but will be overridden shortly for some cases). The colon after an element, followed by a property, indicates that we are declaring a *`pseudo-class`*. In CSS, pseudo-classes are used to add special effects to some selectors.

3.
```
a:visited {
  color: #000000;
}
```

This rule applies to all visited links and says that they should display with black text. Combined with the rule in step 1, visited links will look just like regular text.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
  color: #FFFFFF;
  background-color: #000000;
  text-decoration: underline;
}
```

This rule says that when we're hovering (i.e., putting the mouse cursor over a link), the link should display in white text, with a black background and underlined. Because this rule is after the previous rule, it will still apply when hovering over a visited link. If it was placed before the previous rule, that one would take priority.

5.
```
a:active {
  color: #FF0000;
}
```

This rule says that when the link is being clicked, turn the text red.

✓ Tip

- The different anchor pseudo-class rules can have problems with the cascade. The solution is to put them in a particular order (`link`, `visited`, `hover`, `active`). The mnemonic to remembering it: LVHA, or LoVe/HAte. Really.

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Embedding Styles in Styles

If you like, you can change elements on the page even more precisely than we've shown previously. You can do this by making rules that apply to a class only when it is *inside* another class. **Script 11.7** shows you how, and **Figure 11.7** shows the result, which makes the character name within a stage direction larger.

Script 11.7. Embedding style rules within another style.

```
body {
     background-color: white;
     color: black;
     font-family: "Trebuchet MS", verdana, helvetica, arial, sans-serif;
     font-size: 0.9em;
}
img {
     margin-right: 10px;
}
.character {
     font-weight: bold;
     text-transform: uppercase;
}
div.character {
     margin: 1.5em 0em 1em 17em;
}
.directions {
     font-style: italic;
}
.dialog, .directions {
     margin-left: 22em;
}
.directions .character {
     font-size: 1.4em;
}
#week2 {
     background-color: #FFFF00;
}
a {
     text-decoration: none;
     padding: 5px 10px 5px 10px;
}
a:link {
     color: #0000FF;
}
a:visited {
     color: #000000;
}
a:hover {
```

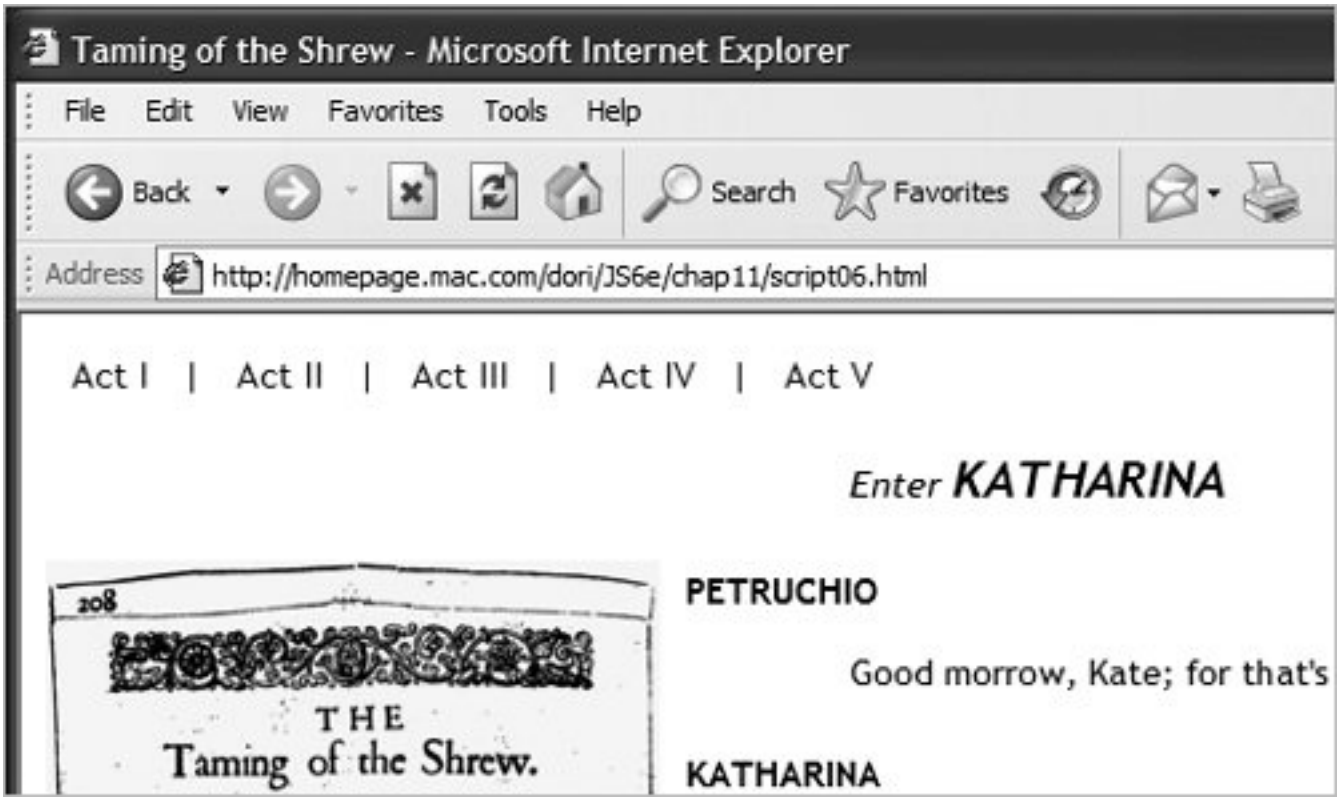
downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
     background-color: #000000;
     text-decoration: underline;
}
a:active {
     color: #FF0000;
}
```

Figure 11.7. By embedding styles rules, you can get extremely specific about your changes, as with the character name shown here.

[View full size image]



To embed a style rule within another style rule:

-

```
.directions .character {
  font-size: 1.4em;
}
```

This rule applies to only those places where there's a `character` class *inside* a `directions` class.

✓ **Tip**

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

- When you are embedding styles this way, you need to be careful to keep these two straight:

  ```
  .directions .character
  ```

  ```
  .directions, .character
  ```

  The first selector sets elements with a `class` of `character` only when they're inside the `class` of `directions`, while the second (with the comma separating the two elements) sets all elements with a `class` of `character` or a `class` of `directions` (or both).

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Adding Background Images

If you're familiar with writing HTML by hand, you've probably added a background image to a page. You could continue adding background images in HTML, but you have more control if you do it via CSS. In this example, we've added a picture of the Bard himself to our page by adding a few properties to the `body` rule, as shown in **Script 11.8**. The image appears on our page, as in **Figure 11.8**.

Script 11.8. We've gone back to the `body` rule to insert the background image, specifying its source and attributes.

```
body {
     background-color: white;
     color: black;
     font-family: "Trebuchet MS", verdana, helvetica, arial, sans-serif;
     font-size: 0.9em;
     background-image: url(images/shakespeare.gif);
     background-repeat: no-repeat;
     background-position: right 50px;
}
img {
     margin-right: 10px;
}
.character {
     font-weight: bold;
     text-transform: uppercase;
}
div.character {
     margin: 1.5em 0em 1em 17em;
}
.directions {
     font-style: italic;
}
.dialog, .directions {
     margin-left: 22em;
}
.directions .character {
     font-size: 1.4em;
}
#week2 {
     background-color: #FFFF00;
}
a {
     text-decoration: none;
     padding: 5px 10px 5px 10px;
}
a:link {
     color: #0000FF;
}
a:visited {
     color: #000000;
```

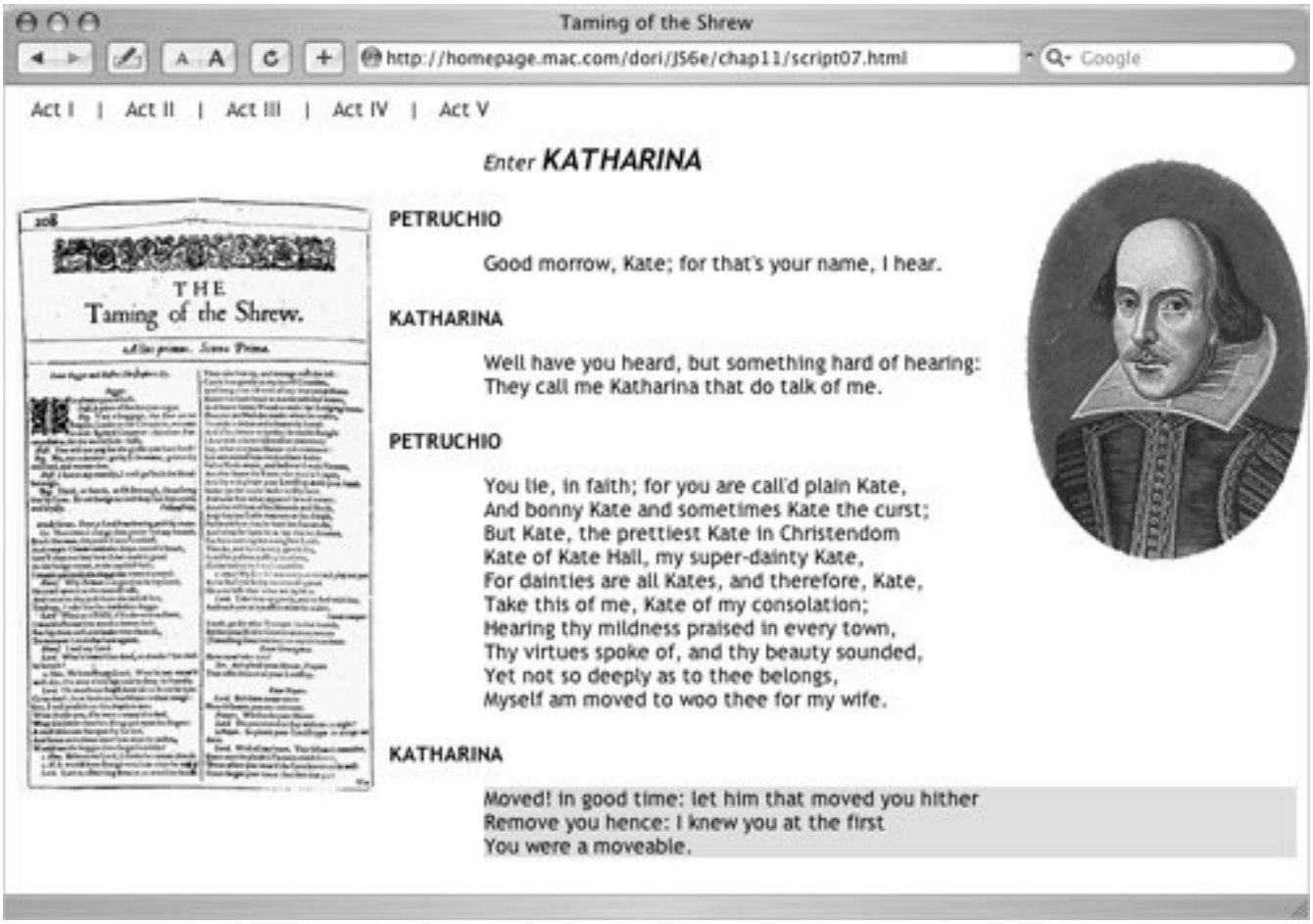
downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
a:hover {
     color: #FFFFFF;
     background-color: #000000;
     text-decoration: underline;
}
a:active {
     color: #FF0000;
}
```

Figure 11.8. We added Shakespeare to watch over the page with just a quick addition to the body rule.

[View full size image]



To add a background image:

-

```
background-image: url(images/shakespeare.gif);
background-repeat: no-repeat;
background-position: right 50px;
```

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

The first line adds the background image and specifies the path to the image. The next line tells the browser to not repeat the image down the page (or in other words, to place it on the page only once). Finally, the image is positioned flush right and 50 pixels from the top of the page.

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Positioning Absolutely

Before CSS, if you wanted something in a precise place in a browser window, you had to do some tricky table work and keep your fingers crossed that it would work cross-browser. **Script 11.9** shows how you can instead use CSS to tell your browser to put things just where you want them.

In this example, we've decided to swap the two images (the play folio and Shakespeare). Rather than messing around with the HTML, we'll just make changes to two of the CSS rules, the ones for `body` (for the background image of the playwright) and `img` (for the folio). You can specify precisely where you want the items to appear on the page, as in **Figure 11.9**.

Script 11.9. By changing the `body` and `img` rules, we've changed the look of the page.

```
body {
     background-color: white;
     color: black;
     font-family: "Trebuchet MS", verdana, helvetica, arial, sans-serif;
     font-size: 0.9em;
     background-image: url(images/shakespeare.gif);
     background-repeat: no-repeat;
     background-position: 20px 80px;
}
img {
     position: absolute;
     top: 20px;
     right: 20px;
}
.character {
     font-weight: bold;
     text-transform: uppercase;
}
div.character {
     margin: 1.5em 0em 1em 17em;
}
.directions {
     font-style: italic;
}
.dialog, .directions {
     margin-left: 22em;
}
.directions .character {
     font-size: 1.4em;
}
#week2 {
     background-color: #FFFF00;
}
```

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

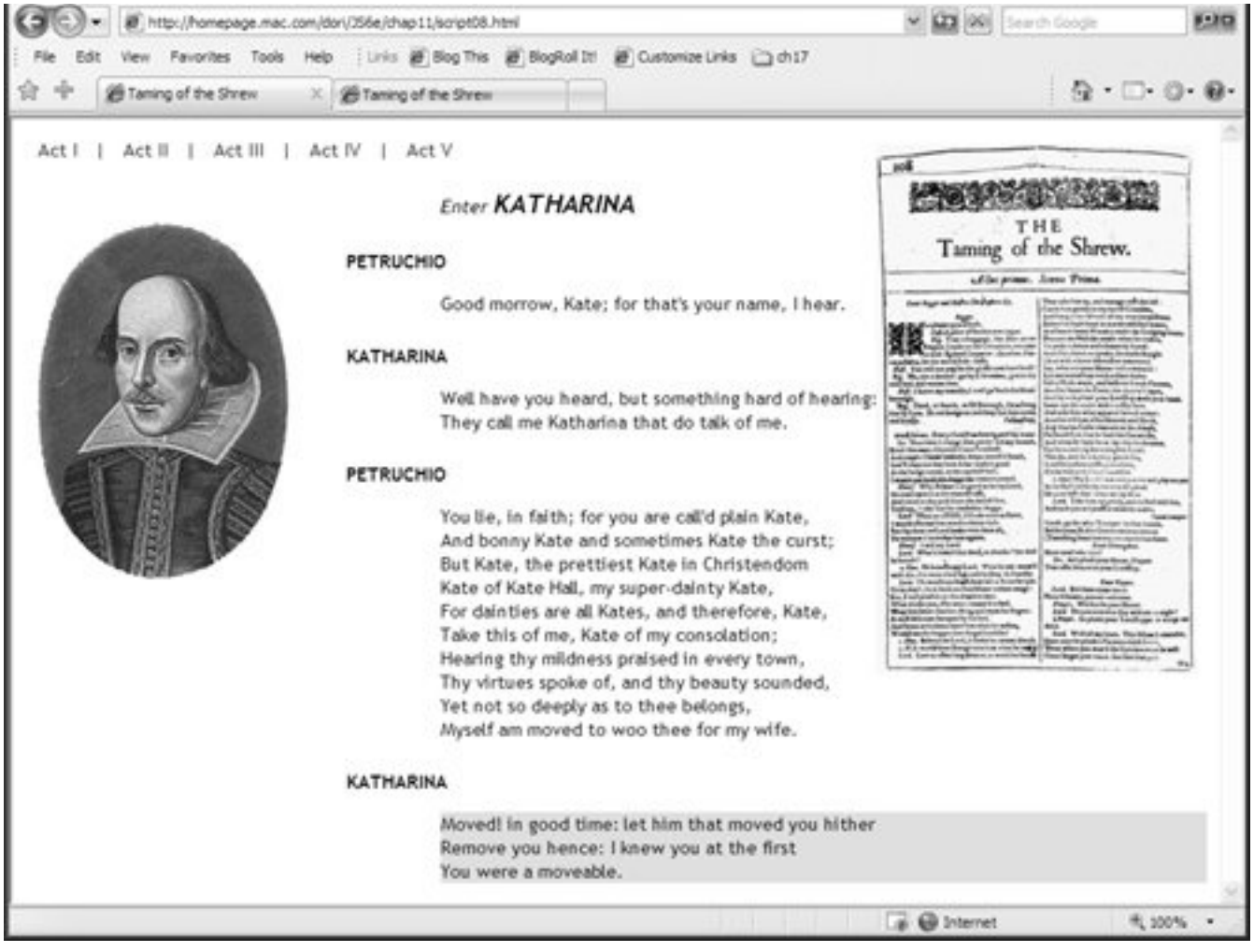
```
     text-decoration: none;
     padding: 5px 10px 5px 10px;
}
a:link {
     color: #0000FF;
}
a:visited {
     color: #000000;
}
a:hover {
     color: #FFFFFF;
     background-color: #000000;
     text-decoration: underline;
}
a:active {
     color: #FF0000;
}
```

Figure 11.9. Swapping the position of the two images required no fiddling with the HTML page, just a few changes to the CSS style sheet.

[View full size image]

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir



To use absolute positioning:

1. `background-position: 20px 80px;`

This property is within the `body` rule and tells the browser to put the picture of Shakespeare 20 pixels from the left edge of the window and 80 pixels down from the top of the window. In other words, the first value is the horizontal position and the second value is the vertical.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
  position: absolute;
  top: 20px;
  right: 20px;
}
```

These changes to the `img` rule are straightforward. First, we specify that the position is `absolute`, meaning that it will be precisely specified by the `top`, `right` (and if needed, `bottom` and `left`) properties. Then we follow that with the values for `top` and `right`, again in pixels measured from the top-left corner of the page.

✓ Tip

- If there were multiple images on the page, we could specify exactly which one we wanted to change by instead using an `id` (to specify a particular image; remember that `id`s are unique on a page) versus the `img` tag itself.

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Chapter 12. Objects and the DOM

Node manipulation is the W3C-recommended way for standards-compliant browsers to support Web pages that act more like applications than the standard, static pages that you're used to. For instance, you can have pages that change based on entries the user makes, without hitting the server, and you can update pages under script control. Although you can use techniques like `innerHTML`, as we've done elsewhere in this book, here we show the officially supported approach. While this can also be done with server-side CGIs, it's only with JavaScript that we can provide this functionality without the user having to go from page to page to page.

In this chapter, you'll learn a bit more about nodes and the DOM; add, delete, and work with specific nodes; and insert and replace nodes on your pages.

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

About Node Manipulation

This chapter is about the deepest that this book goes into JavaScript and the DOM, so we'll first need to cover a little bit of history and terminology.

DOM-2 and the W3C

The W3C (as mentioned in Chapter 1) has released specifications for how browsers should handle the Document Object Model (also known as the DOM). The DOM Level 2 specification, which became an official recommendation in November 2000, goes into more depth as to how browsers should be able to refer to and manage the content on their pages. You can find out more details about the specification at http://www.w3.org/TR/DOM-Level-2-Core/.

Although this specification has been around for years, there are still plenty of browsers in use that have incomplete or partial DOM-2 support. Before using any of these scripts, make sure that your intended audience is able to run them, or that you offer another way for older browsers to achieve the same results. Thankfully, the majority of surfers today use Internet Explorer 6+, Firefox, or Safari, which should all work just fine with these scripts.

DOM-2 terminology

At the beginning of this book, we referred to JavaScript as "the snap-together language," because of the way that you can put objects, properties, and methods together to build JavaScript applications. There's a different way to look at HTML pages that we've only briefly mentioned before: as a tree structure with *nodes*. For example, this simple Web page

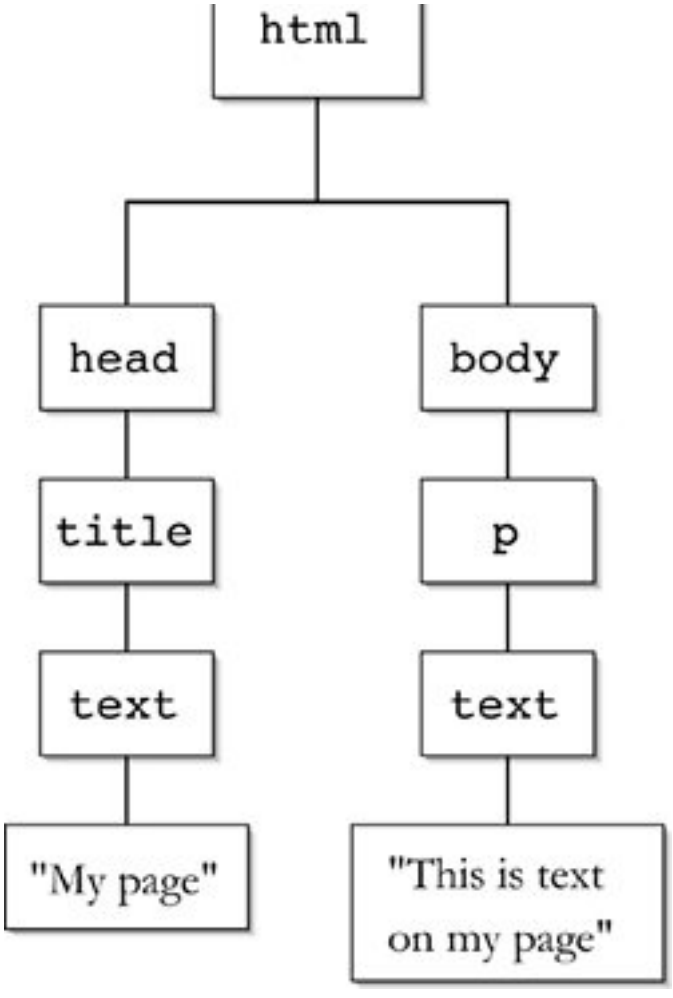
```
<html>
<head>
    <title>My page</title>
</head>
<body>
    <p>This is text on my page</p>
</body>
</html>
```

can be displayed as seen in **Figure 12.1**.

Figure 12.1. The tree structure, showing nodes, is just another way of looking at how an HTML page is organized.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir



We can use JavaScript to modify any aspect of this tree, including the ability to add, access, change, and delete nodes on the tree. Each box on the tree is a node. If the node contains an HTML tag, it's referred to as an *element node*. Otherwise, it's referred to as a *text node*. Of course, element nodes can contain text nodes.

DOM-3

Level three of the DOM standard became an official recommendation in April 2004. That specification is at http://www.w3.org/TR/DOM-Level-3-Core/. As with so many other parts of the W3C process, we're still a long ways off from true support in shipping browsers, so this chapter sticks to discussing DOM-2. However, if you're interested in learning more, the best place to look is at the ECMAScript bindings, which can be found at http://www.w3.org/TR/DOM-Level-3-Core/ecma-script-binding.html.

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Adding Nodes

The easiest way to learn about nodes is to start off by simply appending an element node (one which will contain a text node) to the end of your document. **Scripts 12.1** and **12.2** allow the user to enter some data and click a button, and voila! a new paragraph is added to your page (**Figure 12.2**).

Script 12.1. This HTML creates the text area and submit button that allow the user to add a text node.

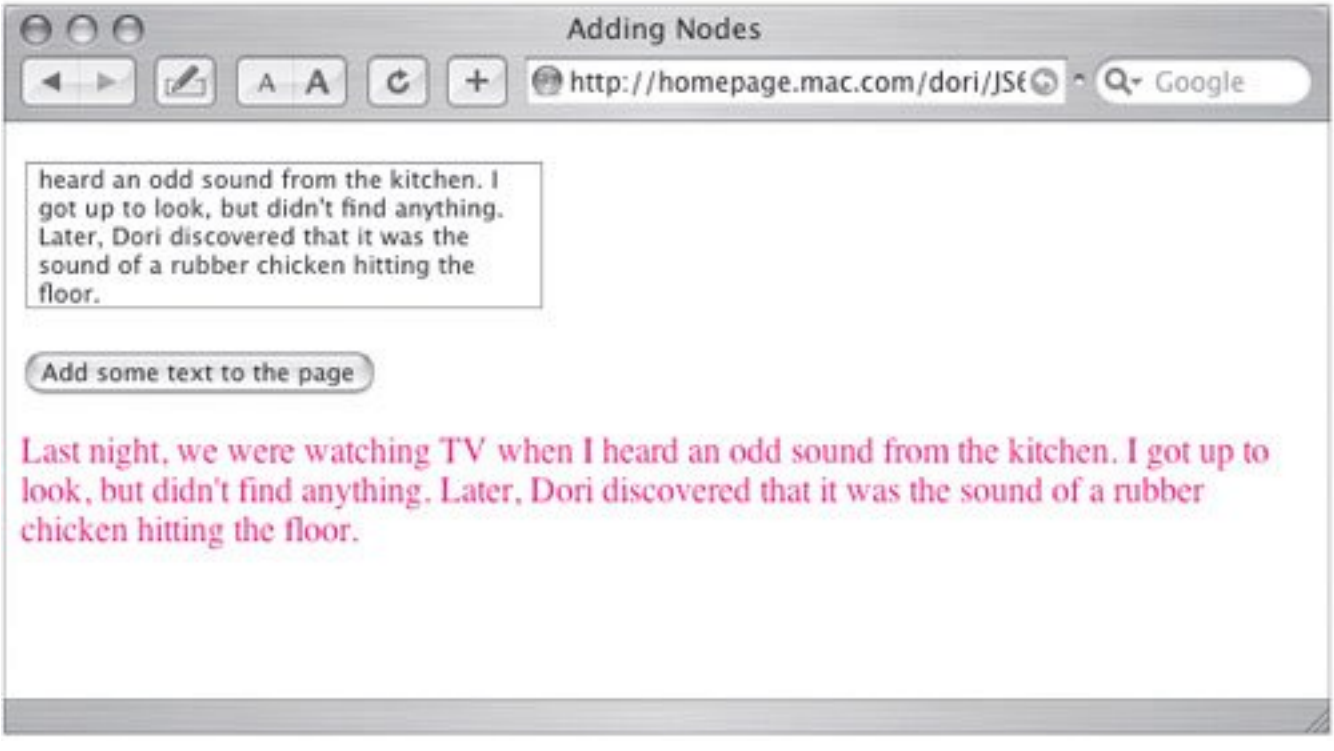
```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0  Transitional//EN">
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
     <title>Adding Nodes</title>
     <script type="text/javascript" language="Javascript" src="script01.js">
     </script>
</head>
<body>
<form action="#">
     <p><textarea id="textArea" rows="5" cols="30"></textarea></p>
     <input type="submit" value="Add some text to the page" />
</form>
</body>
</html>
```

Figure 12.2. To add a node, enter the text in the field (top), and then click the button. The text appears on the page (bottom).

[View full size image]

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir



To add nodes:

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

We start by creating a new text node (called `newText`) using the `createTextNode()` method, which will contain whatever text was found in `textArea`.

2. `var newGraf = document.createElement ("p");`

Next, we create a new element node using the `createElement()` method. While the node we're creating here is a paragraph tag, it could be any HTML container (`div`, `span`, etc.). The name of the new element is `newGraf`.

3. `newGraf.appendChild(newText);`

In order to put the new text into the new paragraph, we have to call `appendChild()`. That's a method of `newGraf`, which, when passed `newText`, puts the text node into the paragraph.

4. `var docBody = document. getElementsByTagName("body")[0];`

In order to add a new node into the body of our document, we need to figure out where the body is. The `getElementsByTagName()` method gives us every `body` tag on our page. If our page is standards-compliant, there should only be one. The `[0]` property is that first `body` tag, and we store that in `docBody`.

5. `docBody.appendChild(newGraf);`

And finally, appending `newGraf` onto `docBody` (using `appendChild()` again) puts the user's new text onto the page.

Script 12.2. With this script, the user can add any text they want to the page.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
function initAll() {
     document.getElementsByTagName("form")[0]. onsubmit = function() {return addNode();}
}

function addNode() {
     var inText = document.getElementById ("textArea").value;
     var newText = document.createTextNode (inText);

     var newGraf = document.createElement("p");
     newGraf.appendChild(newText);

     var docBody = document.getElementsByTagName ("body")[0];
     docBody.appendChild(newGraf);

     return false;
}
```

✓ Tip

- Wondering why you'd bother to go through all the hassle of creating a text node, creating an element node, and appending a child to each just to do what you could have done with a simple assignment to `innerHTML`? Here's one reason: with this approach, you cannot make your page invalid. For example, every `<p>` or `<div>` tag that's added is automatically closed. With `innerHTML`, on the other hand, it's very easy (almost too easy) to create tag soupand once you do, your page's DOM becomes difficult to work with. You can't read the contents of an element if it has a beginning but no ending tag, for instance.

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Deleting Nodes

If you want to add content to your page, you're also likely to want to delete content from your page. **Scripts 12.3** and **12.4** delete the last paragraph on the page, as shown in **Figure 12.3**.

Figure 12.3. The last paragraph on this page needed a little revision (left), so it's good that it can be deleted using the "Delete last paragraph" link (right).

[View full size image]

To delete nodes:

1. `var allGrafs = document. getElementsBy TagName("p");`

   This line uses the `getElementsByTagName` method to collect all the paragraph tags in our page and store them in the `allGrafs` array.

2. `if (allGrafs.length > 1) {`

   Before doing anything we regret, we have to check first that the `allGrafs` array has a `length` greater than 1. We don't want to try to delete something that doesn't exist, and the `length` will always be at least 1 (as Script 12.3's `textarea` form field is inside a `<p>` tag).

Script 12.3. This script adds a link, rather than a button, to delete a text node.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
     <title>Deleting Nodes</title>
     <script type="text/javascript" language="Javascript" src="script02.js">
     </script>
</head>
<body>
<form action="#">
     <p><textarea id="textArea" rows="5" cols="30"></textarea></p>
     <input type="submit" value="Add some text to the page" />
</form>
<a id="deleteNode" href="#">Delete last paragraph</a>
</body>
</html>
```

3. `var lastGraf = allGrafs.item (allGrafs.length-1);`

If there are paragraphs, get the last 1 on the page by subtracting one from `length` and using that as our index array. Remember that `length` is one-relative while arrays are zero-relative, so subtracting 1 from `length` gives us the last paragraph on the page.

4.
```
var docBody = document. getElementsBy TagName("body")[0];
docBody.removeChild(lastGraf);
```

Just like the last task, in order to modify the document we need to get the contents of the `body`. Once we've got that, it's simply a matter of calling the `docBody.removeChild()` method and passing it `lastGraf`, which tells JavaScript which paragraph we want to delete. Our page should immediately show one less paragraph.

✓ Tip

- Once again, remember that you can delete element nodes other than paragraphs. To do this, you need to change the script so that `getElementsByTagName()` is passed something other than a `p`.

Script 12.4. Now the user can both add and delete text.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
function initAll() {
     document.getElementsByTagName("form")[0]. onsubmit = function() {return addNode();}
     document.getElementById("deleteNode"). onclick = delNode;
}

function addNode() {
     var inText = document.getElementById ("textArea").value;
     var newText = document.createTextNode (inText);

     var newGraf = document.createElement("p");
     newGraf.appendChild(newText);

     var docBody = document.getElementsByTagName ("body")[0];
     docBody.appendChild(newGraf);

     return false;
}

function delNode() {
     var allGrafs = document.getElements ByTagName("p");

     if (allGrafs.length > 1) {
        var lastGraf = allGrafs.item (allGrafs.length-1);
        var docBody = document.getElements ByTagName("body")[0];
        docBody.removeChild(lastGraf);

     }
     else {
        alert("Nothing to remove!");
     }

     return false;
}
```

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Deleting Specific Nodes

While always deleting the last paragraph might be interesting, you'll sometimes want to delete something that's not at the end of the page. **Scripts 12.5** and **12.6** make our code considerably more flexible, allowing the user to decide which paragraph is history, as shown in **Figures 12.4** and **12.5**.

Script 12.5. Radio buttons let you offer your visitors the choice of adding or deleting text.

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN">
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
     <title>Deleting Selected Nodes</title>
     <script type="text/javascript" language="Javascript" src="script03.js">
     </script>
</head>
<body>
<form action="#">
     <p><textarea id="textArea" rows="5" cols="30"></textarea></p>
     <p><label><input type="radio" name="nodeAction" />Add node</label>
     <label><input type="radio" name="nodeAction" />Delete node</label></p>
     Paragraph #: <select id="grafCount"> </select>
     <input type="submit" value="Submit" />
</form>
<div id="modifiable"> </div>
</body>
</html>
```

Script 12.6. This script allows users to choose which paragraph they want to delete.

```
window.onload = initAll;
var nodeChangingArea;

function initAll() {
     document.getElementsByTagName("form")[0].onsubmit = function() {return nodeChanger();}

     nodeChangingArea = document.getElementById("modifiable");
}

function addNode() {
     var inText = document.getElementById("textArea").value;
     var newText = document.createTextNode(inText);

     var newGraf = document.createElement("p");
     newGraf.appendChild(newText);
```

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
}

function delNode() {
     var delChoice = document.getElementById("grafCount").selectedIndex;
     var allGrafs = nodeChangingArea.getElementsByTagName("p");
     var killGraf = allGrafs.item(delChoice);

     nodeChangingArea.removeChild(killGraf);
}

function nodeChanger() {
     var actionType = -1;
     var currentPgraphCount = nodeChangingArea.getElementsByTagName("p").length;
     var radioButtonSet = document.getElementsByTagName("form")[0].nodeAction;

     for (var i=0; i<radioButtonSet.length; i++) {
        if (radioButtonSet[i].checked) {
           actionType = i;
        }
     }

     switch(actionType) {
        case 0:

           addNode();
           break;

        case 1:
           if (currentPgraphCount > 0) {
              delNode();
              break;
           }
        default:
            alert("No valid action was chosen");
     }

     document.getElementById("grafCount"). options.length = 0;

     for (i=0; i<nodeChangingArea.getElements ByTagName("p").length; i++) {
       document.getElementById("grafCount"). options[i] = new Option(i+1);
     }

     return false;
}
```

Figure 12.4. After adding nodes, the Paragraph # pop-up menu contains a list of paragraph numbers.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

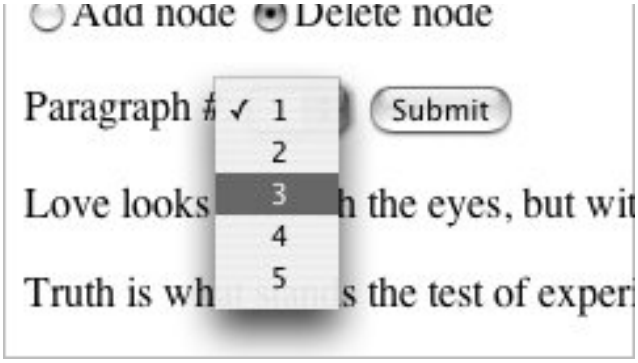
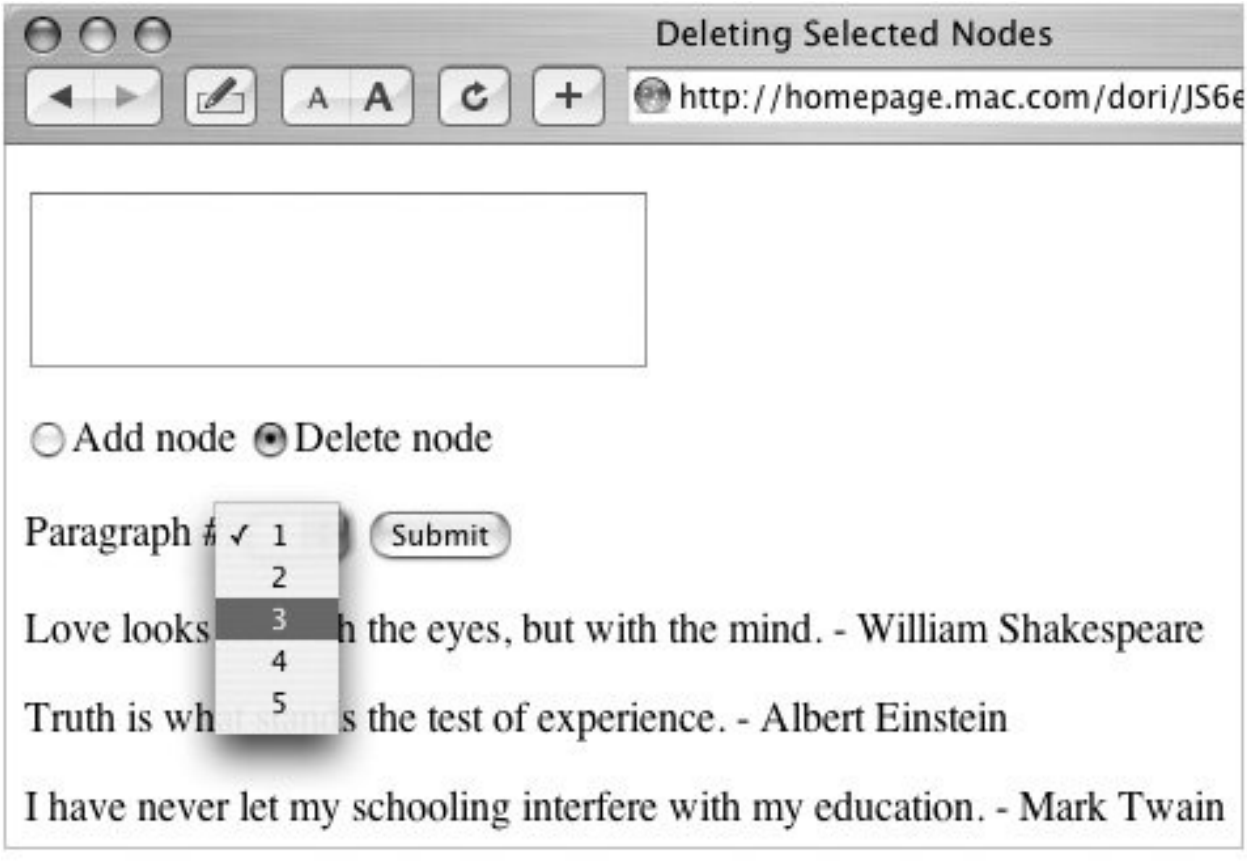
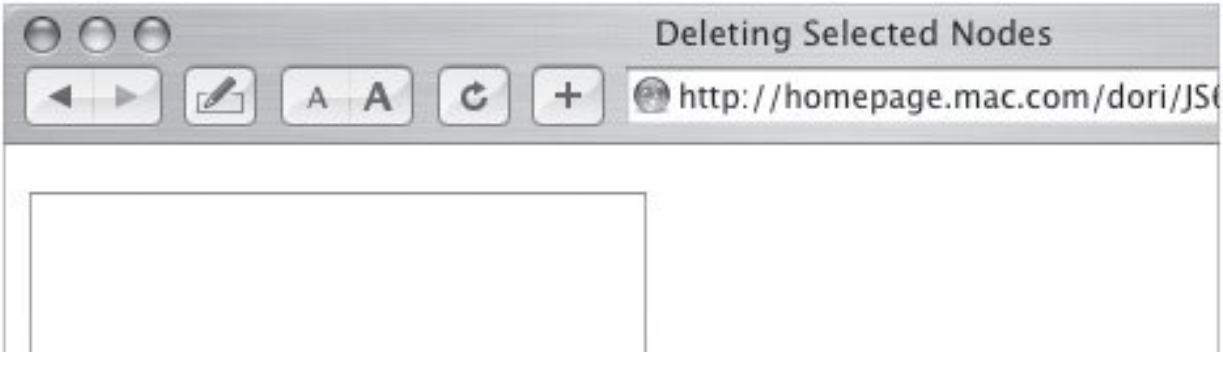


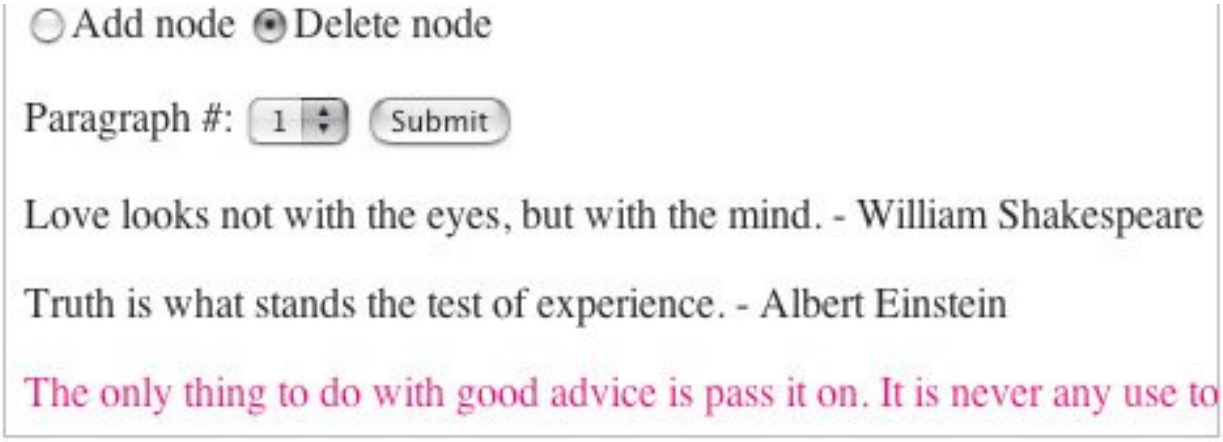
Figure 12.5. First, you click the Delete node radio button, and then you choose a paragraph to delete from the pop-up menu (top). Clicking the Submit button wipes out the selected paragraph (the Mark Twain quote) and moves up the following paragraph (bottom).





downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir



To delete a particular node:

1. `nodeChangingArea = document. getElementById("modifiable");`

   As our HTML page now has multiple paragraphs, it could be confusing to keep track of which can and can't be deleted. Instead, we now set up an entirely new area: a `div` with the `id` of `modifiable`. Here, we set the global variable `nodeChangingArea` to that element node.

2.
```
var delChoice = document. getElementById("grafCount"). selectedIndex;
var allGrafs = nodeChangingArea. getElementsByTagName("p");
var killGraf = allGrafs.item (delChoice);
```

   When the user chose to delete a paragraph, they also had to pick which paragraph to delete. We read that number from the `grafCount` field and store it in `delChoice`. The `allGrafs` variable is then set to be all the paragraphs within `nodeChangingArea`, and the paragraph to be deleted is then stored in `killGraf`.

3. `nodeChangingArea.removeChild (killGraf);`

   This step is just like that in the previous task, except that when it's run we'll see paragraphs disappear from the middle of our page.

✓ Tips

- Having trouble figuring out some of the other code? The `nodeChanger()` function combines (in order of appearance) functionality from Scripts 7.12, 3.12, and 7.4. It's very common in programming to have a library of simple routines, which, when put together, can create a single, much more complex whole.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

`docBody`when you're working with nodes, it's straightforward to swap out code that works with one element node for another. Here, we're looking at just one part of the page instead of the whole, but the overall way to accomplish our task is identical.

- Instead of declaring `nodeChangingArea` as a global variable and initializing it in `initAll()`, we could have created and initialized it locally inside every function in which it's used. Each choice has its pros and cons; here, we went with the global so that we didn't have to initialize it over and over again.

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Inserting Nodes

Along with wanting to delete nodes other than at the end of the document, you're likely to want to add nodes somewhere other than the end. With **Scripts 12.7** and **12.8**, you'll be able to choose where you want your new nodes to appear. In **Figure 12.6**, you can see how the new node gets inserted.

Script 12.7. Another radio button and some script changes allow a third optioninserting text before another paragraph.

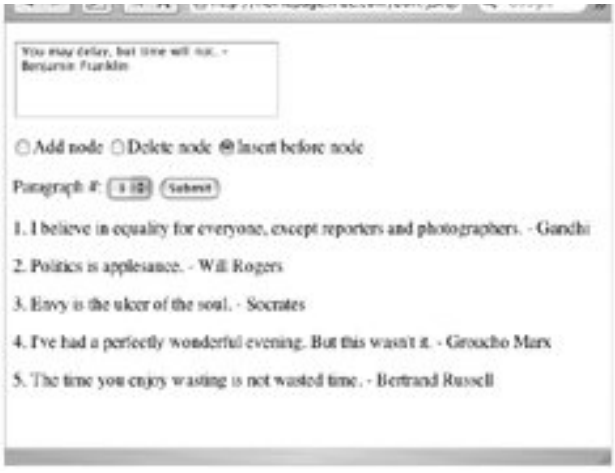
```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN">
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
     <title>Inserting Nodes</title>
     <script type="text/javascript" language="Javascript" src="script04.js">
     </script>
</head>
<body>
<form action="#">
     <p><textarea id="textArea" rows="5" cols="30"></textarea></p>
     <p><label><input type="radio" name="nodeAction" />Add node</label>
     <label><input type="radio" name="nodeAction" />Delete node</label>
     <label><input type="radio" name="nodeAction" />Insert before node</label></p>
     Paragraph #: <select id="grafCount"> </select>
     <input type="submit" value="Submit" />
</form>
<div id="modifiable"> </div>
</body>
</html>
```

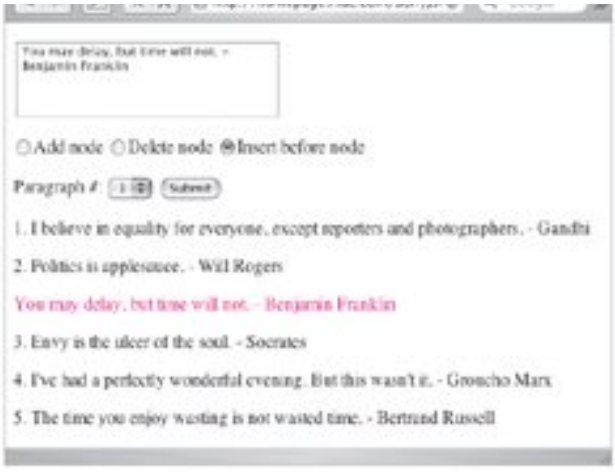
Figure 12.6. To insert a paragraph, click the Insert before node radio button, select the desired paragraph you want for the insertion point (left), enter your text, and then click Submit (right).

[View full size image]

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir





Script 12.8. The user can now add text anywhere on the page.

```
window.onload = initAll;
var nodeChangingArea;

function initAll() {
     document.getElementsByTagName("form")[0].onsubmit = function() {return nodeChanger();}

     nodeChangingArea = document.getElementById("modifiable");
}

function addNode() {
     var inText = document.getElementById("textArea").value;
     var newText = document.createTextNode(inText);

     var newGraf = document.createElement("p");
     newGraf.appendChild(newText);

     nodeChangingArea.appendChild(newGraf);
}

function delNode() {
     var delChoice = document.getElementById("grafCount").selectedIndex;
     var allGrafs = nodeChangingArea.getElementsByTagName("p");
     var killGraf = allGrafs.item(delChoice);

     nodeChangingArea.removeChild(killGraf);
}

function insertNode() {
     var inChoice = document.getElementById("grafCount").selectedIndex;
     var inText = document.getElementById("textArea").value;

     var newText = document.createTextNode(inText);
     var newGraf = document.createElement("p");
     newGraf.appendChild(newText);

     var allGrafs = nodeChangingArea.getElementsByTagName("p");
```

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
     nodeChangingArea.insertBefore(newGraf,oldGraf);
}

function nodeChanger() {
     var actionType = -1;
     var currentPgraphCount = nodeChangingArea. getElementsByTagName("p").length;
     var radioButtonSet = document.getElements ByTagName("form")[0].nodeAction;

     for (var i=0; i<radioButtonSet.length; i++) {
        if (radioButtonSet[i].checked) {
           actionType = i;
        }
     }

     switch(actionType) {
        case 0:
           addNode();
           break;
        case 1:
           if (currentPgraphCount > 0) {
              delNode();
              break;
           }
        case 2:
           if (currentPgraphCount > 0) {
              insertNode();
              break;
           }
        default:
           alert("No valid action was chosen");
     }

     document.getElementById("grafCount"). options.length = 0;

     for (i=0; i<nodeChangingArea.getElements ByTagName("p").length; i++) {
        document.getElementById("grafCount"). options[i] = new Option(i+1);
     }

     return false;
}
```

To insert a node:

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
var inText = document. getElementById("textArea").value;
```

In order to insert a paragraph, we need to know two things: the place where the user wants it inserted (`inChoice`) and the text they want inserted (`inText`).

2.
```
var newText = document. createTextNode(inText);
var newGraf = document.createElement ("p");
newGraf.appendChild(newText);
```

Here's our by-now standard way of creating a new paragraph node and filling it with the user's text.

3.
```
var allGrafs = nodeChangingArea. getElementsByTagName("p");
var oldGraf = allGrafs.item (inChoice);
```

Once again, we get all the `p` tags in our region, and then we store the target paragraph (the one we'll be inserting our new paragraph in front of) in `oldGraf`.

4.
```
nodeChangingArea.insertBefore (newGraf,oldGraf);
```

The new paragraph is inserted by calling the `insertBefore()` method and passing it two parameters: the new node and the existing node that we want the new node to be inserted before (hence the name).

✓ Tip

- While you might think that if there's an `insertBefore()` there ought to be an `insertAfter()`, that's not the case. If you want to add something to the end of the page, you need to use `appendChild()`.

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Replacing Nodes

While you can always delete existing nodes and insert new nodes, it's simpler to just replace nodes if that's what you want. **Scripts 12.9** and **12.10** show how you can replace one node with another. **Figure 12.7** shows the replacement process.

Script 12.9. Adding the Replace node radio button to the HTML rounds out our node manipulation examples.

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN">
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
     <title>Replacing Nodes</title>
     <script type="text/javascript" language="Javascript" src="script05.js">
     </script>
</head>
<body>
<form action="#">
     <p><textarea id="textArea" rows="5" cols="30"></textarea></p>
     <p><label><input type="radio" name="nodeAction" />Add node</label>
     <label><input type="radio" name="nodeAction" />Delete node</label>
     <label><input type="radio" name="nodeAction" />Insert before node</label>
     <label><input type="radio" name="nodeAction" />Replace node</label> </p>
     Paragraph #: <select id="grafCount"> </select>
     <input type="submit" value="Submit" />
</form>
<div id="modifiable"> </div>
</body>
</html>
```

Script 12.10. And finally, the user can add, delete, and replace any text on the page.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
var nodeChangingArea;

function initAll() {
     document.getElementsByTagName("form")[0].onsubmit = function() {return nodeChanger();}

     nodeChangingArea = document.getElementById("modifiable");
}

function addNode() {
     var inText = document.getElementById("textArea").value;
     var newText = document.createTextNode(inText);

     var newGraf = document.createElement("p");
     newGraf.appendChild(newText);

     nodeChangingArea.appendChild(newGraf);
}

function delNode() {
     var delChoice = document.getElementById("grafCount").selectedIndex;
     var allGrafs = nodeChangingArea.getElementsByTagName("p");
     var killGraf = allGrafs.item(delChoice);

     nodeChangingArea.removeChild(killGraf);
}

function insertNode() {
     var inChoice = document.getElementById("grafCount").selectedIndex;
     var inText = document.getElementById("textArea").value;

     var newText = document.createTextNode(inText);
     var newGraf = document.createElement("p");
     newGraf.appendChild(newText);

     var allGrafs = nodeChangingArea.getElementsByTagName("p");
     var oldGraf = allGrafs.item(inChoice);

     nodeChangingArea.insertBefore(newGraf,oldGraf);
}

function replaceNode() {
     var inChoice = document.getElementById("grafCount").selectedIndex;
     var inText = document.getElementById("textArea").value;

     var newText = document.createTextNode(inText);
     var newGraf = document.createElement("p");
     newGraf.appendChild(newText);

     var allGrafs = nodeChangingArea.getElementsByTagName("p");
     var oldGraf = allGrafs.item(inChoice);

     nodeChangingArea.replaceChild(newGraf,oldGraf);
}

function nodeChanger() {
```

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
    var currentPgraphCount = nodeChangingArea.getElementsByTagName("p").length;
    var radioButtonSet = document.getElementsByTagName("form")[0].nodeAction;

    for (var i=0; i<radioButtonSet.length; i++) {
       if (radioButtonSet[i].checked) {
          actionType = i;
       }
    }

    switch(actionType) {
       case 0:
          addNode();
          break;
       case 1:
          if (currentPgraphCount > 0) {
             delNode();
             break;
          }
       case 2:
          if (currentPgraphCount > 0) {
             insertNode();
             break;
          }
       case 3:
          if (currentPgraphCount > 0) {
             replaceNode();
             break
          }
       default:
          alert("No valid action was chosen");
    }

    document.getElementById("grafCount"). options.length = 0;

    for (i=0; i<nodeChangingArea.getElements ByTagName("p").length; i++) {
       document.getElementById("grafCount"). options[i] = new Option(i+1);
    }

    return false;
}
```

To replace nodes:

-

  ```
  nodeChangingArea.replaceChild (newGraf,oldGraf);
  ```

  The only line in this script that should be new to you is this one (see the rest of this chapter for explanations about the rest of the script). And in a similar fashion to the last task, all we need to do is call `replaceChild()` with two parameters: the paragraph we want to swap in and the paragraph we want to swap out.

downloaded from: lib.ommolketab.ir

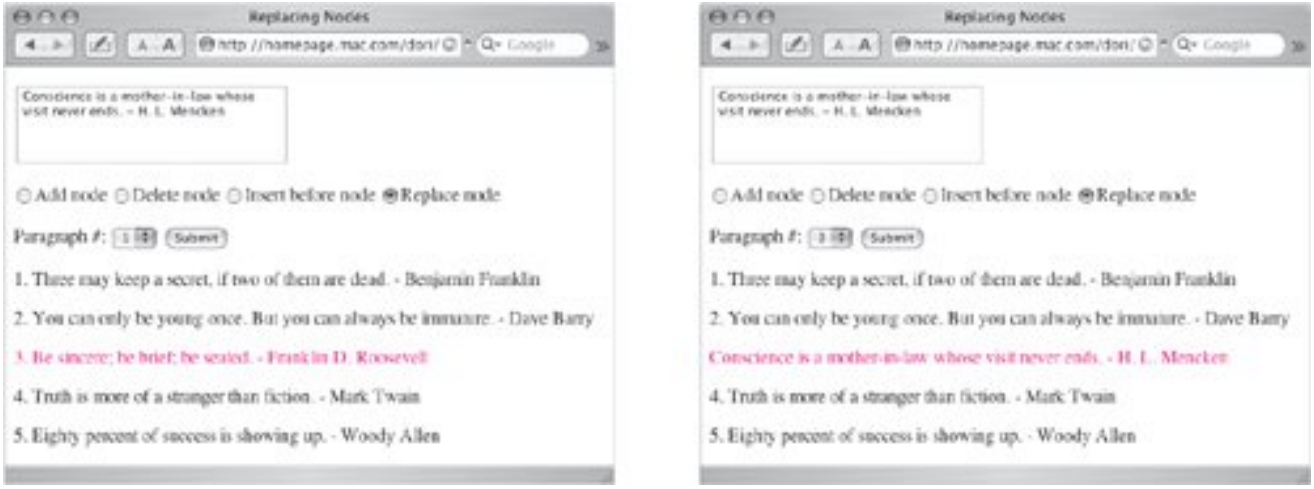
downloaded from: lib.ommolketab.ir

✓ Tip

- This chapter is not by any means a thorough discussion of node manipulationit's just a sample to get you started. If you want more documentation of all the available properties and methods, check out the W3C specification mentioned at the beginning of the chapter.

Figure 12.7. Here, we've replaced the third paragraph (left) with new text (right).

[View full size image]



PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Chapter 13. Making Your Pages Dynamic

Effective Web pages are a result of many different factors, including compelling content, good design, and attention to details, such as how fast the page loads. One of the ways to speed up page loads, while still providing the user with an interesting and interactive experience, is to use JavaScript to make individual page elements update within the user's browser. In other words, instead of your Web server pushing the page experience to the user, the server pushes the script over the Internet. The script then uses the power of the user's computer to make the page come alive. Pages with scripts like these can be called *dynamic pages*.

By moving the processing from the server side to the client (user) side, you get better performance and you can personalize the user experience to some extent.

In this chapter, you'll learn how to use JavaScript to display the local date and time on your Web pages; customize a greeting by the time of day where your user is; convert between different time formats; and move an object across the user's page under script control.

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Putting the Current Date into a Web Page

JavaScript can determine the current date and time from your computer (which it gets as a number) and then manipulate that figure in many ways. Your script has to handle the conversion from a number into a textual date, however. **Script 13.1** shows how to get the current date, convert it from a number into a standard date, and then write the result to a document window.

Script 13.1. This script writes the current date to the document window.

[View full width]

```
window.onload = initDate;

function initDate() {
     var dayName = new Array("Sunday", "Monday", "Tuesday", "Wednesday", "Thursday",
"Friday", "Saturday");
     var monName = new Array("January", "February", "March", "April", "May", "June",
"July", "August", "September", "October", "November", "December");

     var now = new Date();
     var dtString = dayName[now.getDay()] + ", " + monName[now.getMonth()] + " " + now.
getDate();

     document.getElementById("dtField"). innerHTML = dtString;
}
```

To put the current date into a Web page:

1. `window.onload = initDate;`

   When the document loads, call `initDate()`.

2. [View full width]
   `var dayName = new Array("Sunday", "Monday", "Tuesday", "Wednesday", "Thursday", "Friday", "Saturday");`

   First, we need to create a new array that contains the days of the week. Make sure to use commas to separate the items in the array; and because they are text strings, each item must be enclosed in quotes. The array gets assigned to the variable `dayName`.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
var monName = new Array("January", "February", "March", "April", "May", "June", "July",
 "August", "September", "October", "November", "December");
```

In this step, we're doing the same thing with month names; and assigning them to the brilliantly named `monName` variable.

4. `var now = new Date();`

The last thing to do in this first section is to tell JavaScript to create a new `Date` object, call it `now`, and fill it with the current date.

5. `var dtString = dayName[now.getDay()] + ", " + monName[now.getMonth()] + " " + now.getDate();`

The object `dayName[now.getDay()]` is read from right to left; `getday()` is the JavaScript method that gets the day of the week, and asking `now` for it gets today's day of the week. The numerical result references one of the entries in the array `dayName`.

Next, we concatenate a comma and a space to the text string that we're building, and then we concatenate the next expression, which is the month name, expressed by the object `monName[now.getMonth()]`. This gets the month in much the same fashion as getting the day name; and references one of the entries in the array `monName`.

A space is concatenated next, and we end with the object `now.getDate()`, which returns the date of the month. All of this is assigned to the `dtString` variable.

5. `document.getElementById("dtField"). innerHTML = dtString;`

The `id dtField` is in the HTML page (the HTML is trivial, so we haven't included it here); it's within a `<span>` tag, like so:

```
<h1>Today is <span id="dtField"> </span>.</h1>
```

The JavaScript sets the `innerHTML` property of `dtField` to the value of `dtString`. The result is shown in **Figure 13.1**.

Figure 13.1. JavaScript dynamically displays the current date in the window.

[View full size image]

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

JavaScript's Inconsistent Handling of Time

As mentioned earlier in this book, JavaScript begins numbering at zero in most cases, so numbering begins with 0, 1, 2, 3, etc. But this isn't consistent with dates, which begin with the number 1. So if you have an array that deals with the days of the week, you'll have this:

```
Sunday = 0

Monday = 1

Tuesday = 2

Wednesday = 3

Thursday = 4

Friday = 5

Saturday = 6
```

In much the same way, the 12 months of the year are numbered from 0 through 11.

On the other hand, when you're dealing with the date of the month, it makes no sense to start at zero (personally, I've never heard of April 0), so JavaScript starts at 1.

Hours are dealt with from 0 (midnight) to 23 (11 P.M.), as with military time. Later in this chapter we'll show you how to convert from military time to A.M./P.M.

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Working with Days

You might want to display a different message to your users if it's a weekend. **Script 13.2** tells you how to do it.

Script 13.2. This script figures out if it is a weekday or weekend.

```
window.onload = initDate;

function initDate() {
     var now = new Date();
     var dtString;

     if (now.getDay() > 0 && now.getDay() < 6) {
        dtString = "Sorry, it's a weekday.";
     }
     else {
        dtString = "Hooray, it's a weekend!";
}

     document.getElementById("dtField"). innerHTML = dtString;
}
```

To figure out if it is a weekend:

1. `var now = new Date();`

   Fill the variable `now` with the current date.

2. `if (now.getDay() > 0 && now. getDay() < 6) {`

   This extracts the numerical day of the week from the `now` variable and asks if it is greater than 0 (remember that Sunday is 0). Next the line uses the `&&` operator, which is a logical *and* (i.e., both parts have to be true), and asks if `now` is less than 6, which is the number for Saturday.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

If the result of the last expression is greater than 0 and less than 6, it has to be between 1 and 5, which is to say, from Monday to Friday, so the script puts a string to that effect into `dtString`.

4.
```
else {
  dtString = "Hooray, it's a weekend!";
```

If we failed the test in the step 2, it must be a weekend, and we put a string with the happy news in `dtString`.

5.
```
document.getElementById("dtField"). innerHTML = dtString;
```

Finally, we set the `innerHTML` property of `dtField` to the value of `dtString`, just as in the previous example. The result is shown in **Figure 13.2**.

Figure 13.2. The sad news gets written to the window.

[View full size image]

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Customizing a Message for the Time of Day

You can take the technique used in the last example and use it again to customize a message for the user, depending on the time of day. This is often used as a friendly greeting when a user enters a site. **Script 13.3** shows how it is done, and **Figure 13.3** shows how we were up writing way past our usual bedtime.

Script 13.3. Scripts can be used to check what time of day it is and react appropriately.

```
window.onload = initDate;

function initDate() {
     var now = new Date();
     var dtString;

     if (now.getHours() < 5) {
        dtString = "What are you doing up so late?";
     }
     else if (now.getHours() < 9) {
        dtString = "Good Morning!";
     }
     else if (now.getHours() < 17) {
        dtString = "No surfing during working hours!";
     }
     else {
        dtString = "Good Evening!";
     }

     document.getElementById("dtField"). innerHTML = dtString;
}
```

Figure 13.3. It was definitely too late at night when we wrote this.

[View full size image]

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

To customize messages for the time of day:

-

```
if (now.getHours() < 5) {
  dtString = "What are you doing up so late?";
```

We begin the new code in this script by starting a conditional test. The `getHours()` method extracts hours from the `now` variable and then tests to see if that number is less than 5 (which corresponds to 5 A.M., since numbering in JavaScript starts at midnight).

If it is before 5 A.M., the script scolds the user by writing this message to the document window, as shown in Figure 13.3.

The rest of the script repeats the above line, adjusting it for the time of day and writing out a different message. If it is between 5 A.M. and 9 A.M., the script says "Good Morning!"; between 9 A.M. and 5 P.M., it says "No surfing during working hours!"; and after 5 P.M., it says "Good Evening!"

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Displaying Dates by Time Zone

By default, the dates and times that are displayed are those on the user's machine (assuming that they are set correctly). If you want to display a date somewhere else, you need to calculate it based on UTC, Coordinated Universal Time. UTC is essentially a different name for Greenwich Mean Time (GMT); UTC also goes under the names "universal time" (UT) and "world time." **Script 13.4** shows the HTML for the page; **Script 13.5**, with the JavaScript, shows you how to calculate dates in other time zones.

Script 13.4. The HTML for the time zone script uses classes to tag the different offices with the time zone for that office.

[View full width]

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN">
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
     <title>Time Zones</title>
     <script language="Javascript" type="text/  javascript" src="script04.js">
     </script>
</head>
<body bgcolor="#FFFFFF">
     <h3>Our office hours are 9:00 am to 5:00 pm, Monday through Friday, at each of
our
 locations. It is now</h3><ul>
     <li><span class="tz-8"> </span> in San Francisco</li>
     <li><span class="tz-5"> </span> in New York</li>
     <li><span class="tz-0"> </span> in London</li>
     <li><span class="tz+7"> </span> in Hong Kong</li></ul>
</body>
</html>
```

Script 13.5. You can adapt this script to display any time zone you wish.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
window.onload = initDate;

function initDate() {
     var allTags = document.getElementsByTagName("*");

     for (var i=0;i<allTags.length; i++) {
        if (allTags[i].className.indexOf("tz")==0) {
           showTheTime(allTags[i],allTags[i].className.substring(2));
        }
     }
}

function showTheTime(currElem,tzOffset) {
     var dayName = new Array ("Sunday","Monday","Tuesday","Wednesday","Thursday","Friday"
,"Saturday");

     var thatTZ = new Date();
     var dateStr = thatTZ.toUTCString();

     dateStr = dateStr.substr(0,dateStr.length - 3);
     thatTZ.setTime(Date.parse(dateStr));
     thatTZ.setHours(thatTZ.getHours() + parseInt(tzOffset));

     currElem.innerHTML = showTheHours(thatTZ.getHours()) + showZeroFilled(thatTZ.
getMinutes()) + showAmPm(thatTZ.getHours()) + dayName[thatTZ.getDay()];

     function showTheHours(theHour) {
        if (theHour == 0) {
           return (12);
        }
        if (theHour < 13) {
           return (theHour);
        }
        return (theHour-12);
     }

     function showZeroFilled(inValue) {
        if (inValue > 9) {
           return ":" + inValue;
        }
        return ":0" + inValue;
     }

     function showAmPm(thatTime) {
        if (thatTime < 12) {
           return (" AM ");
        }
        return (" PM ");
     }
}
```

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

1.
```
function initDate() {
  var allTags = document. getElementsByTagName("*");
```

Begin the `initDate()` function, then create the `allTags` variable. The command `document. getElementsByTagName("*")` is a handy trickthat asterisk tells JavaScript to return an array containing every tag on the page. Then, we can just loop through it looking for things of interest.

2.
```
for (var i=0;i<allTags.length; i++) {
  if (allTags[i].className. indexOf("tz")==0){
    showTheTime(allTags[i], allTags[i].className. substring(2));
  }
}
```

We begin a loop so we can walk through the page elements, represented by `allTags`. The `allTags[i]. className.indexOf("tz")==0` bit just means, "does the *i*th tag have an attribute `class` that starts with "tz"if so, call `showTheTime()`."

The `showTheTime()` function is passed two parameters: first, the *i*th tag element, and second, the part of the `class` attribute (seen in Script 13.4) that is *after* the "tz", represented by `substring(2)`. Yes, we could figure out the second part from the first, but why bother? It makes the `showTheTime()` function much simpler, as that second parameter turns into the time zone offset.

3.
```
function showTheTime(currElem, tzOffset) {
```

This function takes in the two parameters that were passed to `showTheTime()` in the previous step. Inside the function, they'll be called `currElem` and `tzOffset`, respectively.

4.
```
var thatTZ = new Date();
var dateStr = thatTZ.toUTCString();
```

We create a new date variable, `thatTZ`. The next line turns that date and time (based on UT) into a string (see **Table 13.1** at the end of the chapter), saving the result in `dateStr`.

Table 13.1. Date Methods

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

			Browsers
`getTDate()`	The day of the month	131	JavaScript 1.0
`getUTCDate()`			JavaScript 1.2
`getday()`	The integer value of the day of the week	06	JavaScript 1.0
`getUTCDay()`			JavaScript 1.2
`getFullYear()`	The full four-digit year	1900+	JavaScript 1.2
`getUTCFullYear()`			
`getHours()`	The integer hour of the day	023	JavaScript 1.0
`getUTCHours()`			JavaScript 1.2
`getMilliseconds()`	The number of milliseconds since the last second	0999	JavaScript 1.2
`getUTCMilliseconds()`			
`getMinutes()`	The number of minutes since the last hour	059	JavaScript 1.0
`getUTCMinutes()`			JavaScript 1.2
`getMonth()`	The month of the year	011	JavaScript 1.0
`getUTCMonth()`			JavaScript 1.2
`getSeconds()`	The number of seconds since the last minute	059	JavaScript 1.0
`getUTCSeconds()`			JavaScript 1.2
`getTime()`	The number of milliseconds since midnight 1 January 1970		JavaScript 1.0
`getTimezoneOffset()`	The difference between local time and GMT in minutes	01439	JavaScript 1.0
`getYear()`	The year field of the date	099 for the years 19001999, four-digit year thereafter	JavaScript 1.0

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

	string, return the number of milliseconds since midnight 1 January 1970		
`setDate()`	Set the day, given a number between 131	Date in milliseconds (as of JavaScript 1.2)	JavaScript 1.0
`setUTCDate()`			JavaScript 1.2
`setFullYear()`	Set the year, given a four-digit year	Date in milliseconds	JavaScript 1.2
`setUTCFullYear()`			
`setHours()`	Set the hour, given a number between 023	Date in milliseconds (as of JavaScript 1.2)	JavaScript 1.0
`setUTCHours()`			JavaScript 1.2
`setMilliseconds()`	Set the milliseconds, given a number between 0999	Date in milliseconds	JavaScript 1.2
`setUTCMilliseconds()`			
`setMinutes()`	Set the minutes, given a number between 059	Date in milliseconds (as of JavaScript 1.2)	JavaScript 1.0
`setUTCMinutes()`			JavaScript 1.2
`setMonth()`	Set the month, given a number between 011	Date in milliseconds (as of JavaScript 1.2)	JavaScript 1.0
`setUTCMonth()`			JavaScript 1.2
`setSeconds()`	Set the seconds, given a number between 059	Date in milliseconds (as of JavaScript 1.2)	JavaScript 1.0
`setUTCSeconds()`			JavaScript 1.2
`setTime()`	Set a date, given the number of milliseconds since 1 January 1970	Date in milliseconds	JavaScript 1.0
`setYear()`	Set the year, given either a two- or four-digit value	Date in milliseconds (as of JavaScript 1.2)	JavaScript 1.0
`toGMTString()`	The GMT date and time in string format	day dd mm yyyy hh:mm:ss GMT	JavaScript 1.0
`toUTCString()`			JavaScript 1.2

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

	time in string format	and browser	
`toString()`	The local date and time in string format	Varies based on OS and browser	JavaScript 1.0
`UTC()`	Given a date in year, month, day (and optional hours, minutes, seconds, and milliseconds) format, return the number of milliseconds since 1 January 1970	Date in milliseconds	JavaScript 1.0
`valueOf()`	The number of milliseconds since midnight 1 January 1970	Date in milliseconds	JavaScript 1.2

5. `dateStr = dateStr.substr (0,dateStr.length - 3);`

What we're trying to do in this section is reset `thatTZ` to be based on UT instead of local time, so that we can then add the passed offset for the desired result. Unfortunately, JavaScript doesn't make this simple. We now have UT time in string format, but if we just try to reset the time based on it, it'll outsmart us, knowing that we *really* want local time. What we need to do is take the string version of the date and time and strip off the last three characters, which are `UTC`.

6. `thatTZ.setTime(Date.parse(dateStr));`

Once we've stripped off the last three characters, we can use the `parse` method to turn the date into milliseconds and then the `setTime` method to set `thatTZ` to our desired time.

7. `thatTZ.setHours(thatTZ.getHours() + parseInt(tzOffset));`

Now that we've finally got the UT date stored, we need to add the passed number of hours that our desired time is off UT. As the time zone can be anywhere from +12 to -12, the time zone that was passed in can be anything from `"-12"` to `"+12"`. We use `parseInt()` to turn that string into a number from -12 to 12, and we then add it to the current UT time. The result gives us our desired value: the correct date and time in that time zone.

downloaded from: lib.ommolketab.ir

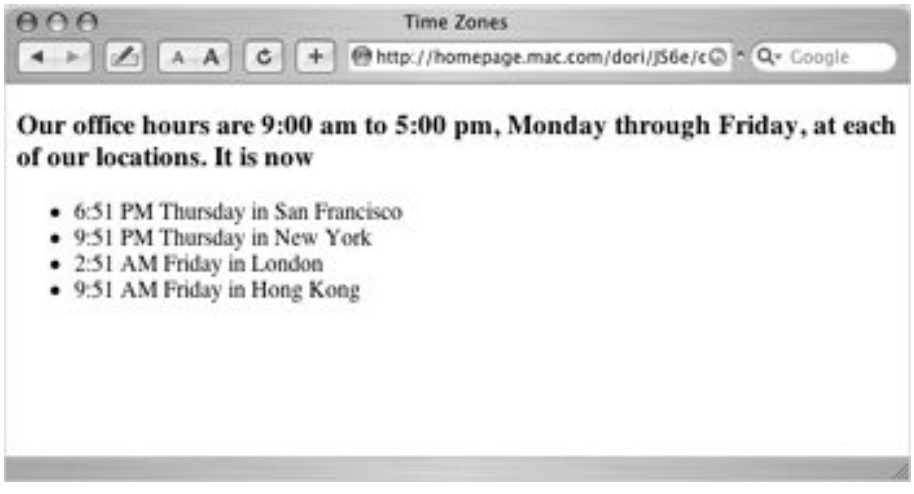
downloaded from: lib.ommolketab.ir

```
currElem.innerHTML = showTheHours (thatTZ.getHours()) + showZeroFilled(thatTZ. getMinutes
(()) + showAmPm (thatTZ.getHours()) + dayName[thatTZ.getDay()];
```

This looks scary, but all it is doing is building the time value that goes into the document by concatenating the result from all of the other functions and then setting the `innerHTML` property of `currElem`, thereby putting the result of the calculation into the document. The final result is shown in **Figure 13.4**.

Figure 13.4. The script calculates the time in each office, based on its time zone.

[View full size image]



The next three functions, `showTheHours()`, `showZeroFilled()`, and `showAmPm()` are within the `showTheTime()` function so that they can share variables. As it turns out, they don't in this task, but they will in the next.

9.
```
function showTheHours(theHour) {
   if (theHour == 0) {
      return (12);
   }
```

First, set up a function called `showTheHours`, containing the variable `theHour`. Then, if `theHour` is zero, return the result 12 (meaning the hour is 12 A.M.); otherwise continue with the script.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
   return (theHour);
}
return (theHour-12);
```

If the result of the hour portion of the time is less than 13, then simply put that number into the variable `theHour`. Otherwise, return `theHour` minus 12 (which converts hours 13 and higher to their 12-hour-clock counterparts).

11.
```
function showZeroFilled(inValue) {
  if (inValue > 9) {
     return ":" + inValue;
  }
  return ":0" + inValue;
}
```

This function is used to pretty up the output; when the minutes or seconds figure is 9 or under, it pads the figure with a leading zero.

12.
```
function showAmPm(thatTime) {
  if (thatTime < 12) {
     return (" AM ");
  }
  return (" PM ");
}
```

This function adds A.M. or P.M. to the time. If the passed variable `thatTime` is less than 12, then the value of the function is A.M.; otherwise it is P.M. Note that there is a leading space in the A.M. or P.M. text string so things look nice.

✓ Tips

- There's no simple and straightforward way to deal with Daylight Savings Time. Some browsers just don't handle it correctly. And unfortunately, you're also at the mercy of computer users knowing how to set up their computers to be aware when it's happening. Luckily, both Windows and Mac OS X have the ability to automatically set the time based on an Internet time server, which does take Daylight Savings into account, so it's less of a problem than it used to be. The bad news: JavaScript doesn't have a way to get at that information from the OS, so it can't tell if you're in a time and place for it to apply.
- It's easy to add another city to the HTML without touching a single line of JavaScriptand it will all just work.
- In this script, we use the `toUTCString()` method instead of the `toGMTString()` method; they work almost identically. In previous editions of this book, we used `toGMTString()` because `toGMTString()` was introduced in JavaScript 1.0, and `toUTCString()` came in with JavaScript 1.2; by using `toGMTString()`, we ensured that the script works even in very old browsers.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

difference between the two methods is that the `toGMTString()` method appends "GMT" to the end of the string, and the `toUTCString()` method appends "UTC" to the end of the string. Either way, you'll still have to strip off three characters in step 5.

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Converting Military Time to A.M./P.M.

JavaScript provides the time in 24-hour format, also known as military time. Many people are unfamiliar or uncomfortable with this format, so you'll want to know how to convert it to 12-hour format. In the next two scripts, you see one way to go about the task, which needs a bit of explanation. The page we're creating (**Script 13.6**) uses a form containing a single `div` into which we write the time, based on a function in the script. The form is controlled by two radio buttons, which let us switch the time from 24-hour format into 12-hour format. The JavaScript behind this is in **Script 13.7**. The result is shown in **Figure 13.5**.

Script 13.6. This HTML uses `id`s to identify each radio button.

[View full width]

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0  Transitional//EN">
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
     <title>JavaScript Clock</title>
     <script language="Javascript" type="text/  javascript" src="script05.js">
     </script>
</head>
<body bgcolor="#FFFFFF">
<div align="center">
     <h2 id="showTime"> </h2>
     <form action="#">
        Display Military Time?
        <input type="radio" name="milTime" id="showMilitary" checked="checked" /><label
 for="showMilitary">Yes</  label>   
        <input type="radio" name="milTime" id="noMilitary" /><label for= "noMilitary">No</
 label>
     </form>
</div>
</body>
</html>
```

Script 13.7. This script converts between 24-hour and 12-hour time.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
window.onload = showTheTime;

function showTheTime() {
     var now = new Date();

     document.getElementById("showTime"). innerHTML = showTheHours(now.getHours()) +
showZeroFilled(now.getMinutes()) + showZeroFilled(now.getSeconds()) + showAmPm();
     setTimeout("showTheTime()",1000);

     function showTheHours(theHour) {
        return (showMilitaryTime() || (theHour > 0 && theHour < 13)) ? theHour :
(theHour
== 0) ? 12 : theHour-12;
     }

     function showZeroFilled(inValue) {
        return (inValue > 9) ? ":" + inValue : ":0" + inValue;
     }

     function showMilitaryTime() {
        return (document.getElementById  ("showMilitary").checked);
     }

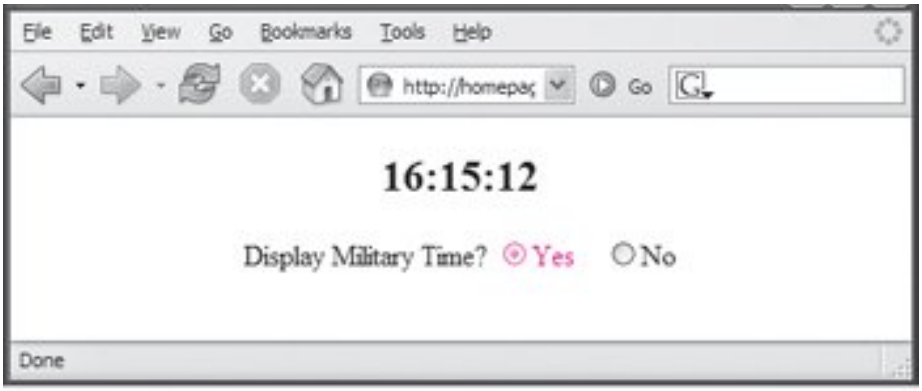
     function showAmPm() {
        return (showMilitaryTime()) ? "" : (now.getHours() < 12) ? " AM" : " PM";
     }
}
```

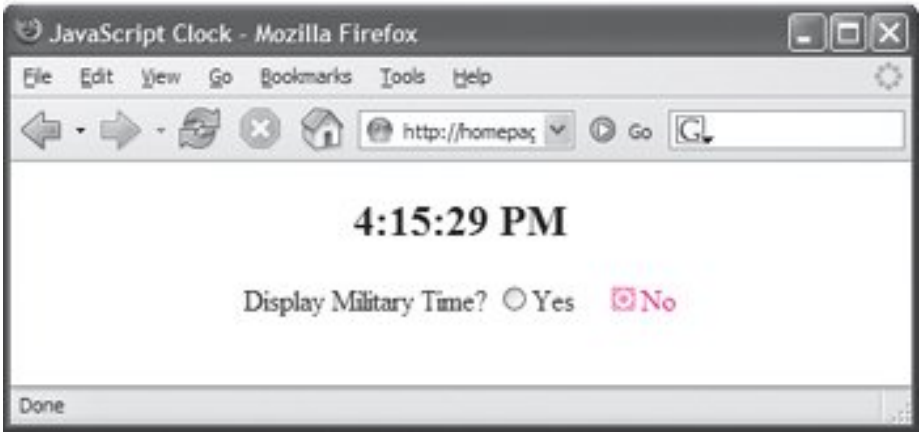
Figure 13.5. The script in action.

[View full size image]

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir





To convert military time to AM/PM:

1. [View full width]
```
document.getElementById ("showTime").innerHTML = showTheHours(now.getHours()) +
  showZeroFilled(now.getMinutes()) + showZeroFilled(now.getSeconds()) + showAmPm();
```

   As in the previous task, this may look daunting, but all it is doing is building the time value displayed on the page by concatenating the result of the other functions (covered below). The result gets put into the `innerHTML` property of `showTime`.

2. `setTimeout("showTheTime()",1000);`

   This bit of code tells the display to update every second.

3. `function showTheHours(theHour) {`

   Next, set up a function called `showTheHours`, containing the variable `theHour`.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
return (showMilitaryTime() || theHour > 0 && theHour < 13)) ? theHour : (theHour ==
0) ?
  12 : theHour-12;
```

This conditional, written in shorthand form, says that if the user wants to show military time, or if the result of the hour portion of the time is greater than zero but less than 13, then simply return the variable `theHour`. Remember that the `||` operator means a logical *or*, as you first saw in Chapter 1. Otherwise, if `theHour` is zero, then return with the result 12 (when the hour is 12 A.M.); otherwise return `theHour` minus 12 (which converts hours 13 and higher to their civilian counterparts).

5.
```
function showZeroFilled(inValue) {
  return (inValue > 9) ? ":" + inValue : ":0" + inValue;
```

Similar to the function of the same name in Script 13.6 (but written in shorthand form), when the minutes or seconds figure is 9 or under, it pads the figure with a leading zero.

6.
```
function showMilitaryTime() {
  return (document.getElementById ("showMilitary").checked);
```

This function returns a value based on which radio button on the page the user has checked. If `showMilitary` is selected, then it should return a true result; otherwise it returns a false result.

7.
```
function showAmPm() {
  return (showMilitaryTime()) ? "" : (now.getHours() < 12) ? " AM" : " PM";
```

This function adds the A.M. or P.M. to the 12-hour time. If the function `showMilitaryTime` is true, it returns nothing, and goes to the next function. If the hours portion of the `now` variable is less than 12, then the value of the function is A.M.; otherwise it is P.M. Again, there is a leading space in the A.M. or P.M. text string, so things look nice.

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Creating a Countdown

Sooner or later, you'll want to put a countdown on your pages that tells the user how many days or hours until a particular event. **Script 13.8** (HTML) and **Script 13.9** (JavaScript) lets one of the authors know his responsibilities, in no uncertain terms, as you can see in **Figure 13.6**.

Script 13.8. The HTML for the countdown script.

[View full width]

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN">
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
     <title>Dynamic Countdown</title>
     <script language="Javascript" type="text/ javascript" src="script06.js">
     </script>
</head>
<body bgcolor="#FFFFFF">
     <p>Dori says:</p>
     <p>It's only <span class="daysTill" id="bday"> </span> days until my birthday and
<span class="daysTill" id="xmas"> </span> days until Christmas, so you'd better
start
shopping now!</p>
     <p>And it's only <span class="daysTill" id="anniv"> </span> days until our
anniversary...</p>
</body>
</html>
```

Script 13.9. This script counts down the number of days Tom stays out of the doghouse.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
function showDays() {
     var allTags = document.getElementsByTagName("*");

     for (var i=0;i<allTags.length; i++) {
        if (allTags[i].className.indexOf("daysTill") > -1) {
           allTags[i].innerHTML = showTheDaysTill(allTags[i].id);
        }
     }

     function showTheDaysTill(thisDate) {
        var theDays;

        switch(thisDate) {
           case "anniv":
              theDays = daysTill(5,6);
              break;
           case "bday":
              theDays = daysTill(8,7);
              break;
           case "xmas":
              theDays = daysTill(12,25);
              break;
           default:
        }
        return theDays + " ";
     }

     function daysTill(mm,dd) {
        var now = new Date();
        var inDate = new Date(now.getFullYear(),mm-1,dd);
        if (inDate.getTime() < now.getTime()) {
           inDate.setYear(now.getFullYear()+1);
        }

        return (Math.ceil(dayToDays(inDate) - dayToDays(now)));
     }

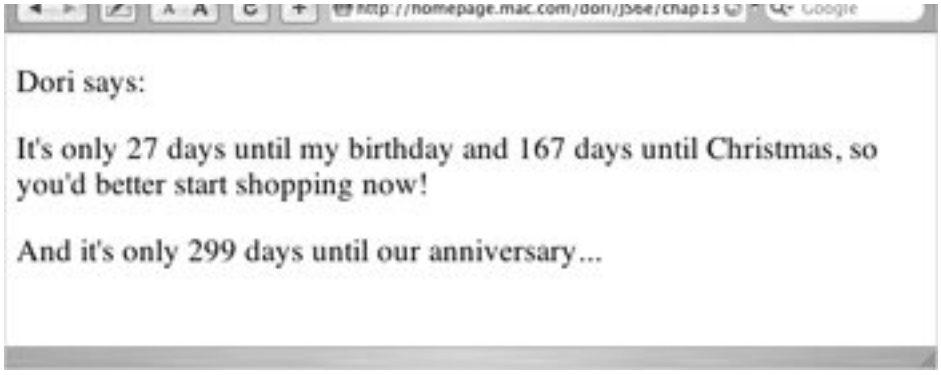
     function dayToDays(inTime) {
        return (inTime.getTime() / (1000 * 60 * 60 * 24));
     }
}
```

Figure 13.6. Loading this page gives one of the authors his marching orders.

[View full size image]

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir



To create a countdown:

1. ```
   var allTags = document. getElementsByTagName("*");
   ```

   Create a new `allTags` array, and fill it with every tag on the page.

2. ```
   for (var i=0;i<allTags.length; i++) {
     if (allTags[i].className. indexOf("daysTill") > -1) {
       allTags[i].innerHTML = showTheDaysTill(allTags[i].id);
     }
   ```

   This loop scans through `allTags` to see if the string `daysTill` is found in the `class` attribute of any tags on the page. Remember that a tag could have multiple `class` attributes (i.e., `class="firstClass daysTill somethingElse fourthThing"`).

   If we found `daysTill`, we call the `showTheDaysTill()` function, which is passed one parameter: that tag's id (which stores what date to put up on the page). That function returns a value that is then put into `innerHTML`.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
  case "anniv":
     theDays = daysTill(5,6);
     break;
  case "bday":
     theDays = daysTill(8,7);
     break;
  case "xmas":
     theDays = daysTill(12,25);
     break;
     default:
```

If you don't remember the `switch/case` multi-level conditionals, you can review the discussion in Chapter 3. Here, we are using the value of `thisDate` to test against the three `case` statements. For the `anniv case`, we're setting `theDays` to May 6 (5,6 is the numerical representation, much like you would write it in the real world); for `bday`, we're setting it to August 7; and for `xmas`, `theDays` gets set to December 25.

4.
```
return theDays + " ";
```

The `showTheDays()` function ends by returning the number of days followed by a space. This is to work around a problem in IE: it eats the spaces in the HTML. If the script doesn't return a space at the end, the number runs into the word "days". If you just stuck the word "days" into this function, then there'd need to be a space after that, and so on.

5.
```
function daysTill(mm,dd) {
  var now = new Date();
  var inDate = new Date (now.getFullYear(),mm-1,dd);
```

This step shows the `daysTill()` function, which receives the dates from the `case` statements in step 3. Then, we create the `now` and `inDate` variables. The latter variable is filled with the current year, but with the month (with 1 subtracted from it to get it right; see the "More Weird Time Stuff" sidebar) and the day that were passed in.

6.
```
if (inDate.getTime() <> now.getTime()) {
  inDate.setYear (now.getFullYear()+1);
}
```

We then check that date against today. If that date in this year has already passed, we increment the year, going for next year's instead.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Here, we're calculating the number of days between `inDate` and the current date. The `Math.ceil()` method makes sure that our result is a whole number.

8.
```
function dayToDays(inTime) {
  return (inTime.getTime() / (1000 * 60 * 60 * 24));
```

JavaScript stores dates in milliseconds since January 1, 1970. In order to compare two dates, change this to be the number of days since January 1, 1970. First, get the number of milliseconds in a day by multiplying 1000 (the number of milliseconds in a second) by 60 (number of seconds in a minute), by 60 again (number of minutes in an hour), and then by 24 (number of hours in a day). Dividing the number of milliseconds returned by `getTime()` by this number gives the number of days since January 1, 1970.

More Weird Time Stuff

Month numbering in JavaScript begins with 0 and day numbering with 1, and JavaScript deals inconsistently with years prior to 1970, depending on the version of JavaScript your browser is using.

Navigator 2 (using JavaScript 1.0) couldn't deal with years before 1970 at all and had a Year 2000 Problem, as it returned the wrong answer for dates in or after 2000. Navigator 3 (which used JavaScript 1.1) supposedly changed the value returned by the `getYear()` method to be two digits if the year is in the 1900s and four digits if the year was before 1900 or after 2000. However, this is not true for all versions of Netscape; for example, Netscape Navigator 4 for Mac returns 100 for the year 2000. And to make things even worse, this still occurs in Firefoxthe current version (1.5) still returns numbers in the hundreds (versus in the 2000s) for `getYear()`.

JavaScript 1.2 (in Navigator 4, and also in ECMAScript-compatible browsers such as Internet Explorer 4 and later) introduced a new method, `getFullYear()`, which always returns four-digit years. We recommend that you use `getFullYear()` any time you know that you'll only be working with version 4 and later browsers, so that's what we're using throughout this book.

The `getTime()` method in JavaScript, for reasons probably best left unexplored, returns a number that is the number of milliseconds since January 1, 1970. Luckily, we hardly ever have to look at that number, as there have been a whopping number of milliseconds in the past three decades.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Moving an Object in the Document

It's possible to use JavaScript to move an object (an image, or text, or whatever) around your screen. In fact, you can make an object appear to move in three dimensions, so that it looks as through it passes behind other objects in the document. In this example, you'll see how to move an image of the Moon behind two other objects so it appears to wax and wane.

This requires three documents: the HTML document (**Script 13.10**), the CSS style sheet (**Script 13.11**), and the JavaScript file (**Script 13.12**). The Moon makes its journey in **Figures 13.7**, **13.8**, and **13.9**. We're using JavaScript to manipulate an image using the `id` assigned in the HTML, and CSS to set the positioning for all the objects on the page: specifically their *z-index*, which is an indicator of which object is shown on top of another object. The object with the higher-numbered z-index is shown when two objects occupy the same space.

Script 13.10. The HTML for the object moving example uses `id`s to tag the elements we want to manipulate.

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0  Transitional//EN">
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
     <title>Moon</title>
     <script language="Javascript" type="text/ javascript" src="script07.js">
     </script>
     <link rel="stylesheet" rev="stylesheet" href="script07.css" />
</head>
<body>
     <img src="images/black_dot.gif" width="250" height="250" id="leftfore" alt="" />
     <img src="images/full_moon.jpg" width="232" height="232" id="mover" alt="Full Moon" />
     <img src="images/black_dot.gif" width="250" height="250" id="rightfore" alt="" />
</body>
</html>
```

Script 13.11. The CSS sets the initial positions of each object.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
     background-color: #000;
}

#leftfore, #mover, #rightfore {
     position: absolute;
     top: 5px;
}

#leftfore {
     left: 0;
     z-index: 2;
}

#mover {
     left: 5px;
     z-index: 1;
}

#rightfore {
     left: 470px;
     z-index: 2;
}
```

Script 13.12. The JavaScript gets the Moon moving.

```
window.onload = slide;

function slide() {
     document.getElementById("mover").style. left = currPos("mover") + 1 + "px";

     if (currPos("mover") <= currPos ("rightfore")) {
        setTimeout("slide()",10);
     }

     function currPos(elem) {
        return document.getElementById(elem). offsetLeft;
     }
}
```

Figure 13.7. The Moon starts on the left, shadowed behind the foreground object...

[View full size image]

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Figure 13.8. ...travels toward the center where it can be seen in its entirety...

[View full size image]

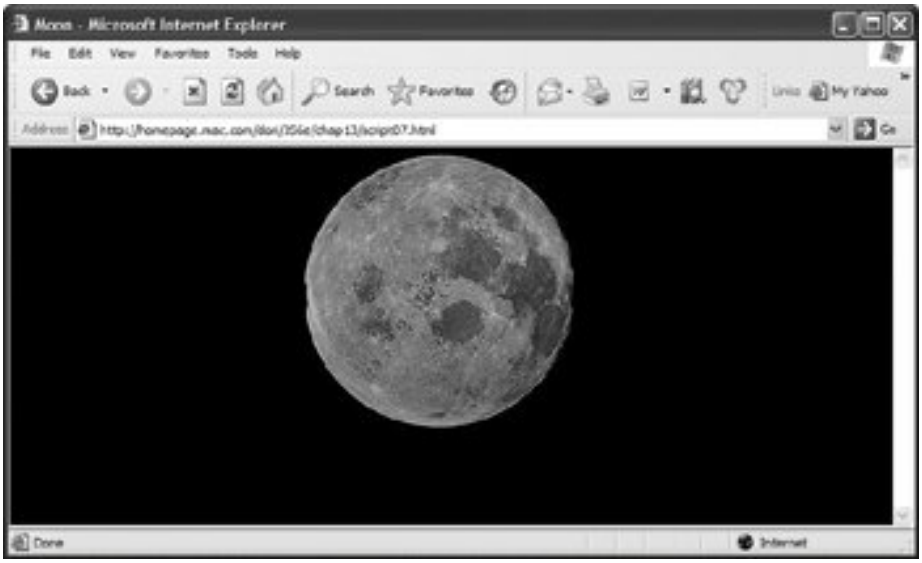
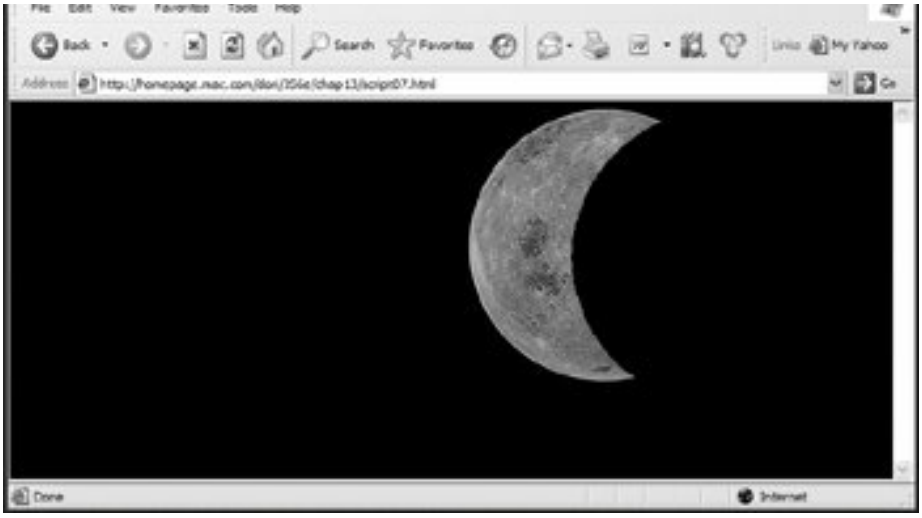


Figure 13.9. ...and then ends up on the right, where the foreground object again covers it.

[View full size image]

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir



To move an object:

1. ```
   function slide(){
     document.getElementById("mover"). style.left = currPos("mover") + 1 + "px";
   ```

   If you look at Script 13.10, you'll see that the image that we want to move has an `id` of `mover`. To move the image object (in a way that works cross-browser), we have to change that object's `style.left` property. Here, we change it by getting the object's current position (as covered below), incrementing it by 1, and finally adding `px` to the end to put it in the correct format. Changing `style.left` is all that's needed to move it to its new location.

2. ```
   if (currPos("mover") <= currPos("rightfore")) {
   ```

   Now that we've moved the image object, we need to figure out if we want to keep on moving itthat's done by checking its current position and comparing it to the current position of `rightfore`, the right-most foreground image. If `mover` has a current position that is less than or equal to that of `rightfore`, that is, it's still to its left, then we want to keep moving it over.

3. ```
   setTimeout("slide()",10);
   ```

   Here's where we tell JavaScript to keep on moving `mover`, by calling `setTimeout()` to call `slide()` again in ten milliseconds.

downloaded from: lib.ommolketab.ir
   ```

downloaded from: lib.ommolketab.ir

Several places above needed to get the current position of an element, and here's where we'll do it. All we need is the `id` of that element.

5. `return document.getElementById (elem).offsetLeft;`

Given the `id` of the object, we can get the object. And given that, all we need is its `offsetLeft` property, which is the object's left position. The `offsetLeft` property contains a numeric value, so we can just return it as-is.

✓ Tips

- You might be wondering: if `offsetLeft` is numeric, why jump through all those hoops to instead change the `style.left` property? We have to do that because `offsetLeft` is read-only; that is, you can read its value, but you can't change it. There aren't any cross-browser, writeable, numeric positioning elements.
- The z-index for each object is set in Script 13.11. Those numbers don't have to be sequential; so long as one number is higher than another, that one will be on top.

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Date Methods

Because you'll often need to deal with dates, here's a table of all of the methods of the Date object. In **Table 13.1**, you'll see a reference to UTC, which stands for Coordinated Universal Time, which replaced Greenwich Mean Time (GMT) as the world standard for time in 1986. Any of the methods that contain UTC are available only in JavaScript 1.2 or later.

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Chapter 14. Applied JavaScript

In earlier chapters in this book, you've learned how to use dozens of JavaScript techniques to accomplish many specific tasks. On many Web pages that you build, you'll often need just one technique, and you'll be able to use a script from this book (usually with some minor modifications) to get the job done.

But sometimes you'll need to use more than one technique to get the job done on your pages. That's where this chapter comes in. The tasks you'll find here require a variety of approaches and are similar (in spirit, if not specifically) to what you'll need to do on your own Web sites.

In this chapter, you'll learn to improve your site's user interface with outline-style sliding and fly-out menus; create a slideshow; process text by crunching it with JavaScript; let JavaScript do the hard work of displaying data in an easy-to-understand graphical manner; and switch between different style sheets under script control.

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Using Sliding Menus

A sliding menu is a simple user interface widget that lets you put a lot of information on a page without cluttering it all up. The user can view just as much (or as little) of the extra information as they want to see at a time. **Script 14.1** contains the HTML, **Script 14.2** the CSS, and **Script 14.3** the JavaScript, as shown below.

Script 14.1. Here's a straightforward HTML page with a lot of links.

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN">
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
     <title>Shakespeare's Plays</title>
     <link rel="stylesheet" rev="stylesheet" href="script01.css" />
     <script type="text/javascript" language="Javascript" src="script01.js">
     </script>
</head>
<body>
     <h1>Shakespeare's Plays</h1>
     <div>
        <a href="menu1.html" class="menuLink">Comedies</a>
        <ul class="menu" id="menu1">
           <li><a href="pg1.html">All's Well That Ends Well</a></li>
           <li><a href="pg2.html">As You Like It</a></li>
           <li><a href="pg3.html">Love's Labour's Lost</a></li>
           <li><a href="pg4.html">The Comedy of Errors</a></li>
        </ul>
     </div>
     <div>
        <a href="menu2.html" class="menuLink">Tragedies</a>
        <ul class="menu" id="menu2">
           <li><a href="pg5.html">Anthony &amp; Cleopatra</a></li>
           <li><a href="pg6.html">Hamlet</a></li>
           <li><a href="pg7.html">Romeo &amp; Juliet</a></li>
        </ul>
     </div>
     <div>
        <a href="menu3.html" class="menuLink">Histories</a>
        <ul class="menu" id="menu3">
           <li><a href="pg8.html">Henry IV, Part 1</a></li>
           <li><a href="pg9.html">Henry IV, Part 2</a></li>
        </ul>
     </div>
</body>
</html>
```

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Script 14.2. It doesn't take much CSS to pull off this effect.

```
body {
     background-color: white;
     color: black;
}

div {
     margin-bottom: 10px;
}

ul.menu {
     display: none;
     list-style-type: none;
     margin-top: 5px;
}

a.menuLink {
     font-size: 16px;
     font-weight: bold;
}
```

Script 14.3. Text (and links) can appear and disappear with this script.

```
window.onload = initAll;

function initAll() {
     var allLinks = document.getElementsByTag Name("a");

     for (var i=0; i<allLinks.length; i++) {
        if (allLinks[i].className.indexOf  ("menuLink") > -1) {
           allLinks[i].onclick = toggleMenu;
        }
     }
}

function toggleMenu() {
     var startMenu = this.href.lastIndexOf  ("/")+1;
     var stopMenu = this.href.lastIndexOf(".");
     var thisMenuName = this.href.substring  (startMenu,stopMenu);

     var thisMenu = document.getElementById  (thisMenuName).style;
     thisMenu.display = (thisMenu.display == "block") ? "none" : "block";

     return false;
}
```

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

To use sliding menus:

1. ```
   var allLinks = document.getElements ByTagName("a");
   ```

   When the page loads, the `initAll()` function is called, and it begins by creating an array of all the links on the page.

2. ```
   for (var i=0;i<allLinks.length;i++) {
     if (allLinks[i].className. indexOf("menuLink") > -1) {
       allLinks[i].onclick = toggleMenu;
     }
   }
   ```

   Once we have all the links, we loop through them, looking for those links with a class of `menuLink` and adding an `onclick` handler to just those links. Here, that `onclick` handler is set to call the `toggleMenu()` function when they're clicked.

3. ```
   var startMenu = this.href. lastIndexOf("/")+1;
   var stopMenu = this.href. lastIndexOf(".");
   ```

   Inside `toggleMenu()`, JavaScript has passed us `this`. Here, `this` is the link object that the user clicked, which means that `this.href` is the full link URL. But we only want the part between the last forward slash and the last period (that is, if the link was to http://www.javascriptworld.com/index.html, we'd only want "index"), so we create and set `startMenu` and `stopMenu` to be the locations in `this.href` where we want to start and stop finding the string that will end up being our menu name.

4. ```
   var thisMenuName = this.href. substring(startMenu,stopMenu);
   ```

   The menu name we want is between those two positions, so here's where we set it.

5. ```
   var thisMenu = document. getElementById (thisMenuName). style;
   ```

   The variable `thisMenu` is set to a reference to the desired menu using the `getElementById()` method.

downloaded from: lib.ommolketab.ir
   ```

downloaded from: lib.ommolketab.ir

If the `display` property of `thisMenu` is `block`, then this code changes it to `none`. Alternatively, if it's `none`, it's changed to `block`. This is what toggles the menu display, as shown in **Figures 14.1** and **14.2**.

Figure 14.1. The initial view of the sliding menus.

[View full size image]

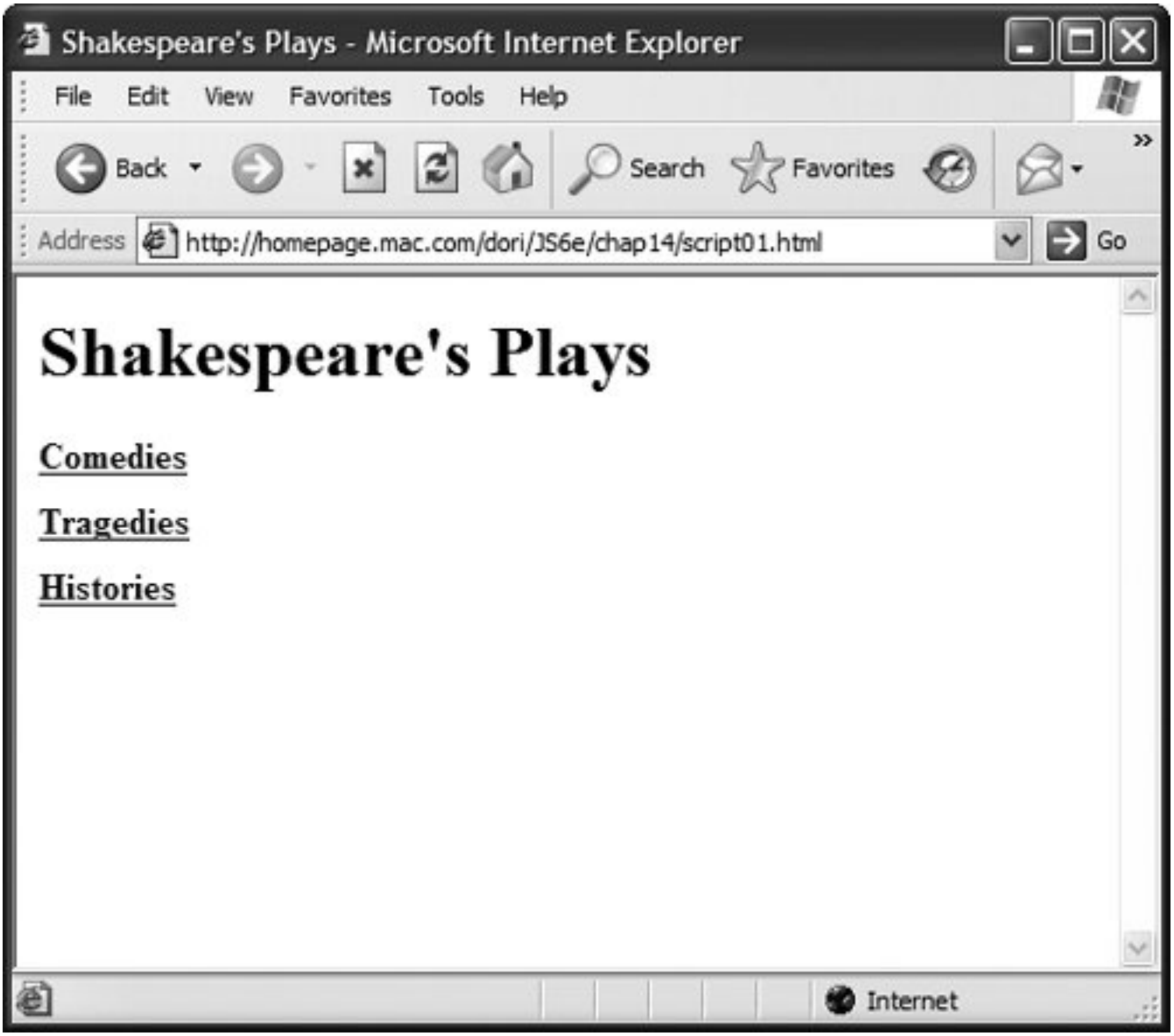
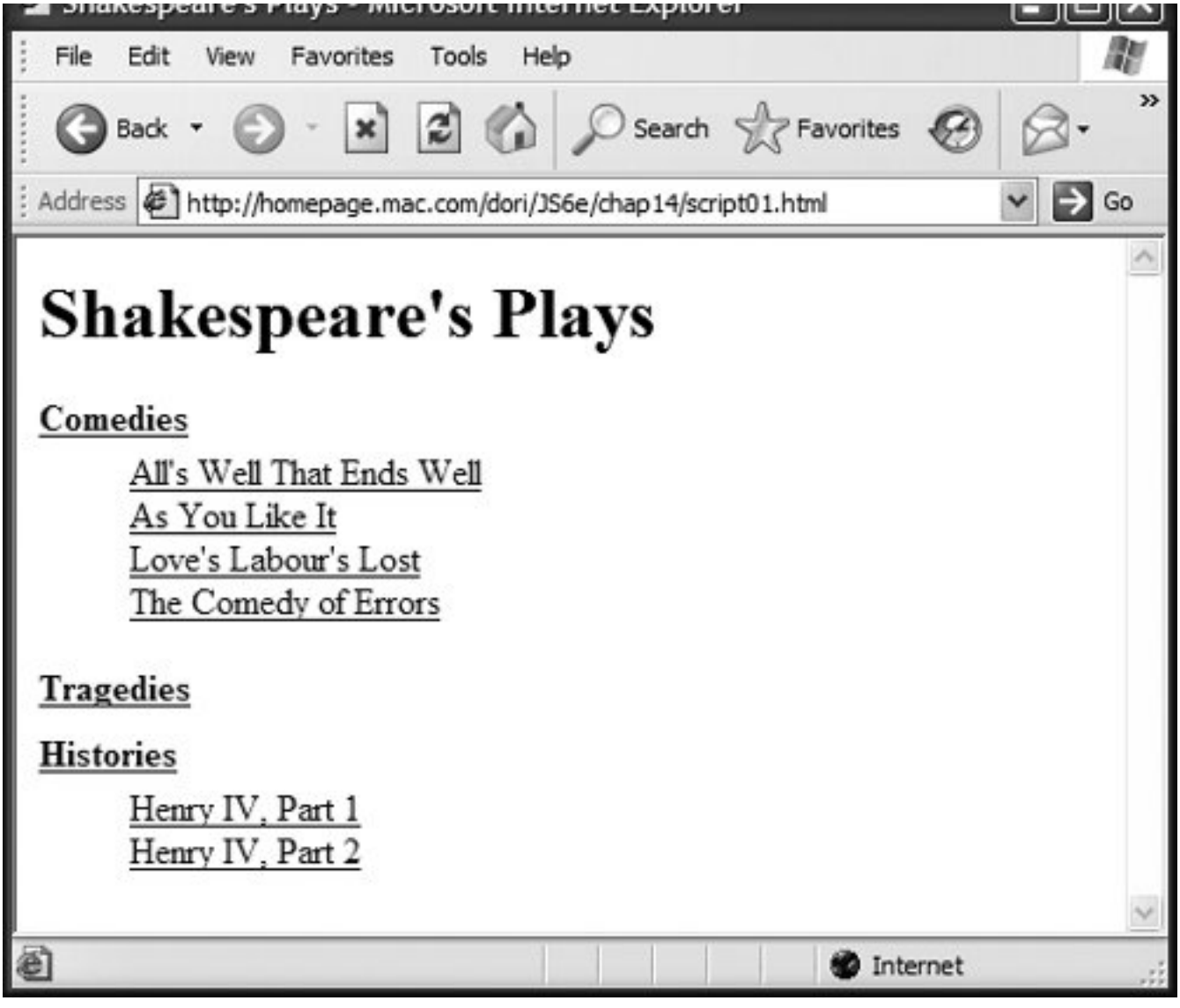


Figure 14.2. After a click, the menu expands and the additional choices appear.

[View full size image]

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir



7. `return false;`

And finally, we return a value of falsethat's because the `toggleMenu()` function was called due to an `onclick` event handler on a link. When we return false, the `href` attribute never gets loaded into the browser window, so the viewer stays on the same page.

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Adding Pull-Down Menus

You may have looked at the sliding menus in the previous task and said to yourself, that's nice, but what I really want are those pull-down menus that make Web pages look like applications. Here's the secret: there's not a lot of difference between the previous task and this one. In fact, the HTML is identical (just refer back to Script 14.1); the CSS is in **Script 14.4**, and the JavaScript is in **Script 14.5**.

Script 14.4. A little more CSS and a little more JavaScript give your menus a more traditional look.

```
body {
     background-color: white;
     color: black;
}

div {
     margin-bottom: 10px;
     width: 180px;
     background-color: #CF9;
}

ul.menu {
     display: none;
     list-style-type: none;
     margin: 0;
     padding: 0;
}

ul.menu li {
     font: 12px arial, helvetica, sans-serif;
     padding-left: 10px;
}

a.menuLink, li a {
     text-decoration: none;
     color: #060;
}

a.menuLink {
     font-size: 16px;
     font-weight: bold;
}

li a:hover {
     background-color: #060;
     color: white;
}
```

Script 14.5. This script turns your everyday links into pull-down menus.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
function initAll() {
     var allLinks = document.getElementsByTagName("a");

     for (var i=0; i<allLinks.length; i++) {
        if (allLinks[i].className.indexOf("menuLink") > -1) {
           allLinks[i].onclick = function() {return false;}
           allLinks[i].onmouseover = toggleMenu;
        }
     }
}

function toggleMenu() {
     var startMenu = this.href.lastIndexOf("/")+1;
     var stopMenu = this.href.lastIndexOf(".");
     var thisMenuName = this.href.substring(startMenu,stopMenu);

     document.getElementById(thisMenuName).style.display = "block";

     this.parentNode.className = thisMenuName;
     this.parentNode.onmouseout = toggleDivOff;
     this.parentNode.onmouseover = toggleDivOn;
}

function toggleDivOn() {
     document.getElementById(this.className).style.display = "block";
}

function toggleDivOff() {
     document.getElementById(this.className).style.display = "none";
}
```

To add a pull-down menu:

1. `allLinks[i].onclick = function() {return false;}`
   `allLinks[i].onmouseover = toggleMenu;`

Instead of adding an `onclick` handler to call `toggleMenu()` as we did previously, here, we set `onclick` to always return falsewe don't want it to do anything at all. Instead, we'll have `onmouseover` call `toggleMenu()`, which means that the menu will open up whenever we move the mouse over it (**Figure 14.3**).

Figure 14.3. The menus expand when you roll the mouse over them, highlighting the choice under the mouse pointer.

[View full size image]

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

2. `document.getElementById (thisMenuName).style.display = "block";`

Down in `toggleMenu()`, we're not toggling quite the same way any more. Instead, we're now just going to set this menu to always display.

3.
```
this.parentNode.className = thisMenuName;
this.parentNode.onmouseout = toggleDivOff;
this.parentNode.onmouseover = toggleDivOn;
```

Once we've set the menu to display, we have to figure out how to hide it again. The secret to a pull-down menu is that you don't want it to close when you move the mouse off the triggering link; you want it to close when you move the mouse off the entire `div`. That is, if you're anywhere on the menu, you want it to stay open. Here, we assign a `class` to the parent of the current link (that's the `div` around the link), and then we assign `onmouseover` and `onmouseout` handlers to the `div`. These trigger `toggleDivOn()` and `toggleDivOff()`, which will handle the `div` from now on.

Here's the trick: if we got here, then by definition, the cursor is inside the `div`. And consequently, just setting the `onmouseover` causes `toggleDivOn()` to be immediately triggered.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

4. `document.getElementById(this.className).style.display = "block";`

Here are the entire contents of `toggleDivOn()`, in which we tell the entire `div` to (again) display. Yes, we did it above in step 2, but we need to do it again here; otherwise, the moment we moved off the link, the menu would snap shut again.

5. `document.getElementById (this.classsName).style.display = "none";`

And here's where we do the reverse of `toggleDivOn()` inside `toggleDivOff()`. Instead of setting the `div` to always display, we set it to hidebut only when the cursor moves off the entire `div` area.

Script 14.6. Add one line of CSS, and you get an entirely new look to your menus.

```
body {
     background-color: white;
     color: black;
}

div {
     margin-bottom: 10px;
     width: 180px;
     background-color: #CF9;
     float: left;
}

ul.menu {
     display: none;
     list-style-type: none;
     margin: 0;
     padding: 0;
}

ul.menu li {
     font: 12px arial, helvetica, sans-serif;
     padding-left: 10px;
}

a.menuLink, li a {
     text-decoration: none;
     color: #060;
}

a.menuLink {
     font-size: 16px;
     font-weight: bold;
}

li a:hover {
     background-color: #060;
```

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

✓ Tips

- But now you're saying, "I don't want a vertical menu; I want a horizontal menu!" Okay, okayhere's the sneaky trick: add `float: left;` to the CSS for each menu `div`, as shown in **Script 14.6** and **Figure 14.4**. Yes, that's all it takes to turn one into anotherno JavaScript changes required.

Figure 14.4. A simple change to the CSS makes the menus appear across the page, rather than down the left side.

[View full size image]

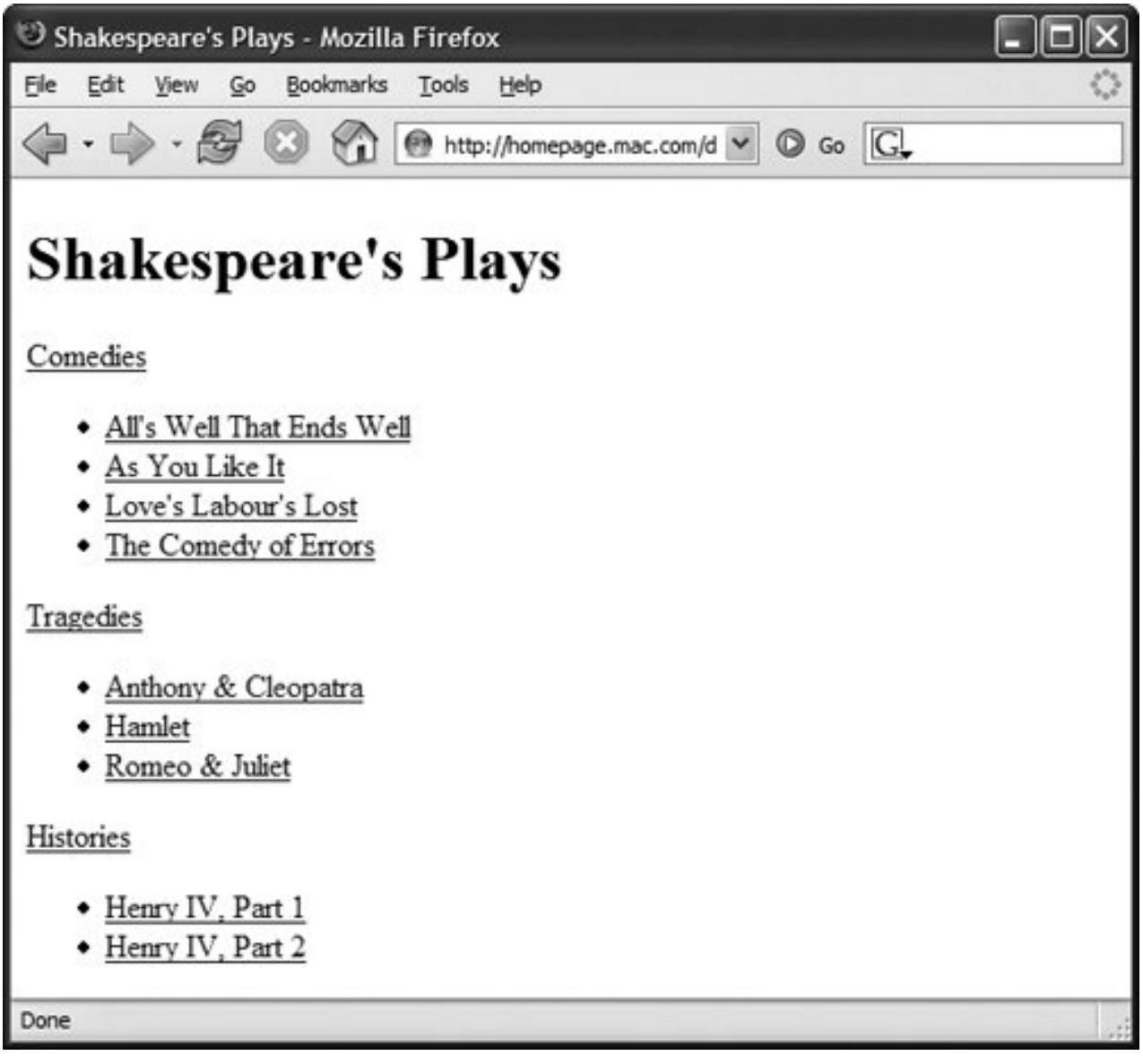
- Here's some of what's going on inside these menus: if you take a close look at the HTML, the links are actually inside `<ul>` and `<li>` tagsthat is, they're unordered lists and list items. If a user has a browser that doesn't support CSS, they'll just see a list of items on the page (**Figure 14.5**). If the browser is capable, though, we can use CSS to style how we want those lists to look, with a result that looks nothing like a plain list.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Figure 14.5: When you turn off the CSS display, as we have done here in Firefox, the menus are revealed for what they really are: just a simple unordered list.

[View full size image]



PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

A Slideshow with Captions

While a slideshow (like the one shown in Script 4.17) can be handy, it's likely to be more useful if you can also show captions that change along with the images. **Scripts 14.7** (HTML), **14.8** (CSS), and **14.9** (JavaScript) show an example of such a slideshow (with pictures of our summer vacation!). In this task, we'll show you how to blend together different techniques you've seen in earlier chapters into one script.

Script 14.7. Our slideshow HTML page.

[View full width]

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN">
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
     <title>Our Summer Vacation!</title>
     <link rel="Stylesheet" href="script03.css" />
     <script type="text/javascript" language="Javascript" src="script03.js">
     </script>
</head>
<body>
     <h1>Our Summer Vacation Slideshow</h1>
     <img height="240" width="320" src="images/slideImg0.jpg" alt="Our Vacation Pix"
  id="slideshow" />
     <div id="imgText">   </div>
     <br clear="all" />
     <form action="#">
        <input type="button" id="prevLink" value="&laquo; Previous" />
        <input type="button" id="nextLink" value="Next &raquo;" />
     </form>
</body>
</html>
```

Script 14.8. The external Cascading Style Sheet called by Script 14.7.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
     background-color: white;
     color: black;
     font: 12px verdana, arial, helvetica, geneva, sans-serif;
}

h1 {
     font: 24px "trebuchet ms", verdana, arial, helvetica, geneva, sans-serif;
     margin-left: 100px;
}

form {
     margin-left: 100px;
}

#slideshow {
     padding: 0 10px 10px 10px;
     float: left;
}

#imgText {
     padding: 10px 0 0 10px;
     float: left;
     width: 200px;
     height: 150px;
     border-color: black;
     border-width: 1px 0 0 1px;
     border-style: solid;
}
```

Script 14.9. The slideshow script displays the photo and the caption.

[View full width]

```
window.onload = initAll;
var currImg = 0;
var captionText = new Array(
     "Our ship, leaving Vancouver.",
     "We took a helicopter ride at our first port, Juneau.",
     "The helicopter took us to Mendenhall Glacier.",
     "The happy (and chilly) couple, on the glacier.",
     "Here's what our second stop, Ketchikan, looked like from the ship.",
     "We got to cruise through Glacier Bay. It was absolutely breathtaking!",
     "In Skagway, we took a train up into the mountains, all the way to the Canadian Border.",
     "Looking back down at Skagway from the train.",
     "On a trip this romantic, I shouldn't have been surprised by a proposal, but I was
(obviously, I said yes).",
     "It's nice to go on vacation, but it's nice to be home again, too."
)

function initAll() {
     document.getElementById("imgText").innerHTML = captionText[0];
     document.getElementById("prevLink").onclick = processPrevious;
```

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
}

function processPrevious() {
     newSlide(-1);
}
function processNext() {
     newSlide(1);
}

function newSlide(direction) {
     var imgCt = captionText.length;

     currImg = currImg + direction;
     if (currImg < 0) {
        currImg = imgCt-1;
     }
     if (currImg == imgCt) {
        currImg = 0;
     }
     document.getElementById("slideshow").src = "images/slideImg" + currImg + ".jpg";
     document.getElementById("imgText").innerHTML = captionText[currImg];
}
```

To create a slideshow with captions:

1. ```
   document.getElementById("imgText"). innerHTML = captionText[0];
   document.getElementById("prevLink"). onclick = processPrevious;
   document.getElementById("nextLink"). onclick = processNext;
   ```

   Our `initAll()` function needs to set three things: the photo caption for the first slide (in the `imgText` area), and the `onclick` handlers for the forward and back buttons, which will call the `processNext()` and `processPrevious()` functions, respectively.

2. ```
   function processPrevious() {
     newSlide(-1);
   }

   function processNext() {
     newSlide(1);
   }
   ```

   Yes, this really is all that these two functions dowell, mostly. We could rig up some convoluted code to know whether or not we want to go forward or backward based on which button was clicked, but instead, we'll just have two functions, both of which call `newSlide()`. The difference: one calls it passing a value of 1, and the other a value of -1, letting `newSlide()` know in which direction to move.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
document.getElementById("imgText"). innerHTML = captionText[currImg];
```

This step changes both the image and its corresponding caption at the same time. **Figure 14.6** shows the result.

Figure 14.6. The script calculates which photo and caption to display.

[View full size image]

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

A Silly Name Generator

You may have seen Web-based toys before that take your name and transform it into a new name, like "Your Superhero Name," or "Your Name if You Were a Character in *The Sopranos*." We've settled for simply being ridiculous, so **Scripts 14.10** and **14.11** can show you how to get your own, new, silly name. In the process, you can see how to combine string handling, arrays, error checking, and form validation into one darned silly script.

Script 14.10. The Web page where you can enter your real name and get your silly name.

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN">
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
     <title>Silly Name Generator</title>
     <script language="Javascript" type="text/javascript" src="script04.js">
     </script>
</head>
<body bgcolor="#FFFFFF">
<h1>What's your silly name?</h1>
<form action="#">
<table>
     <tr>
        <td align="right">First Name:</td>
        <td><input type="text" id="fName" size="30" /></td>
     </tr>
     <tr>
        <td align="right">Last Name:</td>
        <td><input type="text" id="lName" size="30" /></td>
     </tr>
     <tr>
        <td> </td>
        <td><input type="submit" value="Submit" /> <input type="reset" /></td>
     </tr>
</table>
</form>
<p id="msgField"> </p>
</body>
</html>
```

Script 14.11. This script generates a silly name from two arrays, based on characters from the first and last names entered by the user.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
window.onload = initAll;

function initAll() {
     document.forms[0].onsubmit = getSillyName;
}

function getSillyName() {
     document.getElementById("msgField").innerHTML = getSillyNameString();
     return false;
}

function getSillyNameString() {
     var firstName = new Array("Runny", "Buttercup", "Dinky", "Stinky", "Crusty", "Greasy"
, "Gidget", "Cheesypoof", "Lumpy", "Wacky", "Tiny", "Flunky", "Fluffy", "Zippy", "Doofus",
 "Gobsmacked", "Slimy", "Grimy", "Salamander", "Oily", "Burrito", "Bumpy", "Loopy",
 "Snotty", "Irving", "Egbert");
     var lastName1 = new Array("Snicker", "Buffalo", "Gross", "Bubble", "Sheep", "Corset",
 "Toilet", "Lizard", "Waffle", "Kumquat", "Burger", "Chimp", "Liver", "Gorilla", "Rhino",
 "Emu", "Pizza", "Toad", "Gerbil", "Pickle", "Tofu", "Chicken", "Potato", "Hamster",
 "Lemur", "Vermin");
     var lastName2 = new Array("face", "dip", "nose", "brain", "head", "breath", "pants",
 "shorts", "lips", "mouth", "muffin", "butt", "bottom", "elbow", "honker", "toes", "buns",
 "spew", "kisser", "fanny", "squirt", "chunks", "brains", "wit", "juice", "shower");

     var firstNm = document.getElementById("fName").value.toUpperCase();
     var lastNm = document.getElementById("lName").value.toUpperCase();
     var validName = true;

     if (firstNm == "") {
        validName = false;
     }
     else {
        var firstNum = firstNm.charCodeAt(0) - 65;
        if (firstNum < 0 || firstNum > 25) {
           validName = false;
        }
     }

     if (!validName) {
        document.getElementById("fName").focus();
        document.getElementById("fName").select();
        return "That's not a valid first name";
     }
     if (lastNm == "") {
        validName = false;
     }
     else {
        var lastNum1 = lastNm.charCodeAt(0) - 65;
        var lastNum2 = lastNm.charCodeAt ((lastNm.length-1)) - 65;

        if (lastNum1 < 0 || lastNum1 > 25 || lastNum2 < 0 || lastNum2 > 25) {
           validName = false;
        }
     }
```

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
        document.getElementById("lName"). focus();
        document.getElementById("lName"). select();
        return "That's not a valid last name";
    }

    return "Your silly name is " + firstName [firstNum] + " " + lastName1[lastNum1] +
lastName2[lastNum2];
}
```

To combine JavaScript techniques:

1. ```
   document.getElementById("msgField"). innerHTML = getSillyNameString();
   return false;
   ```

   When the page first loads, the form's `onsubmit` handler is set to call the `getSillyName()` function, Here's the contents of that function. First, we call `getSillyNameString()`. That function returns a string value (either the silly name or an error message), which we then write out to the page. Then we return false, so that the `onsubmit` doesn't actually try to submit the form to the server.

2. ```
   var firstNm = document. getElementById("fName").value. toUpperCase();
   var lastNm = document. getElementById("lName").value. toUpperCase();
   ```

   Anyone visiting this page will be asked to enter their first and last names into form fields. When the form is submitted, we start off the `getSillyNameString()` function by converting both names to all uppercase and storing the result in the variables `firstNm` and `lastNm`.

3. ```
   if (firstNm != "") {
     validName = false;
   }
   ```

   It's required that a visitor enter at least one character for the first name, so that check is done here. Remember, the expression is read as "if `firstNm` is not equal to nothing, then." If that's the case, we set `validName` to false.

downloaded from: lib.ommolketab.ir
   ```

downloaded from: lib.ommolketab.ir

Otherwise, the `charCodeAt()` method takes a single character from a string. That single character in the string is based on the number passed to the method; in this case, it is the character in the 0th place, which means the first character in the string (remember, JavaScript starts counting at 0) and returns the ASCII value for that character. The uppercase alphabet starts with "A" having an ASCII value of 65 and ends with "Z" having a value of 90. We then subtract 65 to get a result between 0 and 25, and this result is saved as `firstNum`.

5.
```
if (firstNum < 0 || firstNum > 25) {
  validName = false;
}
```

If the user enters a first name that doesn't start with a character between "A" and "Z", there won't be an equivalent silly name. Here, we make sure that it's within this range before checking the last name. If it isn't, we set `validName` to false.

6.
```
if (!validName) {
  document.getElementById("fName"). focus();
  document.getElementById("fName"). select();
  return "That's not a valid first name";
}
```

At this point, we know that if `validName` is false, it means that the user didn't enter a valid first name. When this happens, we put the cursor in the field, select anything that's in that field, and return an error message.

7.
```
if (lastNm != "") {
   validName = false;
}
```

Just as with the first name, they have to enter something in the last name field.

8.
```
var lastNum1 = lastNm.charCodeAt(0) - 65;
var lastNum2 = lastNm.charCodeAt ((lastNm.length-1)) - 65;
```

To figure out the visitor's new silly last name, we'll need to calculate the ASCII values of both the first and last characters of the last name. The first is found in the same fashion as in step 4. The last character is found by getting the length of the `lastNm` string, subtracting 1, and then passing that number to the `charCodeAt()` method.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
    validName = false;
}
```

As with the first name field, we have to make sure that both the first and last letter of the last name contain a character between "A" and "Z", so once again, we set `validName` to false if there's a problem.

10.
```
if (!validName){
    document.getElementById("lName"). focus();
    document.getElementById("lName"). select();
    return "That's not a valid last name";
}
```

Just as we did in step 6, if the name isn't valid, we want to let the user know.

Your Silly Name

Your silly name is found by taking the first letter of your first name, the first letter of your last name, and the last letter of your last name, and looking each up on the chart in **Table 14.1**. The first letter of your first name gives you your new first name, and the two letters from your last name give you the first and second parts of your new silly last name.

Table 14.1. Chart of Silly Names

	First Letter of First Name	First Letter of Last Name	Last Letter of Last Name
A	runny	snicker	face
B	buttercup	buffalo	dip
C	dinky	gross	nose
D	stinky	bubble	brain
E	crusty	sheep	head
F	greasy	corset	breath
G	gidget	toilet	pants
H	cheesypoof	lizard	shorts
I	lumpy	waffle	lips

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

K	tiny	burger	muffin
L	flunky	chimp	butt
M	fluffy	liver	bottom
N	zippy	gorilla	elbow
O	doofus	rhino	honker
P	gobsmacked	emu	toes
Q	slimy	pizza	buns
R	grimy	toad	spew
S	salamander	gerbil	kisser
T	oily	pickle	fanny
U	burrito	tofu	squirt
V	bumpy	chicken	chunks
W	loopy	potato	brains
X	snotty	hamster	wit
Y	irving	lemur	juice
Z	egbert	vermin	shower

For example, the "T" in Tom gives a new first name of "Oily,"and the "N" and "O" from Negrino produce a new last name of "Gorillahonker." The "D" in Dori turns into "Stinky," and the "S" and "H" from Smith turn into "Gerbilshorts." Consequently, the silly names of this book's authors are Oily Gorillahonker and Stinky Gerbilshorts.

11. [View full width]

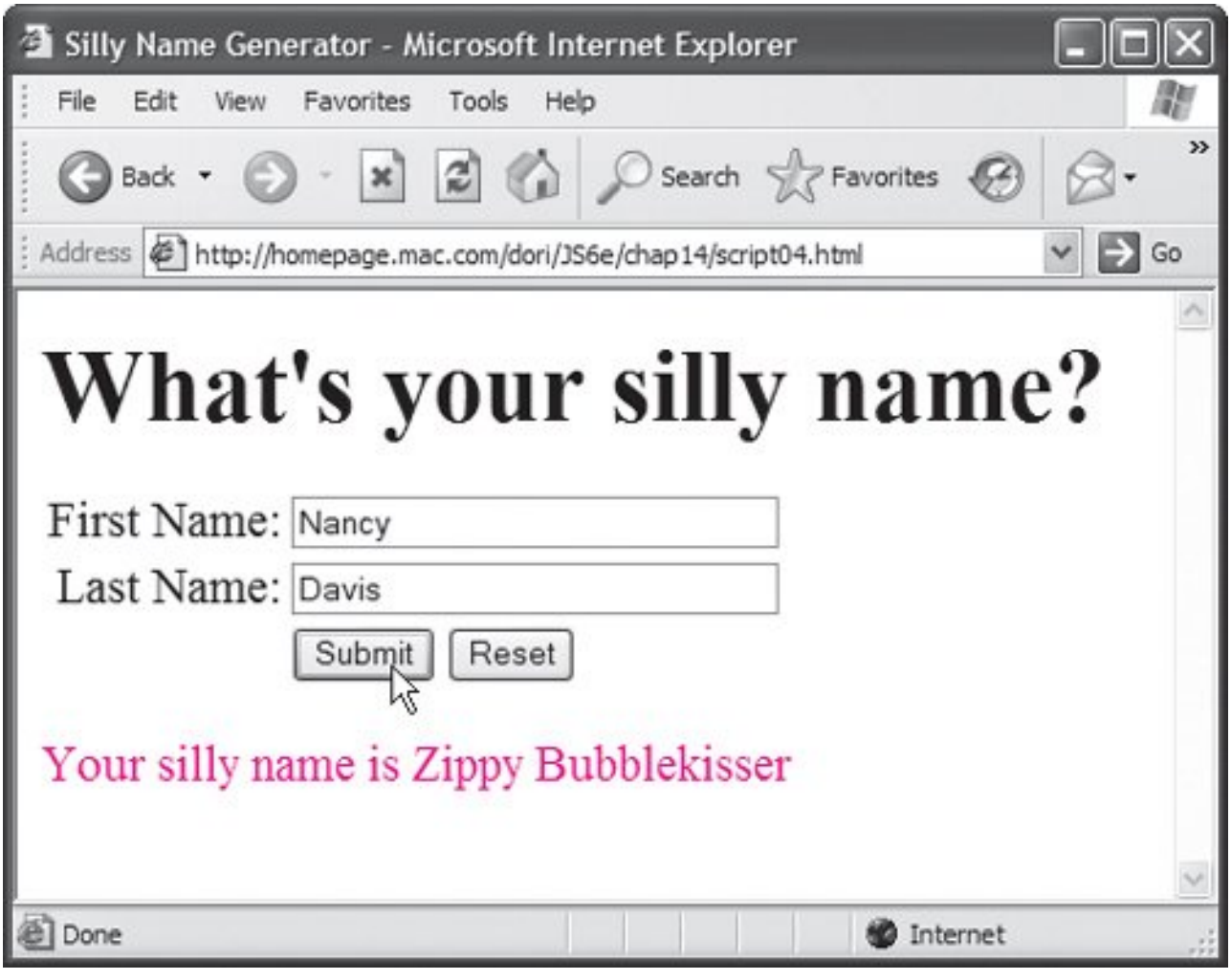
```
return "Your silly name is  " + firstName[firstNum] + " " + lastName1[lastNum1] +
    lastName2[lastNum2];
```

If we've passed all the tests, it's time to calculate the new silly name. Because we turned the characters into numbers between 0 and 25, we can use the results as indices into the name arrays `firstName`, `lastName1`, and `lastName2`. The result of each array lookup is concatenated to the next, with a blank space between the first name and the last name. Notice that the two parts of the last name are concatenated without a space. When we're done, that name is returned and put into the document, as shown in **Figure 14.7**.

Figure 14.7. The resulting silly name.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir



PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

A Bar Graph Generator

Graphs are excellent ways to display visual information. You can create bar graphs by drawing them in Adobe Photoshop or by calculating them in Microsoft Excel, but for dynamic data that might need to change on a regular basis, why not have JavaScript do it instead on the fly? While we've said throughout this book that JavaScript is object-oriented (and therefore buzzword-compliant), and we've used objects throughout the book, we've only briefly shown you how to create your own custom objects. Here's a more in-depth example of how objects work, as seen in **Scripts 14.12** (HTML), **14.13** (CSS), and **14.14** (JavaScript).

Script 14.12. The HTML page for the bar chart generator.

[View full width]

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN">
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
     <title>Bar Chart Form Input</title>
     <link rel="stylesheet" rev="stylesheet" href="script05.css" />
     <script language="Javascript" type="text/ javascript" src="script05.js">
     </script>
</head>
<body>
<form action="#">
     Choose a chart<br />
     <input type="radio" name="type" value="browser" checked="checked" /> Browser Usage<br />
     <input type="radio" name="type" value="platform" /> JavaScript Usage<br />
     <p><br /></p>
     Choose a color<br />
     <input type="radio" name="color" value="lilRed.gif" checked="checked" /> Red<br />
     <input type="radio" name="color" value="lilGreen.gif" /> Green<br />
     <input type="radio" name="color" value="lilBlue.gif" /> Blue<br />
     <p><br /></p>
     Choose a direction<br />
     <input type="radio" name="direction" value="horizontal" checked="checked" />
 Horizontal<br />
     <input type="radio" name="direction" value="vertical" /> Vertical
</form>
<div id="chartArea""> </div>
</body>
</html>
```

Script 14.13. This script contains the styles for the bar chart example.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
     background-color: white;
     color: black;
     font-size: 12px;
}

form {
     float: left;
     width: 200px;
}

.vert {
     text-align: center;
     vertical-align: bottom;
}

.horiz {
     padding: 5px;
}

th.vert {
     border-left: 1px black solid;
     border-bottom: 1px black solid;
     vertical-align: middle;
     text-align: left;
     font-size: 16px;
}

th.horiz {
     border-right: 1px black solid;
     vertical-align: middle;
     text-align: left;
     font-size: 16px;
}
```

Script 14.14. And here's the code that draws the bar chart.

[View full width]

```
window.onload = initAll;

function initAll() {
     var radioButtons = document. getElementsByTagName("input");

     for (var i=0; i<radioButtons.length; i++) {
        if (radioButtons[i].type == "radio") {
           radioButtons[i].onclick = chgChart;
        }
     }
     chgChart();
}

function chgChart() {
     var bChart = new Object();
```

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
bChart.years = new Array("1998", "1999", "2000", "2001", "2002", "2003", "2004", "2005",
"2006");
bChart.fieldnames = new Array("Netscape", "MSIE","Other");
bChart.field1 = new Array(38.9,31.9,21.2, 12.4,6.6,5.1,3,1,6);
bChart.field2 = new Array(60.6,67.4,78.3, 85.6,92.5,94.0,92,89,90);
bChart.field3 = new Array(0.5,0.5,0.5,2.1, 0.9,1.0,4,9,3);
bChart.fields = new Array(bChart.field1, bChart.field2,bChart.field3);

var jsChart = new Object();
jsChart.name = "JavaScript usage by year";
jsChart.years = new Array("1998","1999", "2000","2001","2002","2003","2004", "2005",
"2006");
jsChart.fieldnames = new Array("1.2 or later","1.0 - 1.1","No JavaScript");
jsChart.field1 = new Array(63.4,66.5,78.4, 80.2,88.1,89.1,94,89,96);
jsChart.field2 = new Array(18.7,12.6,2.8, 0.8,0.3,0.3,0,0,0);
jsChart.field3 = new Array(17.9,21.0,18.8, 19.0,11.6,10.6,4,9,3);
jsChart.fields = new Array(jsChart.field1, jsChart.field2,jsChart.field3);

var radioButtons = document. getElementsByTagName("input");
var currDirection = getButton("direction");
var imgSrc = "images/" + getButton ("color");
var thisChart = (getButton("type")== "browser") ? bChart : jsChart;

var chartBody = "<h2>"+thisChart. name+"</h2><table>";

for (var i=0; i<thisChart.years.length; i++) {
   if (currDirection=="horizontal") {
      chartBody += "<tr><th rowspan='4' class='horiz'>"+thisChart.years[i];
      chartBody += "</th><td colspan= '2'></td></tr>";
      for (var j=0; j<thisChart. fieldnames.length; j++) {
          chartBody += "<tr><td class='horiz'>"+thisChart. fieldnames[j];
          chartBody += "</td><td><img src='"+imgSrc+"' height='15' width='";
          chartBody += thisChart.fields [j][i]*3 + "' alt='horiz bar' />";
          chartBody += "  "+ thisChart.fields[j][i]+ "</td></tr>";
      }
   }
   else {
      chartBody += "<tr><th rowspan='2' class='vert'>"+thisChart.years[i]+ "</th>";
      for (var j=0; j<thisChart. fieldnames.length; j++) {
         chartBody += "<td class='vert'> <img src='" + imgSrc;
         chartBody += "' alt='vert bar' hspace='10' width='15' height='";
         chartBody += thisChart.fields [j][i]*3 +"' /></td>";
      }
      chartBody += "</tr><tr>";
      for (j=0; j<thisChart.fieldnames. length; j++) {
         chartBody += "<td class='vert'>" + thisChart.fields[j][i] + "<br />";
         chartBody += thisChart. fieldnames[j] + "<br /><br /></td>";
      }
      chartBody += "</tr>";
   }
}
chartBody += "</table>";
document.getElementById("chartArea"). innerHTML = chartBody;

function getButton(buttonSet) {
   for (var i=0; i<radioButtons.length; i++) {
      if (radioButtons[i].name == buttonSet && radioButtons[i]. checked) {
         return radioButtons[i].value;
      }
```

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
        return -1;
    }
}
```

To generate a bar graph:

1. ```
   var radioButtons = document. getElementsByTagName("input");

   for (var i=0; i<radioButtons.length; i++) {
     if (radioButtons[i].type == "radio") {
        radioButtons[i].onclick = chgChart;
     }
   }
   chgChart();
   ```

   As we've done so many times, the `initAll()` function starts the ball rolling. Here, we get all the radio buttons and loop through them, setting each to call `chgChart()` when they're clicked. When that's done, we call `chgChart()` manually to display the default view of the page.

2. ```
   var bChart = new Object();
   ```

   Here, inside `chgChart()`, is where we create our first custom object, `bChart` (short for "browser chart"). Yep, that's all there is to it.

3. ```
   bChart.name = "Browser usage by year";
   bChart.years = new Array("1998", "1999","2000","2001","2002", "2003","2004","2005","2006");
   bChart.fieldnames = new Array ("Netscape","MSIE","Other");
   bChart.field1 = new Array(38.9,31.9, 21.2,12.4,6.6,5.1,3,1,6);
   bChart.field2 = new Array(60.6,67.4, 78.3,85.6,92.5,94.0,92,89,90);
   bChart.field3 = new Array(0.5,0.5, 0.5,2.1,0.9,1.0,4,9,3);
   ```

   The properties for a custom object are created and initialized simply by assigning values to them. Here, we set up the `name`, `years`, `fieldnames`, `field1`, `field2`, and `field3` properties of `bChart`. Those fields are, respectively, the name of the chart, the years covered by the chart, the three labels for the chart values, and the sets of values for each year and each label (in this case, each browser).

   Note that we're not using the `var` keyword before each of these; that's because they aren't new variables. Instead, they're new properties that we're adding to an existing variable (albeit one we just created).

downloaded from: lib.ommolketab.ir
   ```

downloaded from: lib.ommolketab.ir

Here we create the `fields` property. It's actually an array of arrays and will make it easier to get at the data inside.

5.
```
var jsChart = new Object();
jsChart.name = "JavaScript usage by year";
jsChart.years = new Array("1998", "1999","2000","2001","2002", "2003","2004","2005","2006");
jsChart.fieldnames = new Array("1.2 or later","1.0 - 1.1","No JavaScript");
jsChart.field1 = new Array(63.4, 66.5,78.4,80.2,88.1,89.1,94,89, 96);
jsChart.field2 = new Array(18.7, 12.6,2.8,0.8,0.3,0.3,0,0,0);
jsChart.field3 = new Array(17.9, 21.0,18.8,19.0,11.6,10.6,4,9,3);
jsChart.fields = new Array(jsChart. field1,jsChart.field2,jsChart. field3);
```

In the same way that we created the `bChart` object, we now create the `jsChart` (JavaScript chart) object and assign its properties. For the JavaScript chart, we again have the years, but this time we're measuring what percentage of browsers have JavaScript and which version.

6.
```
var radioButtons = document. getElementsByTagName("input");
var currDirection = getButton ("direction");
var imgSrc = "images/" + getButton ("color");
```

Before we draw our chart, we need to know which radio buttons have been selected. The `radioButtons` array contains all the input elements on the page, and once we've got that, we can call the `getButton()` function. The `getButton()` function is passed a string (the name of the radio set), and it returns a string (the current value of that set).

We could have written `getButton()` to set up `radioButtons` instead of doing it here, but this way means that it's only initialized once instead of three times (once for every time `getButton()` is called).

7.
```
var thisChart = (getButton("type")== "browser") ? bChart : jsChart;
```

When the user clicks any of the radio buttons to change the chart, the `chgChart()` function is called. When that happens, if the browser chart is the one that's wanted, the entire `bChart` object gets stored in `thisChart`. Otherwise, it's the JavaScript chart for us, so `thisChart` is assigned the `jsChart` object.

8.
```
var chartBody = "<h2>"+thisChart. name+"</h2><table>";
```

Here's the start of the actual drawing code. First, we write out the name of the chart (stored in `thisChart. name` and displayed inside an `<h2>` tag), and then we open up a `<table>` tag. From here on out, we're adding to the `chartBody` variable, and when we're done, we'll write it out to the page.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

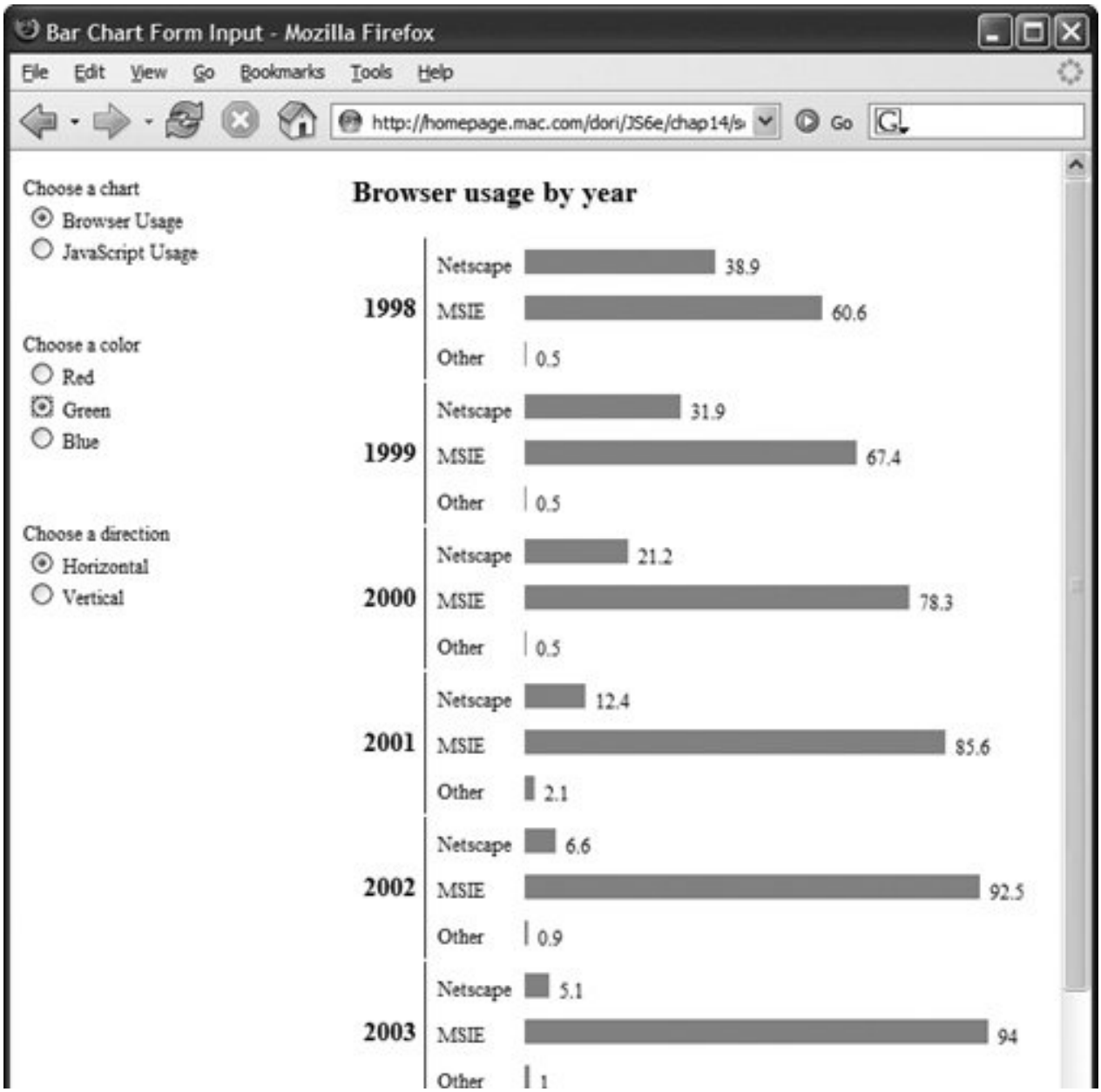
Here's the first of two loops that we'll be going through (remember that pseudo two-dimensional array from step 4?). This external loop uses `i` as the index variable, and how many times it loops around is based on the number of years covered by the chart.

10. `if (currDirection=="horizontal") {`

If the user wants to see the horizontal version of the chart (**Figure 14.8**), run the following code.

Figure 14.8. The initial horizontal version of the bar graph.

[View full size image]



downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

11.
```
chartBody += "<tr><th rowspan='4' class='horiz'>"+thisChart. years[i];
chartBody += "</th><td colspan= '2'></td></tr>";
```

The first row of each horizontal chart contains the `i` th year label.

12.
```
for (var j=0; j<thisChart. fieldnames.length; j++) {
```

Here's the horizontal version of the second of the two loops. This internal loop uses `j` as its index, and how many times it loops around is based on the number of fieldnames that we stored.

13.
```
chartBody += "<tr><td class= 'horiz'>"+thisChart. fieldnames[j];
```

The detail row of the table is started here, and we first write out the value label (either the browser type or the JavaScript version), which is stored in the `j` th element of `fieldnames`.

14.
```
chartBody += "</td><td><img src= '"+imgSrc+"' height='15' width='";
chartBody += thisChart.fields [j][i]*3 + "' alt='horiz bar' />";
```

Next, we close the previous cell and calculate the bar image. The color of the bar is based on `imgSrc`, the height is always 15 pixels, and the width is the value of the `j` th by `i` th index in the array, multiplied by 3. For example, if `imgSrc` is `lilBlue.gif` and `thisChart.fields[3][4]` is 30, this would write out an image tag to draw a blue rectangle, 15 pixels high by 90 pixels wide.

15.
```
chartBody += "  "+ thisChart.fields[j][i]+"</td> </tr>";
```

A couple of blank characters (the ` `) are written out, followed by the actual data value to the right of the bar to finish off this row. This is the end of the interior loop for the horizontal section of the code.

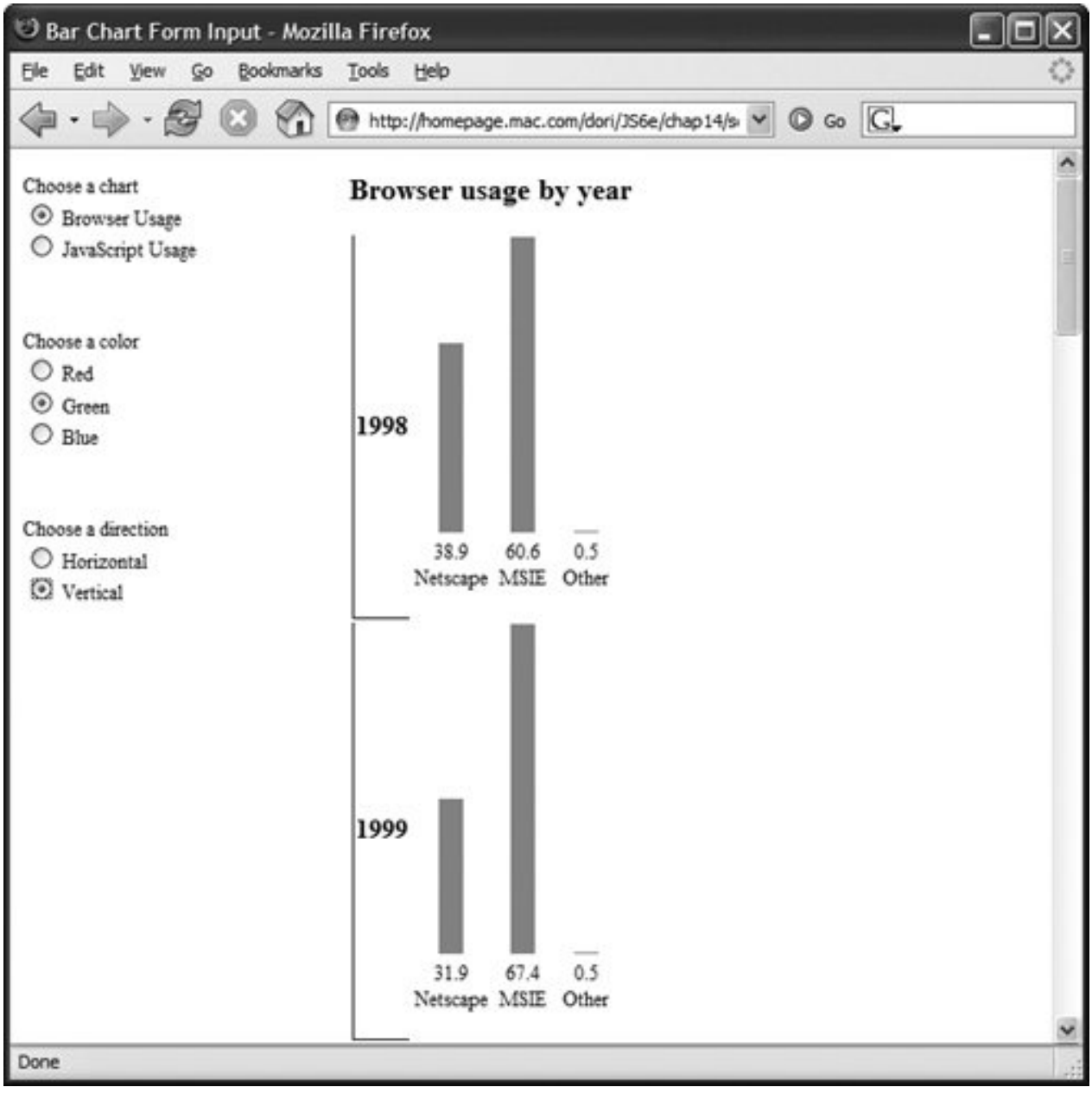
downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

If the user wants to see the chart drawn vertically (**Figure 14.9**), we start by writing the initial row of the chart. The vertical version of the chart is somewhat more complex and requires two internal (but separate) `j` loops. Here we write out the label for the chart.

Figure 14.9. The vertical version of the bar graph.

[View full size image]



downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Here's the first internal loop. This one writes out each vertical bar on the graph in a row.

18.
```
chartBody = += "<td class='vert'> <img src='" + imgSrc;
chartBody += "' alt='vert bar' hspace='10' width='15' height='";
ChartBody += thisChart.fields [j][i]*3 = +"' /></td>";
```

And here's the image tag being written on the fly. This time, the width is fixed at 15 pixels, but the height varies based on the value found in the array of arrays. For example, if `imgSrc` is `lilGreen.gif` and `thisChart.fields[3][4]` is 30, this would write out an image tag to draw a green rectangle, 90 pixels high by 15 pixels wide.

19.
```
chartBody += "</tr><tr>";
```

When all the bars on the graph have been written out, close that table row and start the next row.

20.
```
for (j=0; j<thisChart.fieldnames. length; j++) {
```

Here's the second internal loop. This one writes the value of each data point, under its corresponding bar, followed by the y-axis label.

21.
```
chartBody += "<td class='vert'>" + thisChart.fields[j][i] + "<br />";
chartBody += thisChart.fieldnames [j] + "<br /><br /></td>";
```

Here's the information being written out for each bar. The variable `thisChart.fields[j][i]` is the value of that bar, and `thisChart.fieldnames[j]` is the data label for that bar.

22.
```
chartBody += "</tr>";
```

After the last internal loop is complete, we need to write out a final end row tag.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
document.getElementById ("chartArea").innerHTML = chartBody;
```

At this point, both the horizontal and vertical sections are done, and the external loop has completed, so we write out the final table tag to end our script and then put the entire thing into the `innerHTML` property of the `chartArea` section of the page.

✓ Tips

- This code uses three images: `lilRed.gif`, `lilBlue.gif`, and `lilGreen.gif`. Each of these is a single-pixel GIF in its corresponding color. HTML allows you to set the height and width regardless of the image's actual physical dimensions, so a single pixel allows us to create bars of any size and shape.
- This chart can be changed to graph almost anything simply by changing the array values in steps 3 and 5. No matter what you set the arrays to, you shouldn't have to change the loops that create the graphs.
- The statistics on these charts are based on those found at The Counter's Global Statistics, at http://www.thecounter.com/stats/. Unfortunately, they only started keeping track of these figures in September 1998, so the 1998 figures begin in September. Figures for all other years begin in January.

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Style Sheet Switcher

One of the most powerful uses of JavaScript is the ability to modify, on the fly, which style sheet is being used. For example, you can offer your site's visitors the ability to choose the style and size of the text on your site. Some people like to read tiny, sans-serif text that gets lots of words on the screen (**Figure 14.10**), while others prefer larger, serif text that's a bit more readable (**Figure 14.11**). Now you can make both kinds of visitors happy. And to make it even more useful, this script also uses cookies to store the user's choice for future visits.

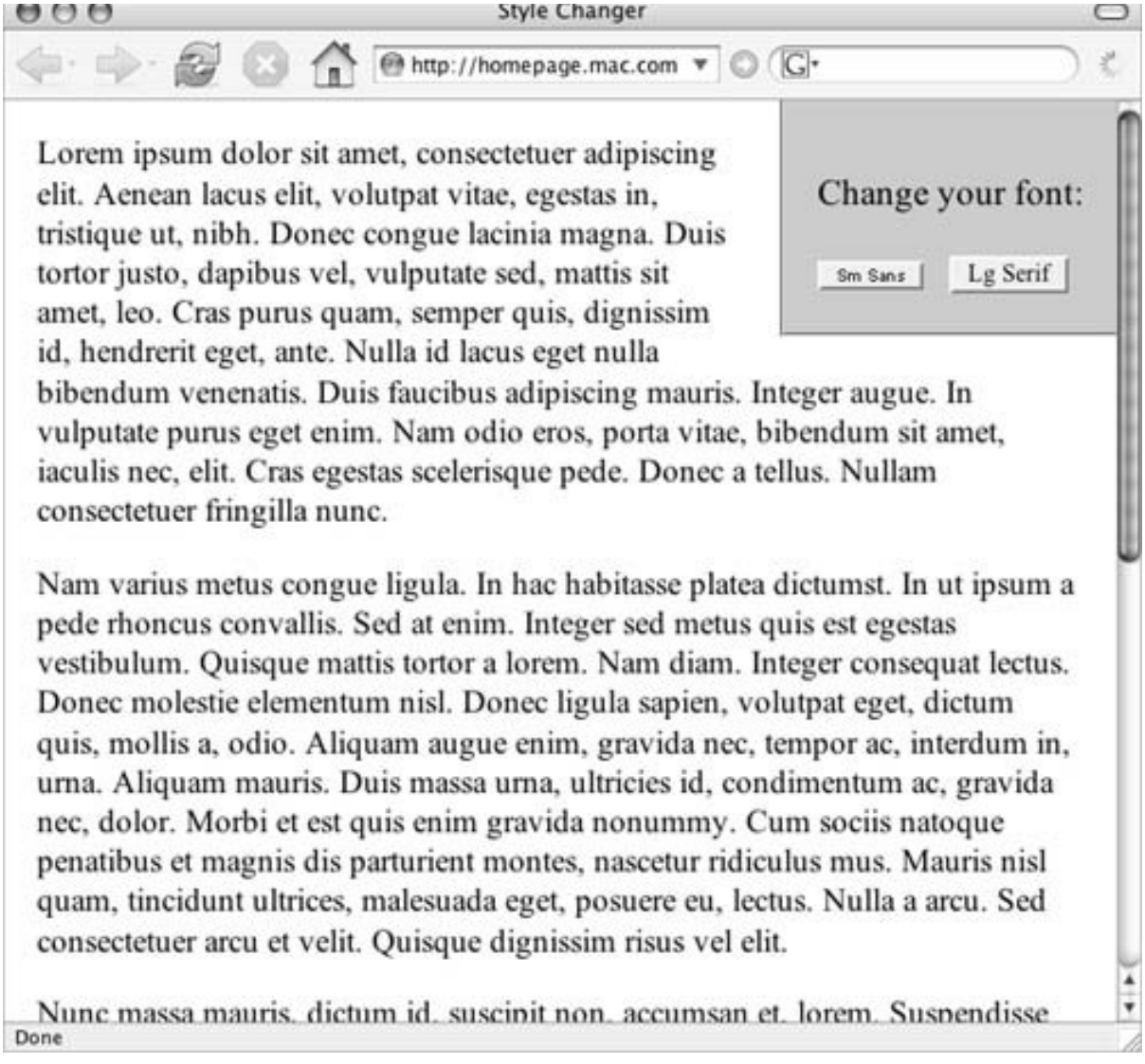
Figure 14.10. Some visitors prefer to read smaller, sans-serif text that can get more text on the page.

[View full size image]

Figure 14.11. Other visitors will be glad to choose larger, serif text that they find more readable.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir



To allow the user to switch between style sheets:

1. `<link href="sansStyle.css" rel="stylesheet" rev="stylesheet" title="default" />`

Script 14.15 shows a standard `link` to bring in an external style sheet, with one new twist: it has a `title` attribute, "default". That comes into play later.

Script 14.15. This page has the content for the page and the user controls, and it calls the external style sheets that the user can choose.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN">
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
     <title>Style Changer</title>
     <link href="script06.css" rel="stylesheet" rev="stylesheet" />
     <link href="sansStyle.css" rel="stylesheet" rev="stylesheet" title="default" />
     <link href="serifStyle.css" rel="alternate stylesheet" rev="alternate stylesheet"
title="serif" />
     <script src="script06.js" language="javascript" type="text/javascript"></script>
</head>
<body>
     <div class="navBar"><p>Change your font:</p>
        <form action="#">
           <input type="button" class="typeBtn" value="Sm Sans" id="default" />  
           <input type="button" class="typeBtn2" value="Lg Serif" id="serif" />
        </form>
        <br clear="all" />
     </div>
     <p>Lorem ipsum dolor sit amet, consectetuer adipiscing elit. Aenean lacus elit,
  volutpat vitae, egestas in, tristique ut, nibh. Donec congue lacinia magna. Duis tortor
  justo, dapibus vel, vulputate sed, mattis sit amet, leo. Cras purus quam, semper quis,
  dignissim id, hendrerit eget, ante. Nulla id lacus eget nulla bibendum venenatis. Duis
  faucibus adipiscing mauris. Integer augue. In vulputate purus eget enim. Nam odio eros,
  porta vitae, bibendum sit amet, iaculis nec, elit. Cras egestas scelerisque pede. Donec a
  tellus. Nullam consectetuer fringilla nunc.</p>

     <p>Nam varius metus congue ligula. In hac habitasse platea dictumst. In ut ipsum a
pede rhoncus convallis. Sed at enim. Integer sed metus quis est egestas vestibulum. Quisque
  mattis tortor a lorem. Nam diam. Integer consequat lectus. Donec molestie elementum nisl.
  Donec ligula sapien, volutpat eget, dictum quis, mollis a, odio. Aliquam augue enim,
  gravida nec, tempor ac, interdum in, urna. Aliquam mauris. Duis massa urna, ultricies id,
  condimentum ac, gravida nec, dolor. Morbi et est quis enim gravida nonummy. Cum sociis
  natoque penatibus et magnis dis parturient montes, nascetur ridiculus mus. Mauris nisl
  quam, tincidunt ultrices, malesuada eget, posuere eu, lectus. Nulla a arcu. Sed
  consectetuer arcu et velit. Quisque dignissim risus vel elit.</p>

     <p>Nunc massa mauris, dictum id, suscipit non, accumsan et, lorem. Suspendisse non
lorem quis dui rutrum vestibulum. Quisque mauris. Curabitur auctor nibh non enim. Praesent
  tempor aliquam ligula. Fusce eu purus. Vivamus ac enim eget urna pulvinar bibendum.
  Integer porttitor, augue et auctor volutpat, lectus dolor sagittis ipsum, sed posuere
  lacus pede eget wisi. Proin vel arcu ac velit porttitor pellentesque. Maecenas mattis
  velit scelerisque tellus. Cras eu tellus quis sapien malesuada porta. Nunc nulla. Nullam
  dapibus malesuada lorem. Duis eleifend rutrum tellus. In tempor tristique neque. Mauris
  rhoncus. Aliquam purus.</p>

     <p>Morbi felis quam, placerat sed, gravida a, bibendum a, mauris. Aliquam porta diam.
  Nam consequat feugiat diam. Fusce luctus, felis ut gravida mattis, ante mi viverra sapien,
  a vestibulum tellus lectus ut massa. Duis placerat. Aliquam molestie tellus. Suspendisse
  potenti. Fusce aliquet tellus a lectus. Proin augue diam, sollicitudin eget, hendrerit non
, semper at, arcu. Sed suscipit tincidunt nibh. Donec ullamcorper. Nullam faucibus euismod
  augue. Cras lacinia. Aenean scelerisque, lorem sed gravida varius, nunc tortor gravida
  odio, sed sollicitudin pede augue ut metus. Maecenas condimentum ipsum et enim. Sed nulla.
  Ut neque elit, varius a, blandit quis, facilisis sed, velit. Suspendisse aliquam odio sed
  nibh.</p>
</body>
</html>
```

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

2. [View full width]
```
<link href="serifStyle.css" rel="alternate stylesheet" rev="alternate stylesheet"
 title="serif" />
```

Here's another style sheet, again using the `link` tag. However, the `rel` and `rev` attributes aren't set to the usual stylesheet; instead, they're set to alternate stylesheet. This is because this style sheet isn't actually in useinstead, it'll only be used if the user chooses it.

3.
```
<input type="button" class="typeBtn" value="Sm Sans" id = "default" />  
<input type="button" class= "typeBtn2" value="Lg Serif" id = "serif" />
```

There are two buttons: Sm Sans and Lg Serif. Clicking the former puts all the text on the page into a small sans-serif font, while clicking the latter puts all the text on the page into a larger, serif font. If supported by the browser, the styles in **Script 14.16** cause the buttons to themselves appear in the destination font, giving the user a signal as to what they will see if they choose that button.

Script 14.16. This Cascading Style Sheet contains the styles that always load.

```
body {
     margin: 0 20px;
     padding: 0;
     background-color: white;
     color: black;
}

div.navBar {
     background-color: #CCC;
     width: 175px;
     position: relative;
     top: -1.0em;
     right: -20px;
     float: right;
     padding: 20px 0 0 20px;
     border-left: 2px groove #999;
     border-bottom: 2px groove #999;
}

.typeBtn {
     font: 9px/10px verdana, geneva, arial, helvetica, sans-serif;
}

.typeBtn2 {
     font: 14px/15px Times New Roman, Times, serif;
}
```

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
  font: .9em/1.1em verdana, geneva, arial, helvetica, sans-serif;
}
```

Script 14.17 (better known as `sansStyle.css`), just tells the browser that when it's loaded, every tag that it covers should be displayed in .9em Verdana (or one of the other sans-serif fonts on the user's computer).

Script 14.17. This style sheet, `sansStyle.css`, changes all the text to a smaller, sans-serif font.

```
body, p, td, ol, ul, select, span, div, input {
     font: .9em/1.1em verdana, geneva, arial, helvetica, sans-serif;

}
```

5.
```
body, p, td, ol, ul, select, span, div, input {
  font: 1.1em/1.2em Times New Roman, Times, serif;
}
```

In a complementary way, **Script 14.18** (also better known as `serifStyle.css`) tells the browser that every tag that *it* covers should be displayed in 1.1em Times New Roman (or again, any other serif font the browser can find).

Script 14.18. This style sheet, `serifStyle.css`, changes the page text to a larger serif font.

```
body, p, td, ol, ul, select, span, div, input {
     font: 1.1em/1.2em Times New Roman, Times, serif;
}
```

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
var title = (thisCookie) ? thisCookie. getPreferredStylesheet();
setActiveStylesheet(title);
```

The `initStyle()` function in **Script 14.19** is loaded when the page runs, and its goal is to initialize everything that the page needs. Here, we're checking to see if the user has a cookie already set that saved their preferred style. Our old buddy the `cookieVal()` function comes back from Chapter 10 to read the cookies and see if there's one called "style". If there is, its value is the style sheet we want; if not, `getPreferredStylesheet()` is called. Once the desired style sheet is known, `setActiveStylesheet()` is called to set the wanted appearance.

Script 14.19. This script handles setting the active style sheet.

[View full width]

```
window.onload = initStyle;
window.onunload = unloadStyle;

function initStyle() {
     var thisCookie = cookieVal("style");
     var title = (thisCookie) ? thisCookie : getPreferredStylesheet();
     setActiveStylesheet(title);

     var allButtons = document. getElementsByTagName("input");
     for (var i=0; i<allButtons.length; i++) {
        if (allButtons[i].type == "button") {
           allButtons[i].onclick = setActiveStylesheet;
        }
     }
}

function unloadStyle() {
     var expireDate = new Date();
     expireDate.setYear(expireDate. getFullYear()+1);
     document.cookie = "style=" + getActiveStylesheet() + ";expires=" + expireDate.
toGMTString() + ";path=/";
}
function getPreferredStylesheet() {
     var thisLink, relAttribute;
     var linksFound = document. getElementsByTagName("link");
     for (var i=0; i<linksFound.length; i++) {
        thisLink = linksFound[i];
        relAttribute = thisLink. getAttribute("rel");
        if (relAttribute.indexOf("style") > -1 && relAttribute.indexOf("alt") == -1 &&
thisLink.getAttribute("title")) {
           return thisLink.getAttribute ("title");
        }
     }
     return "";
}

function getActiveStylesheet() {
     var thisLink;
     var linksFound = document. getElementsByTagName("link");

     for (var i=0; i<linksFound.length; i++) {
```

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
        if (thisLink.getAttribute("rel"). indexOf("style") > -1 && thisLink. getAttribute("title") && !thisLink. disabled) {
            return thisLink.getAttribute ("title");
        }
    }
    return "";
}

function setActiveStylesheet(inVal) {
    var thisLink;
    var linksFound = document. getElementsByTagName("link");

    var title = (inVal) ? ((typeof inVal == "string") ? inVal : inVal.target.id) : window.event.srcElement.id;
    for (var i=0; i<linksFound.length; i++) {
        thisLink = linksFound[i];
        if (thisLink.getAttribute("rel"). indexOf("style") > -1 && thisLink. getAttribute("title")) {
            thisLink.disabled = true;
            if (thisLink.getAttribute("title") == title) {
                thisLink.disabled = false;
            }
        }
    }
}

function cookieVal(cookieName) {
    var thisCookie = document.cookie. split("; ");
    for (var i=0; i<thisCookie.length; i++) {
        if (cookieName == thisCookie[i]. split("=")[0]) {
            return thisCookie[i].split("=")[1];
        }
    }
    return "";
}
```

7.

```
var allButtons = document. getElementsByTagName("input");
for (var i=0; i<allButtons.length; i++) {
  if (allButtons[i].type == "button") {
     allButtons[i].onclick = setActiveStylesheet;
  }
}
```

The `initStyle()` function also needs to add event handlers to our buttons. Here, we tell them both to call `setActiveStylesheet()` when they're clicked.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
function unloadStyle() {
  var expireDate = new Date(); expireDate.setYear(expireDate. getFullYear()+1);
  document.cookie = "style=" + getActiveStylesheet() + ";expires=" + expireDate.
  toGMTString() + ";path=/";
}
```

When the page is unloaded, we need to set the cookie for the future. The cookie's expiration date is set to one year from today, `getActiveStylesheet()` is called to establish what the user currently has, and the cookie is written out for future use.

9.

```
function getPreferredStylesheet() {
var thisLink, relAttribute;
var linksFound = document. getElementsByTagName("link");
```

If, when the page is loaded, there's no cookie saying which style the user has previously chosen, our script needs to be able to figure out what the preferred style sheet is. That's the goal of the `getPreferredStylesheet()` function in this step and the next.

10. [View full width]

```
for (var i=0; i<linksFound.length; i++) {
  thisLink = linksFound[i];
  relAttribute = thisLink. getAttribute("rel");
  if (relAttribute.indexOf ("style") > -1 && relAttribute. indexOf("alt") == -1 &&
  thisLink.getAttribute("title")) {
    return thisLink.getAttribute ("title");
  }
}
```

This function loops through each `link` tag, looking to see if each has a `rel` attribute, if that attribute has a value that contains "style", if that attribute has a value that does *not* contain "alt", and if the tag has a `title` attribute. If one is found that matches all these criteria, that's the preferred style sheet, and its `title` attribute is returned.

To see which of the actual tags in our code is the preferred style sheet, look at the `link` tags in our HTML file. While there are three `link` tags, only two of them have `title` attributes. And of those two, one has a `rel` attribute of "stylesheet", while the other is "alternate stylesheet". Consequently, the preferred style sheet has to be `default`.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
for (var i=0; i<linksFound.length; i++) {
  thisLink = linksFound[i];
    if (thisLink.getAttribute ("rel").indexOf("style") > -1 && thisLink.getAttribute (
"title") && !thisLink. disabled) {
    return thisLink.getAttribute ("title");
  }
}
```

As mentioned above, we're going to want to use a cookie to store the user's chosen style sheet when they leave this site, so that they'll be greeted with their favorite font when they return. While we could write out a cookie every time they click the style button, it's a better idea to only write it out once when they leave the site. Here, the `getActiveStylesheet()` function (which is called when the page is unloaded, as we saw above) looks through all the `link` tags, chooses the one that's currently enabled, and returns the `title` of that style.

12. [View full width]

```
function setActiveStylesheet(inVal) {
   var thisLink;
   var linksFound = document. getElementsByTagName("link");

   var title = (inVal) ? ((typeof inVal == "string") ? inVal : inVal.target.id): window.
 event.srcElement.id;
```

As seen above, when the user loads this page, the `setActiveStylesheet()` function is called and passed a parameter that's referred to inside the function as `inVal`. When `setActiveStylesheet()` is called after a button is clicked, however, there may or may not be a parameter passed, depending on which browser is being used and how it handles events. Here's where we do a little checking to figure out how we got here and what the user wants to do. There are three possibilities:

- `initStyle()` called this function and passed it a string containing the preferred stylesheet. In this case, `inVal` exists and it's a string, so `title` is set to `inVal`.
- A style button was clicked in a browser that supports W3C style events. In this case, `inVal` is automatically set to the event that triggered the function, so `inVal` will exist but it won't be a string. When that happens, we know that the `target` of the event (what caused the event to trigger) is the button that was clicked, and the `id` of that button stores the style desired.
- A style button was clicked in a browser that doesn't support W3C standards but does support the IE event model. If that's the case, the `inVal` variable won't exist, so we instead grab the style desired from `window.event.srcElement.id`.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
if (thisLink.getAttribute("rel").indexOf("style") > -1 && thisLink.getAttribute("title")) {
  thisLink.disabled = true;
  if (thisLink.getAttribute ("title") == title) {
    thisLink.disabled = false;
  }
}
```

The `setActiveStylesheet()` function loops through all the link tags in the document, checking each one to make sure that it has both a `rel` attribute that contains "style" and an existing `title` attribute. If both of these are true, the link is first disabled and then (and only then) re-enabled if the `title` attribute is set to the `title` value.

So, if the current style sheet being used has the `title` attribute of "default", and the user clicks the Lg Serif button, JavaScript sees that it should load the `serif` style sheet. There's one `link` tag with a `title` of "serif", so all others (i.e., the `default` style sheet, in this case) are disabled, and only the `serif` style sheet is turned on.

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Chapter 15. Introducing Ajax

The Web is always changing, and for Web and JavaScript developers the ground shifted under their feet beginning in early 2005. New and immediately popular Web applications appeared, some of them from Google, such as Gmail and Google Maps, and some from others, such as Flickr and the MyYahoo! portal. The common denominator of all of these new sites was that they acted more like desktop applications, with fast, responsive user interfaces. Instead of the traditional Web application, where the user clicked, waited some number of seconds for the server to respond and refresh the page, and then repeated the process, these new sites were more reactive, updating pages right away, providing superior interaction, and making for a better user experience.

There was something new (actually not so new, as we'll see) powering these sites, and it is called *Ajax*. You can use Ajax techniques to make your sites more responsive and attractive, which makes your site's users happier in the process. Best of all, you don't have to learn a completely new technology, because Ajax is made from building blocks that you already know (and that we've covered earlier in this book).

In this chapter, you'll learn how to request information from the server in the background and turn it into a form your Ajax application can use; automatically refresh the information from the server; build a cool previewing effect for objects on your page; and build an Ajax application that auto-completes form fields, just like a desktop application. Let's get to it.

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

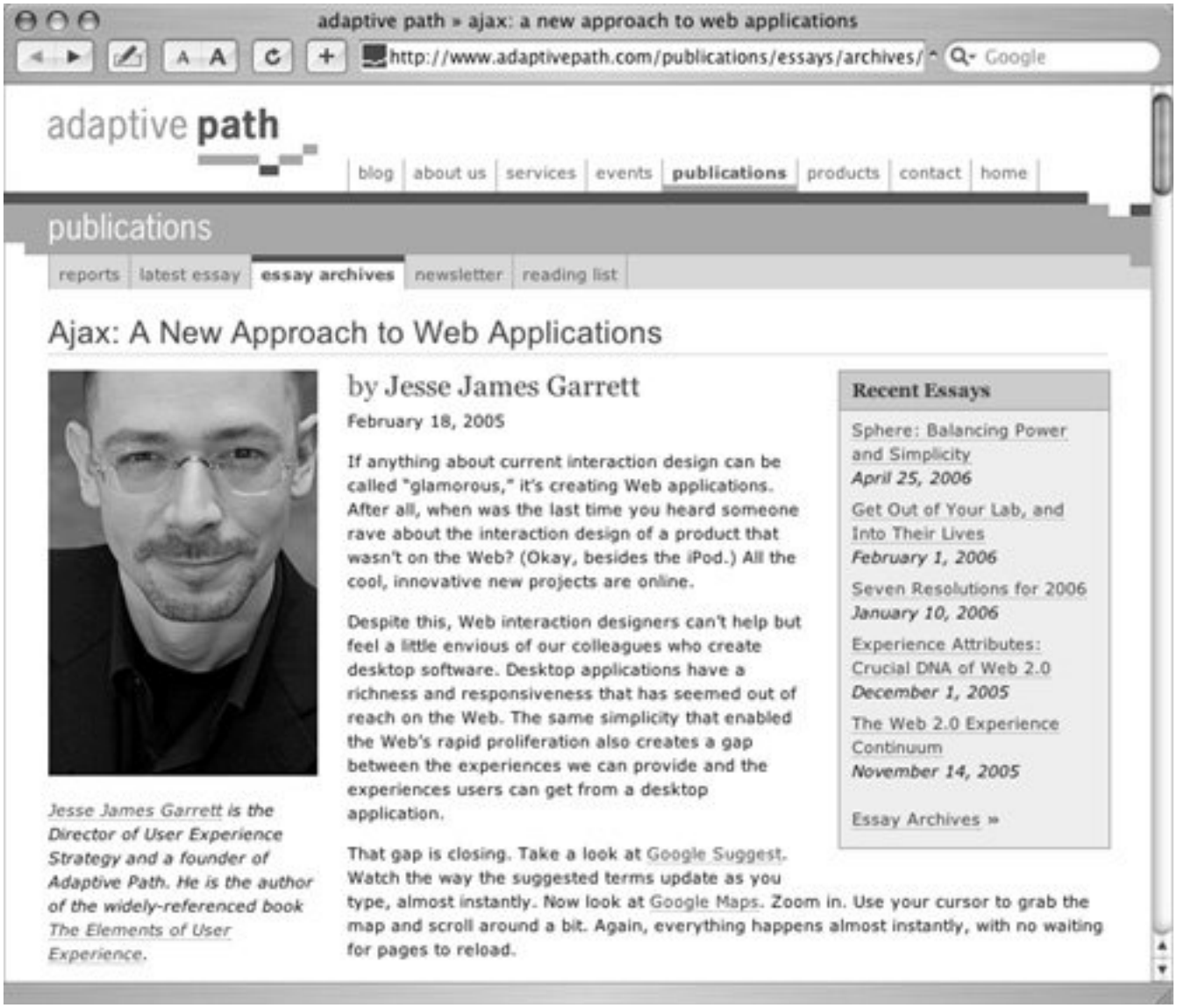
Ajax: Pinning It Down

One of the interesting things about Ajax is that there is some confusion and even a little disagreement as to what Ajax really is. We know that it is important and that it's very popular; heck, we even changed the name of this book from previous editions to hitch onto Ajax's popularity. So here is our take on what Ajax is and isn't, and what we mean when we use the term.

First, a little history. In February 2005, Jesse James Garrett, a founder of Adaptive Path (a Web interface and design shop in San Francisco), coined the term Ajax in an article on their site. He said Ajax was shorthand (but *not* an acronym) for "Asynchronous JavaScript and XML." You can read the article for yourself at www.adaptivepath.com/publications/essays/archives/000385.php (**Figure 15.1**).

Figure 15.1. This is the article that launched a zillion Ajax sites.

[View full size image]



downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

According to Garrett, Ajax is not in itself a new technology; it's a technique that combines several long-standing Web technologies:

- Using XHTML and CSS for structure and presentation
- Displaying and manipulating pages using the Document Object Model
- Using the browser's `XMLHttpRequest` object to transfer data between the client and the server
- Using XML as the format for the data flowing between the client and server
- And finally, using JavaScript to dynamically display and interact with all of the above

An Ajax application places an intermediary between the user and the server. This *Ajax engine* (also known as the JavaScript part of a Web page) provides an interface to the user (in concert, of course, with XHTML and CSS), and if a user action doesn't require a request to the server (for example, displaying data that is already local), the Ajax engine responds. This allows the browser to react immediately to many user actions and makes the Web page act with the snappiness we've come to expect from our desktop programs. If the user action does require a server call, the Ajax engine performs it *asynchronously*, that is, without making the user wait for the server response; the user can continue to interact with the application, and the engine updates the page when the requested data arrives. The important part is that the user's actions don't come to a screeching halt while waiting for the server.

As the technique evolved, not all of the pieces had to be in place to call something an Ajax application, and this is where the confusion and disagreements set in. In fact, even the authors disagree about this:

Tom says, "I'm fine with just manipulating the page with the DOM, XHTML and CSS, and JavaScript and calling it Ajax. There are tons of effects that people are referring to as Ajax, and the whole look of modern sites has changed because of this approach. The change from the static Web to the dynamic Web page, which is sometimes called Web 2.0, owes its look and feel to the Ajax approach, whether or not there's a server call behind the scenes. Maybe calling it Ajax won't please the purists, but it's good enough for me."

Dori, who's the real JavaScript programmer in the family, says: "To call it Ajax, you need to use `XMLHttpRequest` and transfer some data between the client and server. Otherwise, what's so new about it?"

Dori's writing the code, so for the most part in this chapter we're sticking to her sensibilities as to what an Ajax application is and what it should do. But in the next chapter, we'll show you how to add some great (but still useful, not just flashy) Web 2.0style eye candy to your sites.

Now, let's talk a little about what's not Ajax. Because you can do some cool visual effects on Web pages using Ajax, some people think that Ajax is *anything* you can do that looks good on a page, leading them to refer to things like interfaces made in Macromedia Flash as "Ajax." But just saying it doesn't make it so. Ajax is not about loading up your sites with cute user interface widgets and adding user interface tweaks that are cool but that change or break behaviors that people are used to with Web pages.

That leads us to problems with Ajax, and they can be significant. For example, to work correctly, an Ajax site needs to be running in a modern browser (for a list, see the back cover of this book). It also requires JavaScript. So what do you do about people using older browsers or who have turned JavaScript off? Or what about disabled users, or people who may be browsing your site with limited-capability handheld devices such as mobile phones or PDAs? The answer is that you must write your sites to degrade gracefully, meaning that users with less-capable browsers get a subset of your site's functionality, or, at the minimum, get a meaningful error message explaining why they can't use your site.

Another potential problem with Ajax applications is that they may break the expected behavior of the

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

to the last page it loaded. But because Ajax-enabled pages are dynamically updated, that might not be a valid expectation. There are solutions for the "back button problem," and before you dive wholeheartedly into Ajax, you should take the problem and its solutions into account.

Additionally, Ajax is not dependent on specific server-side technologies. There are a number of companies that are using the Ajax boom to try to sell their own server-side solutions, and that's what they're in business to dobut there's no reason why their products are required. So long as what's on the back end is something that your JavaScript can read (XML, ideally), you're fine. Just because the guys in the snappy suits (*cough* IBM *cough* Sun *cough*) want to hitch their buzzword-compliant products to Ajax's success in order to get you to buy doesn't mean that you have to fall for it.

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Reading Server Data

We begin our exploration of Ajax with the basics: using the `XMLHttpRequest` object to retrieve and display information from a server.

To get the job done, we'll use **Scripts 15.1** (HTML) and **15.2** (JavaScript). There are two possible files that can be read: the XML file that is shown in **Script 15.3** and the plain text file that is **Script 15.4**.

Script 15.1. The HTML for the text and XML file request example.

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN">
<html>
<head>
     <title>My First Ajax Script</title>
     <script src="script01.js" type="text/javascript" language="Javascript">
     </script>
</head>
<body>
     <p><a id="makeTextRequest" href="gAddress.txt">Request a text file</a><br />
     <a id="makeXMLRequest" href="us-states.xml">Request an XML file</a></p>
     <div id="updateArea"> </div>
</body>
</html>
```

Script 15.2. This JavaScript gets the files from the server.

[View full width]

```
window.onload = initAll;

var xhr = false;
function initAll() {
     document.getElementById("makeTextRequest"). onclick = getNewFile;
     document.getElementById("makeXMLRequest"). onclick = getNewFile;
}

function getNewFile() {
     makeRequest(this.href);
     return false;
}

function makeRequest(url) {
     if (window.XMLHttpRequest) {
        xhr = new XMLHttpRequest();
     }
```

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
        if (window.ActiveXObject) {
           try {
              xhr = new ActiveXObject ("Microsoft.XMLHTTP");
           }
           catch (e) { }
        }
     }

     if (xhr) {
        xhr.onreadystatechange = showContents;
        xhr.open("GET", url, true);
        xhr.send(null);
     }
     else {
        document.getElementById("updateArea"). innerHTML = "Sorry, but I couldn't create
 an XMLHttpRequest";
     }
}

function showContents() {
     if (xhr.readyState == 4) {
        if (xhr.status == 200) {
           var outMsg = (xhr.responseXML && xhr.responseXML.contentType== "text/xml") ?
xhr.responseXML. getElementsByTagName("choices") [0].textContent: xhr.responseText;
        }
        else {
           var outMsg = "There was a problem with the request " + xhr.status;
        }
        document.getElementById("updateArea"). innerHTML = outMsg;
     }
}
```

Script 15.3. This is the XML file that is requested.

```
<?xml version="1.0"?>
<choices xml:lang="EN">
     <item><label>Alabama</label><value>AL</value></item>
     <item><label>Alaska</label><value>AK</value></item>
     <item><label>Arizona</label><value>AZ</value></item>
     <item><label>Arkansas</label><value>AR</value></item>
     <item><label>California</label><value>CA</value></item>
     <item><label>Colorado</label><value>CO</value></item>
     <item><label>Connecticut</label><value>CT</value></item>
     <item><label>Delaware</label><value>DE</value></item>
     <item><label>Florida</label><value>FL</value></item>
     <item><label>Georgia</label><value>GA</value></item>
     <item><label>Hawaii</label><value>HI</value></item>
     <item><label>Idaho</label><value>ID</value></item>
     <item><label>Illinois</label><value>IL</value></item>
     <item><label>Indiana</label><value>IN</value></item>
     <item><label>Iowa</label><value>IA</value></item>
```

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
    <item><label>Kentucky</label><value>KY</value></item>
    <item><label>Louisiana</label><value>LA</value></item>
    <item><label>Maine</label><value>ME</value></item>
    <item><label>Maryland</label><value>MD</value></item>
    <item><label>Massachusetts</label><value>MA</value></item>
    <item><label>Michigan</label><value>MI</value></item>
    <item><label>Minnesota</label><value>MN</value></item>
    <item><label>Mississippi</label><value>MS</value></item>
    <item><label>Missouri</label><value>MO</value></item>
    <item><label>Montana</label><value>MT</value></item>
    <item><label>Nebraska</label><value>NE</value></item>
    <item><label>Nevada</label><value>NV</value></item>
    <item><label>New Hampshire</label><value>NH</value></item>
    <item><label>New Jersey</label><value>NJ</value></item>
    <item><label>New Mexico</label><value>NM</value></item>
    <item><label>New York</label><value>NY</value></item>
    <item><label>North Carolina</label><value>NC</value></item>
    <item><label>North Dakota</label><value>ND</value></item>
    <item><label>Ohio</label><value>OH</value></item>
    <item><label>Oklahoma</label><value>OK</value></item>
    <item><label>Oregon</label><value>OR</value></item>
    <item><label>Pennsylvania</label><value>PA</value></item>
    <item><label>Rhode Island</label><value>RI</value></item>
    <item><label>South Carolina</label><value>SC</value></item>
    <item><label>South Dakota</label><value>SD</value></item>
    <item><label>Tennessee</label><value>TN</value></item>
    <item><label>Texas</label><value>TX</value></item>
    <item><label>Utah</label><value> UT</value></item>
    <item><label>Vermont</label><value> VT</value></item>
    <item><label>Virginia</label><value> VA</value></item>
    <item><label>Washington</label><value> WA</value></item>
    <item><label>West Virginia</label><value> WV</value></item>
    <item><label>Wisconsin</label><value> WI</value></item>
    <item><label>Wyoming</label><value> WY</value></item>
</choices>
```

Script 15.4. The requested text file.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
brought forth on this continent, a new nation,
conceived in Liberty, and dedicated to the
proposition that all men are created equal.
Now we are engaged in a great civil war, testing
whether that nation, or any nation so conceived
and so dedicated, can long endure. We are met on
a great battle-field of that war. We have come
to dedicate a portion of that field, as a final
resting place for those who here gave their lives
that that nation might live. It is altogether
fitting and proper that we should do this.

But, in a larger sense, we can not dedicate --
we can not consecrate -- we can not hallow --
this ground. The brave men, living and dead,
who struggled here, have consecrated it, far
above our poor power to add or detract. The
world will little note, nor long remember what
we say here, but it can never forget what they
did here. It is for us the living, rather, to
be dedicated here to the unfinished work
which they who fought here have thus far so
nobly advanced. It is rather for us to be here
dedicated to the great task remaining before
us -- that from these honored dead we take
increased devotion to that cause for which they
gave the last full measure of devotion -- that
we here highly resolve that these dead shall
not have died in vain -- that this nation, under
God, shall have a new birth of freedom -- and
that government of the people, by the people,
for the people, shall not perish from the earth.
```

To request server data:

1. `var xhr = false;`

In Script 15.2, the `xHR` variable is one that you'll be seeing a lot of in this chapter. It's an `XMLHttpRequest` object (or it will be later, after it's initialized). At this point, we just need to create it outside any functions in order to make it globally available.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
  document.getElementById ("makeTextRequest").onclick = getNewFile;
  document.getElementById ("makeXMLRequest").onclick = getNewFile;
}
```

When the page is first loaded, it knows to call the `initAll()` function. Here, we set two `onclick` handlers so that when a user clicks either of the links, the `getNewFile()` function is triggered.

3.
```
function getNewFile() {
  makeRequest(this.href);
  return false;
}
```

Someone's clicked a link, so it's time to do something. Here, that something is to call `makeRequest()`but that function needs to know which file was requested. Thankfully, we know that that information is tucked away in `this.href`, so we can pass it along. When we come back, we know we're done, so we return a value of false, telling the browser that no, we don't really want to load up a new Web page.

4.
```
if (window.XMLHttpRequest) {
  xhr = new XMLHttpRequest();
}
```

Now, we're inside `makeRequest()`, and it's here that things get interesting. Modern browsers support a native `XMLHttpRequest` object as a property of `window`. So, we check to see if that property exists, and if it does, we create a new `XMLHttpRequest` object.

5.
```
if (window.ActiveXObject) {
  try {
     xhr = new ActiveXObject ("Microsoft.XMLHTTP");
  }
  catch (e) { }
}
```

However, there's a browser that supports `XMLHttpRequest` that doesn't have a native version of the object, and that's Microsoft Internet Explorer (versions 5.5 and 6). In that case, we have to check to see if the browser supports ActiveX. If it does, we then check (using a `try`/`catch` error check) to see if we can create an `XMLHttpRequest` object based on ActiveX. If we can, great.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
  xhr.onreadystatechange = showContents;
  xhr.open("GET", url, true);
  xhr.send(null);
}
```

Either way, we should have a new `xhr` object, and if we do, we need to do something (in fact, three somethings) with it. Here are the three things that we always do with `xhr`:

- Set the `xhr`'s `onreadystatechange` event handler. Any time the `xhr.readyState` property changes its value, this handler is triggered.
- We call `open()` and pass in three parameters: an HTTP request method (e.g., `"GET"`, `"POST"`, or `"HEAD"`), a URL to a file on the server, and a Boolean telling the server if the request is asynchronous (that is, if we're sitting around waiting for it).
- And finally, we `send()` the request we just created. If we were requesting a `POST`, the parameters would be passed here.

7. [View full width]

```
else {
  document.getElementById ("updateArea").innerHTML = "Sorry, but I couldn't create an
  XMLHttpRequest";
}
```

If we end up here, we couldn't create an `XMLHttpRequest` for some reason, and there's nothing else that can be done.

8.

```
if (xhr.readyState == 4) {
  if (xhr.status == 200) {
```

Now we're down in the `showContents()` function. The `readyState` property can have one of several values (see **Table 15.1**), and every time the server changes its value, the `showContents()` function is triggered. However, we don't actually want to do anything (at least not here) until the request is finished, so we start off by checking to see if `readyState` is 4. If it is, we're good to go, and we can check to see what the request returned.

Table 15.1. readyState Property Values

Value	What It Means
0	Uninitialized; object contains no data

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

2	Loaded; object has finished loading its data
3	Interactive; user may interact with the object even though it is not fully loaded
4	Complete; object has finished initializing

The first thing to check is the request's `status`, which will be a result code returned by the server (servers routinely return these codes behind the scenes for every file served, although browsers only show them to you if there's an error). A status code of 200 means that everything's fine. The status here is the same status that is returned by any server call; for instance, if you ask for a file that doesn't exist you'll get a 404 error from the Web server.

9. [View full width]

```
var outMsg = (xhr.responseXML && xhr.responseXML.contentType =="text/xml") ? xhr
 .responseXML. getElementsByTagName("choices")[0]. textContent: xhr.responseText;
```

If we're here, that means that everything is fine, and we want to look at what the server actually gave us. There were two different types of files we could be reading, so we need to check what type of data we got back. The `responseXML` property contains the data if it's XML. If the `contentType` property (which can also be referred to as the MIME type) contains "`text/xml`", then we know that we've got a properly formatted DOM object back, and we can use commands we've seen before (such as `getElementsByTagName()`) to traverse its nodes. But here, we're just trying to see if it worked, so we'll take everything and dump it all into `outMsg`.

If what we got back isn't valid XML, then it's our text file. In that case, we want to put `xHR`'s `responseText` property into `outMsg`.

10.

```
else {
  var outMsg = "There was a problem with the request " + xhr.status;
}
```

If what we got back had a `status` other than 200, we've got a problem, so we set `outMsg` to say that and append the status error so we can try to figure out what the problem is.

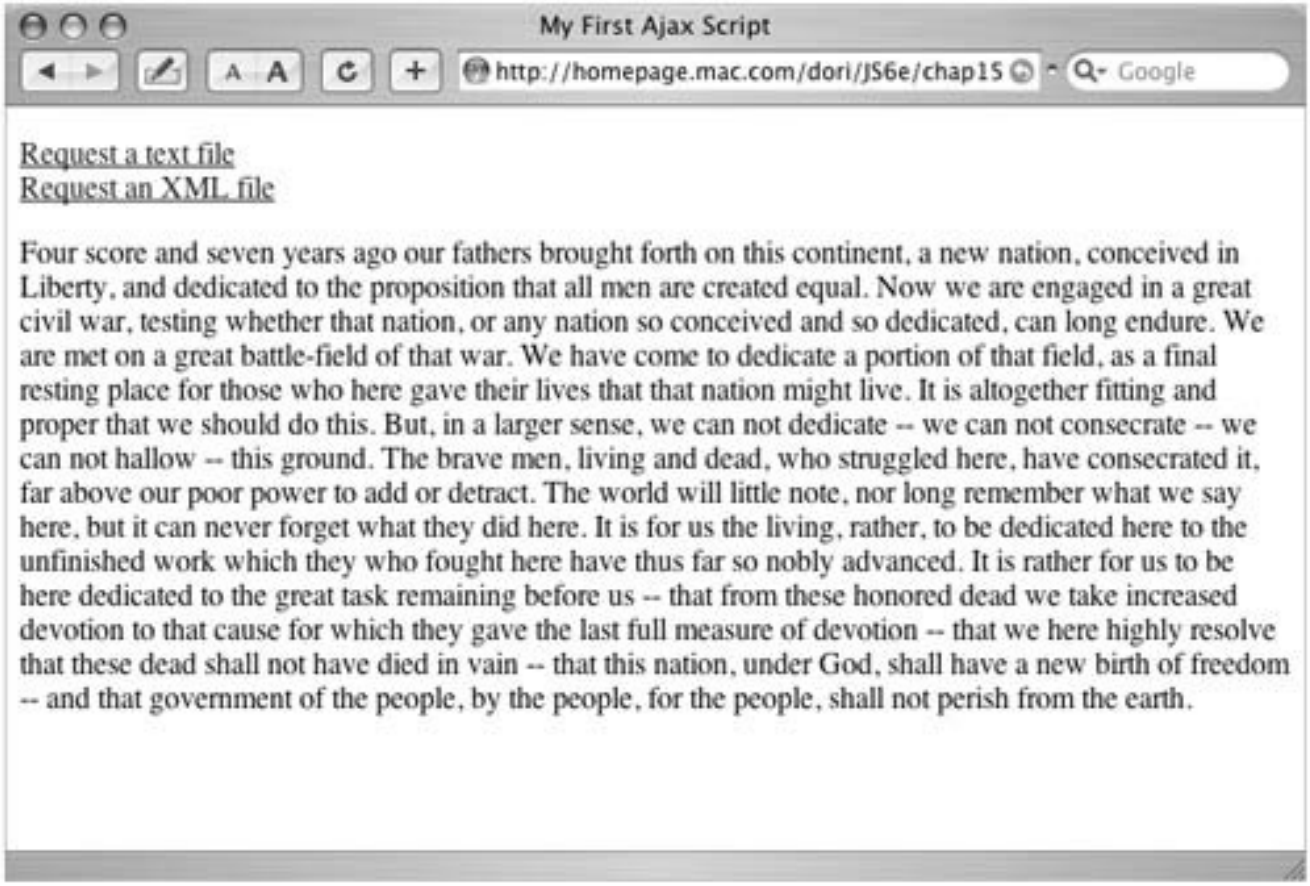
downloaded from: lib.ommolketab.ir

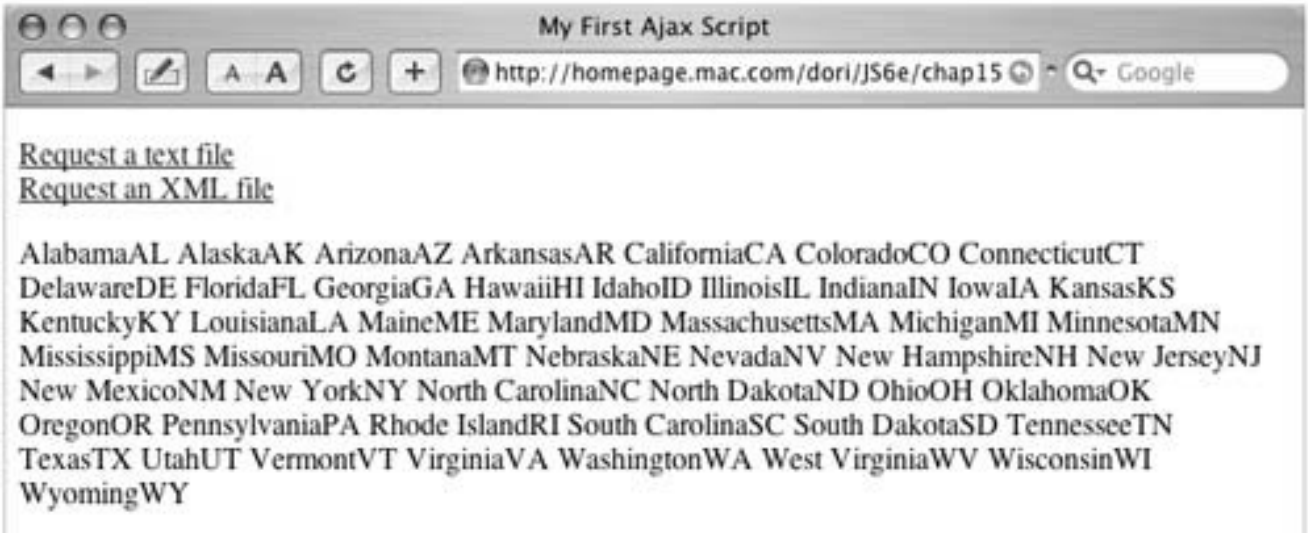
downloaded from: lib.ommolketab.ir

And finally, we take `outMsg` and dump it onto the screen, as shown in **Figure 15.2**.

Figure 15.2. By clicking the appropriate link, you can fetch either a text file of the Gettysburg Address (top) or an XML file of U.S. states and their abbreviations (bottom).

[View full size image]





downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

✔ Tips

- Because of the way that Ajax works, when you are doing your development and testing, the files that you're reading must reside on a server; they can't just be local files.
- Back in step 5, we said that IE 5.5 and 6 used an ActiveX control to create the `XMLHttpRequest` object. Thankfully, IE7 has a native object so that's no longer required. However, this means that you always have to check for the existence of a native object firstif you check for `window.ActiveXObject` first, that will be `true` for IE7, and then you'll be going down the wrong path. A considerable amount of older, pre-IE7 Ajax code has this problem.
- If it matters deeply to your code which version of Microsoft's ActiveX object you actually get, here's a code snippet for you to use instead:

```
if (window.ActiveXObject) {
  try {
    xhr = new ActiveXObject ("Msxml2.XMLHTTP");
  }
  catch (e) {
    try {
      xhr = new ActiveXObject ("Microsoft.XMLHTTP");
    }
    catch (e) { }
  }
```

  This approach attempts to use the IE6 version (`Msxml2.XMLHTTP`) of the `XMLHttpRequest` object first and only falls back to the older version if it can't find it. However, the `Microsoft.XMLHTTP` version should always give you the latest version available on the PC, so we'll just be using that in this chapterbecause eventually, the older code will be going away.

✔ Tips

- One drawback of Ajax calls is that they can be cached; that is, it looks like your application is contacting the server and getting new data, but it's really just looking at stuff it read previously. If that's the case, setting the headers of the request can help. Adding one or more of these can help force recalcitrant servers to fork over the goods:

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
xhr.setRequestHeader ("Cache-Control","no-cache");
xhr.setRequestHeader ("Cache-Control", "must-revalidate");
xhr.setRequestHeader ("Cache-Control","no-store");
xhr.setRequestHeader ("Pragma","no-cache");
xhr.setRequestHeader ("Expires","0");
```

- You can force the call to return XML data by overriding the MIME type:

  ```
  xhr.overrideMimeType("text/xml");
  ```

  However, this may cause problems with certain browsers and configurations, so use it with care.

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Parsing Server Data

Now that we have data from the server, we need to find the exact information we need and make sure that it is in a format that our Ajax application can use. To do that, we'll first need to examine the information. Because the data is a nicely structured XML document, our script walks the XML document tree to find and extract the particular data we need and store it in variables. Then, if needed, the script can reformat the data for later use.

The HTML is unchanged from the last example, so all we need to do is add more code in the JavaScript file. The result is **Script 15.5**. For this task, the XML file is data about photographs stored on Flickr; a portion of the XML can be seen in **Script 15.6**.

Script 15.5. The additional JavaScript in this script allows you to parse the data you previously requested.

```
window.onload = initAll;
var xhr = false;
function initAll() {
     if (window.XMLHttpRequest) {
        xhr = new XMLHttpRequest();
     }
     else {
        if (window.ActiveXObject) {
           try {
              xhr = new ActiveXObject ("Microsoft.XMLHTTP");
           }
           catch (e) { }
        }
     }

     if (xhr) {
        xhr.onreadystatechange = showPictures;
        xhr.open("GET", "flickrfeed.xml", true);
        xhr.send(null);
     }
     else {
        alert("Sorry, but I couldn't create an XMLHttpRequest");
     }
}

function showPictures() {
     var tempDiv = document.createElement ("div");
     var pageDiv = document.getElementById ("pictureBar");

     if (xhr.readyState == 4) {
        if (xhr.status == 200) {
           tempDiv.innerHTML = xhr.responseText;
           var allLinks = tempDiv. getElementsByTagName("a");

           for (var i=1; i<allLinks.length; i+=2) {
                pageDiv.appendChild(allLinks[i]. cloneNode(true));
             }
          }
```

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
            }
        }
}
```

Script 15.6. This is an edited and shortened version of the XML file that Flickr provides; the original was approximately 500 lines in length!

[View full width]

```
<?xml version="1.0" encoding="utf-8" standalone= "yes"?>
<feed xmlns="http://www.w3.org/2005/Atom" xmlns: dc="http://purl.org/dc/elements/1.1/">
     <title>Dori Smith's Photos</title>
     <link rel="self" href="http://www.flickr. com/services/feeds/photos_public.gne?id=
  23922109@N00" />
     <link rel="alternate" type="text/html" href="http://www.flickr.com/photos/ dorismith/"/>
     <id>tag:flickr.com,2005:/photos/public/ 116078</id>
     <icon>http://static.flickr.com/5/ buddyicons/23922109@N00.jpg?1113973282 </icon>
     <subtitle>A feed of Dori Smith's Photos </subtitle>
     <updated>2006-03-22T20:12:44Z</updated>
     <generator uri="http://www.flickr.com/ ">Flickr</generator>
     <entry>
        <title>Mash note</title>
        <link rel="alternate" type="text/html" href="http://www.flickr.com/photos/
  dorismith/116463569/"/>
        <id>tag:flickr.com,2005:/photo/116463569</id>
        <published>2006-03-22T20:12:44Z</published>
        <updated>2006-03-22T20:12:44Z</updated>
        <dc:date.Taken>2006-03-22T12:12:44-08:00</dc:date.Taken>
        <content type="html"><p><a href="http://www.flickr.com/people/dorismith/">Dori
 Smith</a> posted a photo:</p>
<p><a href="http://www.flickr.com/photos/dorismith/116463569/" title="Mash note"><img
 src="http:// static.flickr.com/44/116463569_483fd4ee7c_s.jpg" width="75" height="75"
  alt="Mash note" style= "border: 5px solid #ddd;" /></a></p></content>
        <author>
           <name>Dori Smith</name>
           <uri>http://www.flickr.com/people/dorismith/</uri>
        </author>
        <category term="dorismith" scheme="http://www.flickr.com/photos/tags/" />
        <category term="ncmug" scheme="http://www.flickr.com/photos/tags/" />
     </entry>
     <entry>
        <title>My odometer reading</title>
        <link rel="alternate" type="text/html" href="http://www.flickr.com/photos
 /dorismith/69558528/"/>
        <id>tag:flickr.com,2005:/photo/69558528</id>
        <published>2005-12-03T03:48:40Z</published>
        <updated>2005-12-03T03:48:40Z</updated>
        <dc:date.Taken>2005-11-07T13:04:54-08:00</dc:date.Taken>
        <content type="html"><p><a href="http://www.flickr.com/people/dorismith/">Dori
 Smith</a> posted a photo:</p>
<p><a href="http://www.flickr.com/photos/dorismith/69558528/" title="My odometer
 reading"><img src= "http://static.flickr.com/20/69558528_d6b9bb4b08_s.jpg" width="75"
```

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
<p>Why yes, I am a geek.</p></content>
        <author>
           <name>Dori Smith</name>
           <uri>http://www.flickr.com/people/dorismith/</uri>
        </author>
        <category term="32768" scheme="http://www.flickr.com/photos/tags/" />
        <category term="dori" scheme="http://www.flickr.com/photos/tags/" />
        <category term="geek" scheme="http://www.flickr.com/photos/tags/" />
        <category term="dorismith" scheme="http://www.flickr.com/photos/tags/" />
     </entry>
</feed>
```

To parse information from the server:

1. ```
   xhr.onreadystatechange = showPictures;
   xhr.open("GET", "flickrfeed.xml", true);
   ```

   Every time `readyState` changes, we want to call the `showPictures()` function. The file name we want to read off the server is `flickrfeed.xml`. Both those values are set here.

2. ```
   var tempDiv = document.createElement ("div");
   var pageDiv = document. getElementById("pictureBar");
   ```

   Down in `showPictures()` is where the real work is done. We start by creating variables to store two elements: `tempDiv`, a temporary `div` placeholder, and `pageDiv`, a reference to the `pictureBar div` on the page.

3. ```
   tempDiv.innerHTML = xhr.responseText;
   var allLinks = tempDiv. getElementsByTagName("a");
   ```

   The response back from the server contained XML, but for the sake of convenience here, we're taking the data from `responseText` (that is, the text version) and throwing it into `tempDiv`'s `innerHTML` property.

   Take a look at the XML in Script 15.6, and you'll see that there's a lot of stuff there that we don't care about at allin fact, all we want is what's in the `&lt;a&gt;` tags (and really, only half of those). So, we start to narrow down to just what we want by creating the `allLinks` array, which will contain the contents of all the `&lt;a&gt;` nodes in the document.

downloaded from: lib.ommolketab.ir
   ```

downloaded from: lib.ommolketab.ir

As previously mentioned, we only want half the `<a>` nodes, so we winnow out the ones here that we don't want. In a file with information about 20 photos, there will be 20 `<entry>` nodes, each of which contains two links. Each `<entry>` node contains the photographer's name (linked to their Flickr page), followed by a thumbnail image which is linked to the full-size version. We want just the latter, so we can go through the loop starting with 1 (rather than 0) and increment `i` by 2 each go-round.

The end result: we'll get links 1, 3, 5, and so on, each of which is just the thumbnail image inside a link.

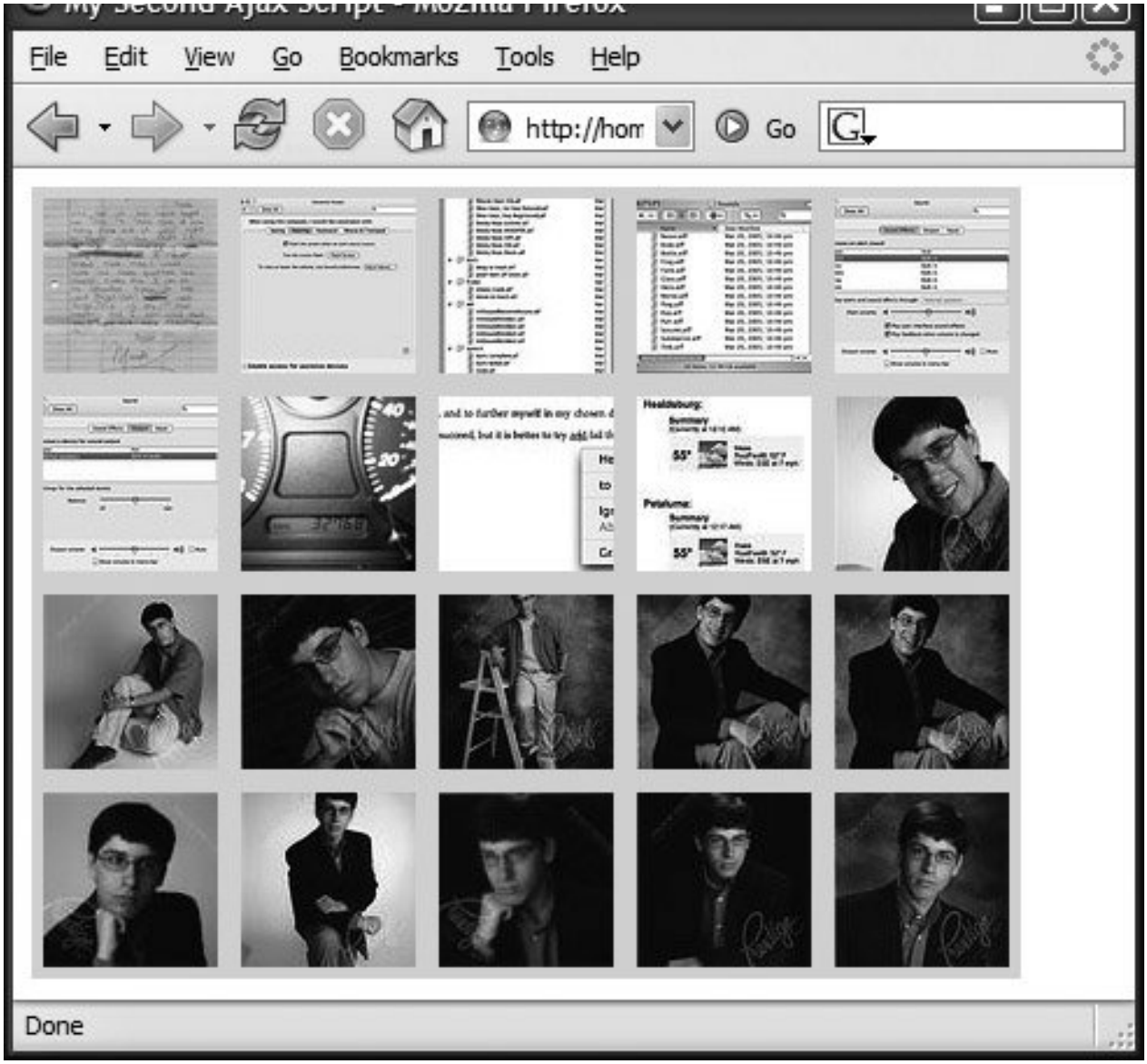
5. `pageDiv.appendChild(allLinks[i]. cloneNode(true));`

Inside the loop, we take the node that we want, clone it, and then append it onto the HTML page's `pageDiv`. The end result is as we see it in **Figure 15.3**, where every thumbnail image on the page is a link back to the full-size version.

Figure 15.3. These thumbnail images were read from Flickr.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir



We need to use `cloneNode` and not simply append `allLinks[i]` because using append actually moves the nodes from one to anotherinstead, we want to duplicate what we've already got. The value `true` passed as a parameter tells JavaScript to clone not just this node, but also any child nodes of this node, and that's exactly what we want to do to get the `<img>` node along with the `<a>`.

✓ Tips

- While you can't read a data file that's stored on another server (see the "Getting Your Data" sidebar for more about why that's the case), you can always have your HTML file load information from another server. Here, your Web page, no matter where it is, is able to display images from flickr.com's servers.
- One of the best things about the new crop of Web 2.0 dot-coms is that they understand that people want access to dataand not just their own data, but other people's data (when they've agreed to make it public) as well. For instance, it's possible to search Flickr for all the photographs containing the tags "Hawaii" and "sunset," and then get the result as an XML file. Combine that with this script or the next, and you'll always have new and lovely

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Getting Your Data

One of the things people want to do when they first hear about Ajax is write JavaScript that reads in all kinds of XML files (including RSS and Atom feeds), mash them up, and then put the result on their own Web page.

The bad news: it doesn't quite work that waya script can only read a file that comes from the same server as the one that the script is on itself. If you think about it for a while, you'll start to figure out why; after all, if a script could read anything, then that would open up all kinds of possible security scams and fake sites.

The sort-of good news: you can have a program on your server that goes out periodically, grabs an XML file, and then stores it locally. Once you've done that, your Ajax application will have no problems reading it. In this example and the next, it's assumed that you've got something running that grabs the Flickr data file of your choice periodically and saves it on your server. How to do that, though, is beyond the scope of this book.

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Refreshing Server Data

Our Ajax application has fetched information from the server and then parsed the data and acted upon it. Now we'll show you how to make the application retrieve a new version of the data from the server, which automatically refreshes the page. **Script 15.7** contains the necessary JavaScript.

Script 15.7. Use this script to automatically refresh server information.

```
window.onload = initAll;

var xhr = false;
function initAll() {
     if (window.XMLHttpRequest) {
        xhr = new XMLHttpRequest();
     }
     else {
        if (window.ActiveXObject) {
           try {
              xhr = new ActiveXObject ("Microsoft.XMLHTTP");
           }
           catch (e) { }
        }
     }

     if (xhr) {
        getPix();
     }
     else {
        alert("Sorry, but I couldn't create an XMLHttpRequest");
     }
}

function getPix() {
     xhr.open("GET", "flickrfeed.xml", true);
     xhr.onreadystatechange = showPictures;
     xhr.send(null);

     setTimeout("getPix()",5 * 1000);
}

function showPictures() {
     var tempDiv = document.createElement ("div");
     var tempDiv2 = document.createElement ("div");

     if (xhr.readyState == 4) {
        if (xhr.status == 200) {
           tempDiv.innerHTML = xhr.responseText;
           var allLinks = tempDiv. getElementsByTagName("a");

           for (var i=1; i<allLinks.length; i+=2) {
              tempDiv2.appendChild(allLinks[i]. cloneNode(true));
           }
```

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
            var randomImg = Math.floor (Math.random() * allLinks.length);
            document.getElementById ("pictureBar").innerHTML = allLinks[randomImg].innerHTML;
         }
         else {
            alert("There was a problem with the request " + xhr.status);
         }
      }
}
```

To refresh server information:

1.
```
function getPix() {
  xhr.open("GET", "flickrfeed.xml", true);
  xhr.onreadystatechange = showPictures;
  xhr.send(null);

  setTimeout("getPix()",5 * 1000);
}
```

   Where the previous script did the `xhr` call inside `initAll()`, this script pushes it down into its own function, `getPix()`. There's one addition: the `setTimeout()` afterwards. Five seconds after the script has grabbed a random image, it goes and gets another.

2.
```
for (var i=1; i<allLinks.length; i+=2) {
  tempDiv2.appendChild(allLinks[i]. cloneNode(true));
}
```

   This is almost the same loop that's in the previous task, with one difference: instead of appending the nodes to the Web page, it adds them to another temporary `div`.

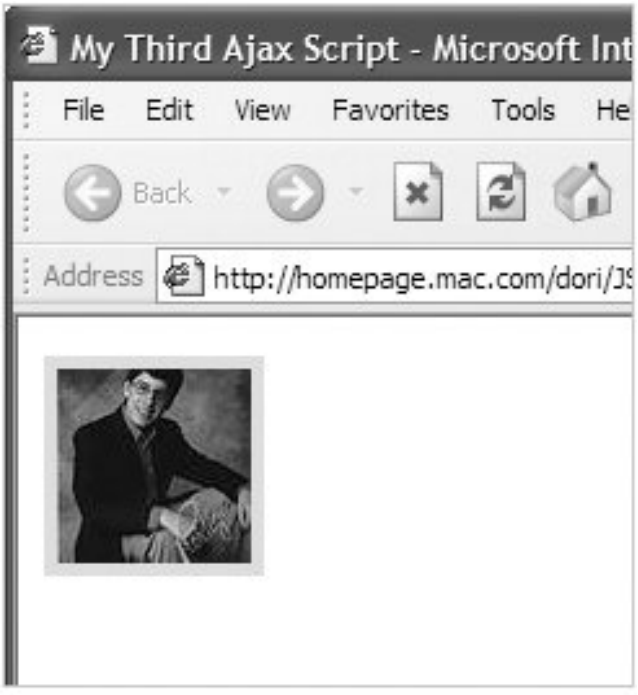
3.
```
allLinks = tempDiv2. getElementsByTagName("a");
var randomImg = Math.floor (Math.random() * allLinks.length);
document.getElementById ("pictureBar").innerHTML = allLinks[randomImg].innerHTML;
```

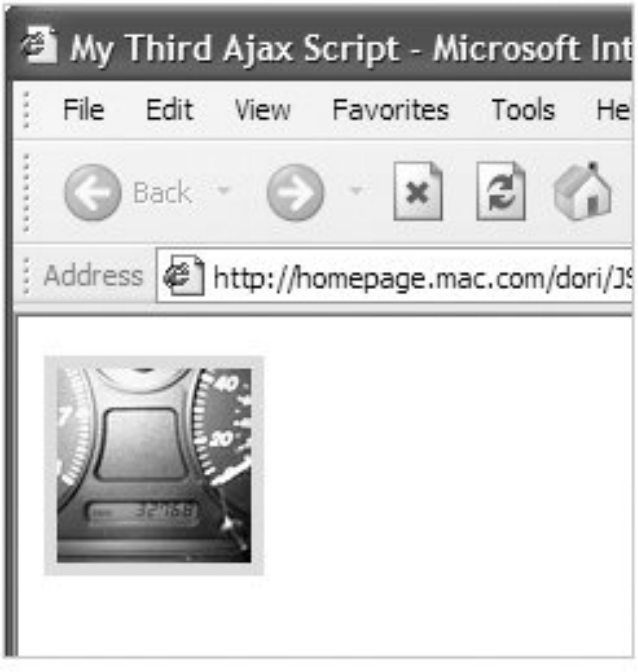
   When the loop completes, we want to figure out one random image out of all of them to display. We start by creating another array of links (now with just the linked photographs instead of all the links). We then calculate a random number between zero and one less than the number of images, using `Math.random()` and `Math.floor()` as we did back in Chapter 4 in "Displaying a Random Image." And finally, we use that random number as an index into the `allLinks` array to grab the one image, and we put that into our Web page (**Figure 15.4**).

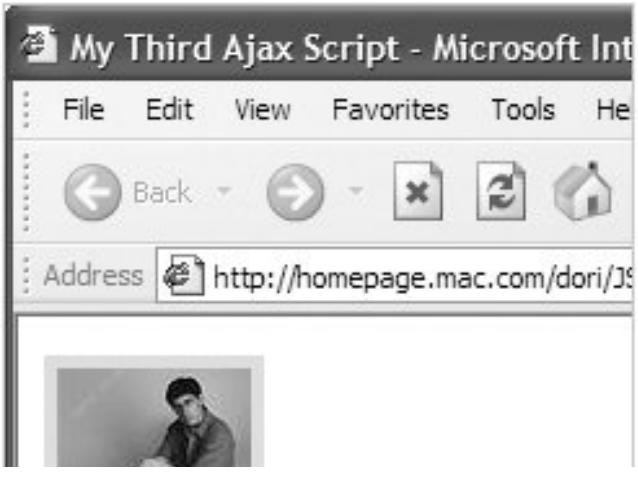
Figure 15.4. The script fetches one image after another

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir







downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

✓ Tips

- You might wonder why this script bothers to read from the same XML file every timeafter all, if the file isn't changing, why not just keep the data in variables after the first time through? If you keep in mind the technique referred to in the previous sidebar ("Getting Your Data"), you'll then realize that the XML file could be changing at any point. Say your server-side program grabs a new version of the XML file every few minuteswhy should anyone have to wait to see the latest pictures? This way, your site's visitors always get the latest possible version.
- If you take the approach just mentioned, you're likely to run into the Ajax drawback covered earlier in this chapter: caching. Different browsers (and different versions, and different platforms) all have their own unique caching peculiarities, most of which are solved by modifying the headers as discussed earlier. Another solution many recommend is to change the `GET` to a `POST`. But here's what we've found that works: swap the order of the `open()` and `onreadystatechange`, as shown above in step 1.

PREV NEXT

downloaded from: lib.ommolketab.ir

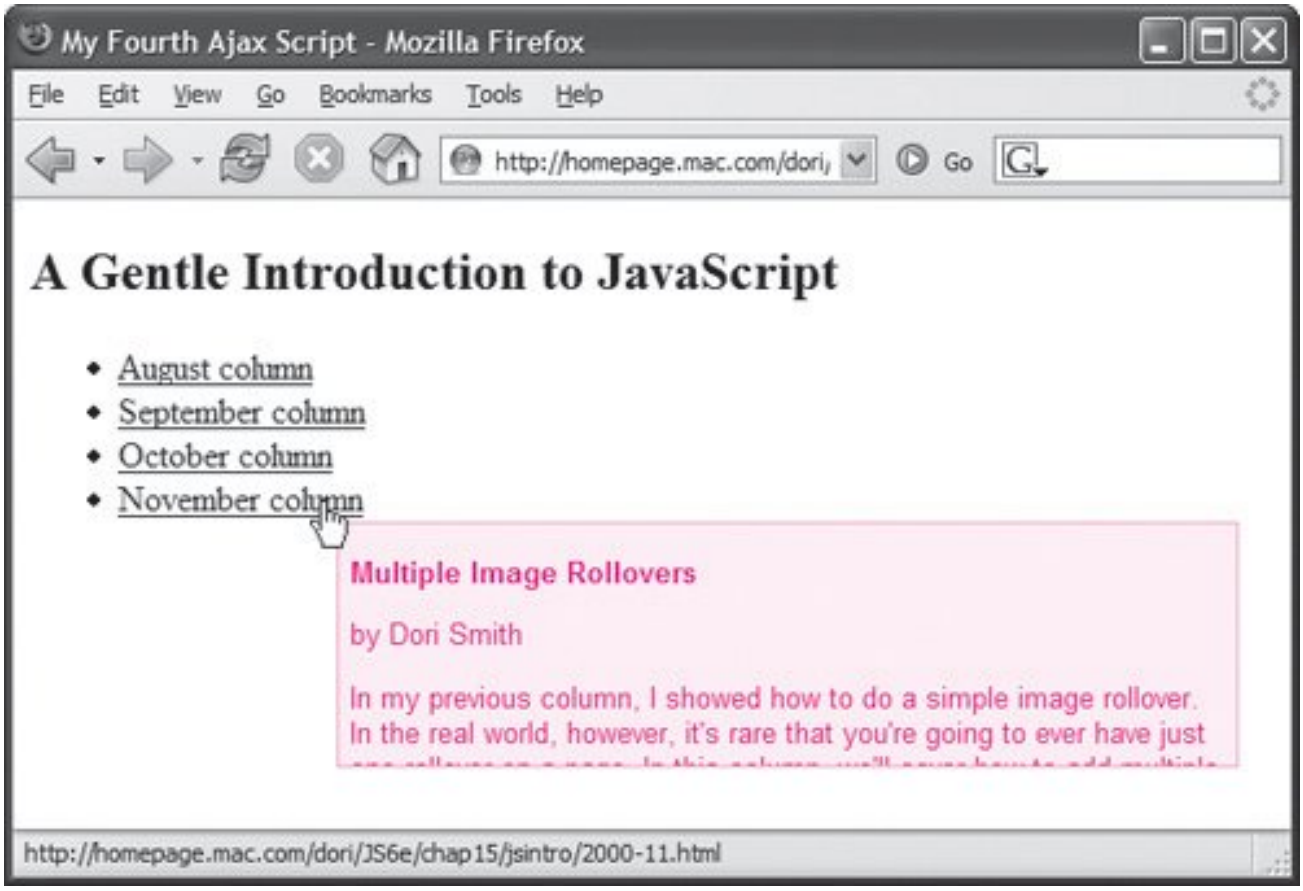
downloaded from: lib.ommolketab.ir

Previewing Links with Ajax

There's a handy and great-looking visual effect that many sites are using now, where, when you hover the mouse pointer over a link, the first few lines of the page that is the link's destination appear in a floating window under the cursor (**Figure 15.5**). This turns out to be a fairly easy-to-create Ajax application. You'll find the HTML in **Script 15.8**, the CSS in **Script 15.9**, and the JavaScript in **Script 15.10**.

Figure 15.5. When you hover over a link, this script reads the HTML file on the server and gives you an overlay containing a preview of the first few lines of the file.

[View full size image]



Script 15.8. This HTML builds the page for the preview example.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
<html>
<head>
     <title>My Fourth Ajax Script</title>
     <link rel="stylesheet" rev="stylesheet" href="script04.css" />
     <script src="script04.js" type="text/javascript" language="Javascript">
     </script>
</head>
<body>
<h2>A Gentle Introduction to JavaScript</h2>
<ul>
     <li><a href="jsintro/2000-08.html">August column</a></li>
     <li><a href="jsintro/2000-09.html"> September column</a></li>
     <li><a href="jsintro/2000-10.html"> October column</a></li>
     <li><a href="jsintro/2000-11.html"> November column</a></li>
</ul>
<div id="previewWin"> </div>
</body>
</html>
```

Script 15.9. This CSS styles the preview pop-up.

```
#previewWin {
     background-color: #FF9;
     width: 400px;
     height: 100px;
     font: .8em arial, helvetica, sans-serif;
     padding: 5px;
     position: absolute;
     visibility: hidden;
     top: 10px;
     left: 10px;
     border: 1px #CC0 solid;
     clip: auto;
     overflow: hidden;
}

#previewWin h1, #previewWin h2 {
     font-size: 1.0em;
}
```

Script 15.10. The JavaScript that allows the server request and the appearance of the pop-up.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
window.onload = initAll;
var xhr = false;
var xPos, yPos;

function initAll() {
     var allLinks = document. getElementsByTagName("a");

     for (var i=0; i< allLinks.length; i++) {
        allLinks[i].onmouseover = showPreview;
     }
}

function showPreview(evt) {
     getPreview(evt);
     return false;
}
function hidePreview() {
     document.getElementById("previewWin"). style.visibility = "hidden";
}
function getPreview(evt) {
     if (evt) {
        var url = evt.target;
     }
     else {
        evt = window.event;
        var url = evt.srcElement;
     }
     xPos = evt.clientX;
     yPos = evt.clientY;

     if (window.XMLHttpRequest) {
        xhr = new XMLHttpRequest();
     }
     else {
        if (window.ActiveXObject) {
           try {
              xhr = new ActiveXObject ("Microsoft.XMLHTTP");
           }
           catch (e) { }
        }
     }

     if (xhr) {
        xhr.onreadystatechange = showContents;
        xhr.open("GET", url, true);
        xhr.send(null);
     }
     else {
        alert("Sorry, but I couldn't create an XMLHttpRequest");
     }
}

function showContents() {
     var prevWin = document.getElementById ("previewWin");
```

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
        prevWin.innerHTML = (xhr.status == 200) ? xhr.responseText : "there was a
problem
 with the request " + xhr.status;
        prevWin.style.top = parseInt(yPos)+2 + "px";
        prevWin.style.left = parseInt(xPos)+2 + "px";
        prevWin.style.visibility = "visible";
        prevWin.onmouseout = hidePreview;
     }
}
```

To use Ajax to preview links:

1. ```
   var allLinks = document. getElementsByTagName("a");
   for (var i=0; i< allLinks.length; i++) {
     allLinks[i].onmouseover = showPreview;
   }
   ```

   Here's our `initAll()` function, which simply plows through all the links on the page and adds an `onmouseover` event handler to each. This event handler will (as you'll see, below) read the destination page and display a preview for the (possible) visitor.

2. ```
   function showPreview(evt) {
     getPreview(evt);
     return false;
   }
   ```

   The `showPreview()` event handler function passes the event triggering the function call to `getPreview()`. That's where the real work will be done.

3. ```
   function hidePreview() {
     document.getElementById ("previewWin").style.visibility = "hidden";
   }
   ```

   If we have a `showPreview()` function, we need a `hidePreview()`, right? Here's ours, and all it does is set the preview window back to its hidden level of visibility.

downloaded from: lib.ommolketab.ir
   ```

downloaded from: lib.ommolketab.ir

```
  var url = evt.target;
}
else {
  evt = window.event;
  var url = evt.srcElement;
}
xPos = evt.clientX;
yPos = evt.clientY;
```

Here in `getPreview()`, the first thing we need to do is figure out what file we want to read, and that's done by looking at the properties of the event. Depending on which browser your visitor is using, the URL is in either `evt.target` or `window.event.srcElement`. Once we've got that, we can grab the `x` and `y` positions of the mouse for later use.

5.
```
var prevWin = document. getElementById("previewWin");

if (xhr.readyState == 4) {
```

Having used Ajax to read the file, we're now down in the `showContents()` function. We store the `previewWin` element for later use in `prevWin`, and when `xHR.readyState` is 4, it's time to show off.

6. [View full width]
```
prevWin.innerHTML = (xhr.status == 200)? xhr.responseText : "There was a problem with the
 request " + xhr.status;
prevWin.style.top = parseInt(yPos)+ 2 + "px";
prevWin.style.left = parseInt(xPos)+2 + "px";
prevWin.style.visibility = "visible"; prevWin.onmouseout = hidePreview;
```

If everything's fine, then `xHR.status` is 200 and the data we want to put into `prevWin.innerHTML` is in `xhr.responseText`. If not, we put the error message there instead.

Once that's done, it's simply a matter of figuring out where to place the preview window, and that's where those `x` and `y` mouse coordinates come in handy. It's a pop-up, so we put it just below and to the right (2 pixels over and 2 down) of the cursor position that triggered this call.

Lastly, we set `prevWin` to be visible, and we let JavaScript know that `prevWin` should be hidden when the cursor moves off the preview.

✓ Tips

- The data being read is in HTML format. Putting `xhr.responseText` into `innerHTML` tells the browser that when the preview window displays, it should interpret the HTML as, well, HTML. If you wanted something else to display (say, for instance, that you wanted to see

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

preview.

- Ajax requires that the file being read reside on the same serverbut it doesn't require that it be in the same directory. If the page you're reading in is in a different directory, and the page contains relative links, then those links will not work. If your pages refer to a particular CSS file, or images, or JavaScript, you won't be able to preview those particular parts of the file. The same solution applies here as well: modify `prevWin.innerHTML` before displaying it.

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Auto-Completing Form Fields

A first-rate way to help your site's visitors is to lessen the drudgery of data entry into fields. Helping them fill out forms that have a large number of choices saves them time and effort, and additionally helps provide your site with valid data.

For this example, **Script 15.11** (HTML), **Script 15.12** (CSS), and **Script 15.13** (JavaScript) automatically show a list of U.S. states that match the letters the user types into a form field (**Figure 15.6**). As the user continues typing, the list shrinks until there is only one state left; this is then automatically put into the entry field, and the list goes away.

Script 15.11. This simple HTML provides the form field that will be auto-completed.

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN">
<html>
<head>
     <title>My Fifth Ajax Script</title>
     <link rel="stylesheet" rev="stylesheet" href="script05.css" />
     <script src="script05.js" type="text/javascript" language="Javascript">
     </script>
</head>
<body>
     <form action="#">
        Please enter your state:<br />
        <input type="text" id="searchField" autocomplete="off" /><br />
        <div id="popups"> </div>
     </form>
</body>
</html>
```

Script 15.12. The CSS here styles the search field and the pop-up menu.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
     font: 1.2em arial, helvetica, sans-serif;
}

.suggestions {
     background-color: #FFF;
     padding: 2px 6px;
     border: 1px solid #000;
}

.suggestions:hover {
     background-color: #69F;
}

#popups {
     position: absolute;
}

#searchField.error {
     background-color: #FFC;
}
```

Script 15.13. This JavaScript handles the server request and the pop-up display.

[View full width]

```
window.onload = initAll;
var xhr = false;
var statesArray = new Array();

function initAll() {
     document.getElementById("searchField"). onkeyup = searchSuggest;

     if (window.XMLHttpRequest) {
        xhr = new XMLHttpRequest();
     }
     else {
        if (window.ActiveXObject) {
           try {
              xhr = new ActiveXObject ("Microsoft.XMLHTTP");
           }
              catch (e) { }
        }
     }

     if (xhr) {
        xhr.onreadystatechange = setStatesArray;
        xhr.open("GET", "us-states.xml", true);
        xhr.send(null);
     }
     else {
        alert("Sorry, but I couldn't create an XMLHttpRequest");
     }
```

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
function setStatesArray() {
     if (xhr.readyState == 4) {
        if (xhr.status == 200) {
           if (xhr.responseXML) {
              var allStates = xhr.responseXML. getElementsByTagName("item");
              for (var i=0; i<allStates.length; i++) {
                 statesArray[i] = allStates[i]. getElementsByTagName ("label")[0].firstChild;
              }
           }
        }
        else {
           alert("There was a problem with the request " + xhr.status);
        }
     }
}

function searchSuggest() {
     var str = document.getElementById ("searchField").value;
     document.getElementById("searchField"). className = "";
     if (str != "") {
          document.getElementById("popups"). innerHTML = "";

          for (var i=0; i<statesArray.length; i++) {
              var thisState = statesArray[i]. nodeValue;

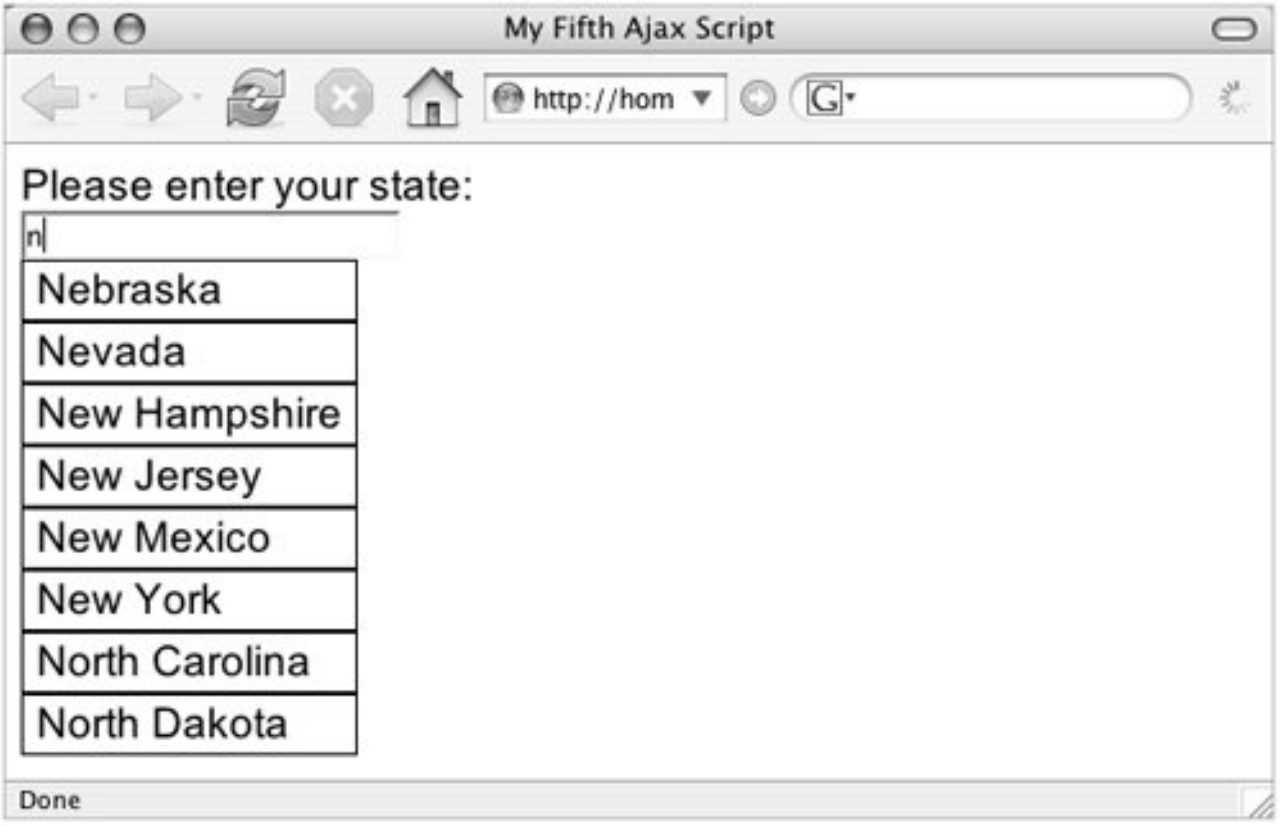
              if (thisState.toLowerCase().indexOf (str.toLowerCase()) == 0) {
                 var tempDiv = document. createElement("div");
                 tempDiv.innerHTML = thisState;
                 tempDiv.onclick = makeChoice;
                 tempDiv.className = "suggestions";
                 document.getElementById("popups"). appendChild(tempDiv);
              }
          }
          var foundCt = document.getElementById ("popups").childNodes.length;
          if (foundCt == 0) {
             document.getElementById ("searchField").className = "error";
          }
          if (foundCt == 1) {
             document.getElementById ("searchField").value = document.getElementById(
 "popups"). firstChild.innerHTML;
             document.getElementById("popups"). innerHTML = "";
          }
     }
}

function makeChoice(evt) {
     var thisDiv = (evt) ? evt.target : window.event.srcElement;
     document.getElementById("searchField"). value = thisDiv.innerHTML;
      document.getElementById("popups"). innerHTML = "";
}
```

Figure 15.6. As you type, the number of possible choices narrows.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir



To build auto-completing form fields:

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
<input type="text" id="searchField" autocomplete="off" /><br />
<div id="popups"> </div>
```

Here's the bit of HTML that we care about. The one tricky (and non-standards compliant) part: that `autocomplete` attribute. It tells browsers not to do any auto-completion on this field, as we'll be handling it with the script. While it isn't part of any W3C recommendations, `autocomplete`, like `XMLHttpRequest` itself, has excellent cross-browser support.

2.
```
document.getElementById ("searchField").onkeyup = searchSuggest;
```

In order to grab and process each keystroke, we need an event handler, and here's ours, set in `initAll()`.

3.
```
xhr.onreadystatechange = setStatesArray;
xhr.open("GET", "us-states.xml", true);
xhr.send(null);
```

Unlike those photographs earlier in this chapter, the names of the United States aren't likely to change. We can read the XML file (Script 15.3) in once, initialize our array, and safely assume that our list will still be valid at the end of this session.

4.
```
if (xhr.responseXML) {
  var allStates = xhr.responseXML. getElementsByTagName("item");
  for (var i=0; i<allStates.length; i++) {
     statesArray[i] = allStates[i]. getElementsByTagName("label") [0].firstChild;
  }
}
```

Here's where we read that file in, looking at each `item` node, finding the `label` node inside, and then storing `label`'s `firstChild`the name of the state itself. Each of them goes into a slot in the `StatesArray` array.

5.
```
var str = document.getElementById ("searchField").value;
document.getElementById ("searchField").className = "";
```

When you start typing in the field, you'll end up here, in the `searchSuggest()` event handler function. We start off by getting the value of `searchField`, which is whatever has been typed so far. Next, we clear that field's `class` attribute.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
  document.getElementById("popups"). innerHTML = "";
```

If nothing's been entered, we don't want to do anything, so there's a check here to make sure that the user's entry has a value before we start popping up possibilities. If there's something there, we then blank out the previous list of possibilities.

7.
```
for (var i=0; i<statesArray.length; i++) {
  var thisState = statesArray[i]. nodeValue;
```

Now, we loop through the list of states, storing the current state we're looking at in `thisState`.

8.
```
if (thisState.toLowerCase().indexOf (str.toLowerCase()) == 0) {
```

We want to see if what they've entered so far is part of a state namebut that alone isn't sufficient; we also have to make sure that what they've entered is at the beginning of the name. If you type in `Kansas`, you don't want to see a drop-down box asking if you want `Arkansas` or `Kansas`, after all. And so long as we're doing that check, we'll also force the comparison to be lowercase on both sides before checking `indexOf()`.

If `indexOf()` returns 0that is, the entered string was found starting at position 1 of `thisState`then we know we have a hit.

9.
```
var tempDiv = document. createElement("div");
tempDiv.innerHTML = thisState;
tempDiv.onclick = makeChoice;
tempDiv.className = "suggestions";
document.getElementById("popups"). appendChild(tempDiv);
```

Because this state is a possibility, we want to add it to the list that will display. That's done by creating a temporary `div`, setting its `innerHTML` to the name of the state, adding an `onclick` handler and `className`, and then appending the whole to the `popups div`. Adding each state as a separate `div` allows us to manipulate each using JavaScript and CSS.

10.
```
var foundCt = document. getElementById("popups"). childNodes.length;
```

When we've looped through all the states, we're done setting up the `popups`but how many do we have? We calculate that, the `foundCt`, here.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
   document.getElementById ("searchField").class Name = "error";
}
```

If `foundCt` is 0, they've entered something unexpected. We let them know that by setting the `class Name` to "`error`", which causes the entry field to display with a pale yellow background (based on a CSS style rule in Script 15.12).

12. [View full width]

```
if (foundCt == 1) {
   document.getElementById ("searchField").value = document.getElementById ("popups")
   .firstChild. innerHTML;
   document.getElementById ("popups").innerHTML = "";
}
```

If `foundCt` is one, however, we know that they've got a unique hit, so we can then put that state into the entry field. If they've typed in `ca`, they shouldn't have to type in `lifornia` also; we already know which state they want. We give them the full state by using the single `div` in `popups` to fill in the entry field, and then we blank out the `popups div`.

13.

```
function makeChoice(evt) {
  var thisDiv = (evt) ? evt.target : window.event.srcElement;
  document.getElementById ("searchField").value = thisDiv.innerHTML;
  document.getElementById ("popups").innerHTML = "";
}
```

Another way the user can enter a state name is to click one from the pop-up list. In that case, the `makeChoice()` event handler function is called. First, we figure out which state the user clicked by looking at the target of the event, and that gives us a particular `div`. Looking at the `innerHTML` for that `div` gives us the state name, and we put that into the entry field. And finally, we clear out the pop-up list of possibilities.

✓ Tips

- You can see an advanced example of this technique at Google Suggest (labs.google.com/suggest/). As you type into what looks like the usual Google search field, a pop-up list appears with search results. As you type, the search results are continually filtered in the list.
- You may have noticed that this task and the last spent a lot more time and effort making things look good than actually demonstrating Ajax, XML, and server-side technologies. That's because much of what has come to be known (or at least thought of by some) as Ajax involves not just the underlying technology but also the way the technology works. How to make that all much simpler is the goal of Chapter 16.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Chapter 16. Ajax Toolkits

Here's what we didn't tell you in the last chapter: writing Ajax applications can be difficult. They often require a great deal of knowledge of working with the DOM, CSS, JavaScript, and server resources. Since this is a book for beginning scripters, we've shown you how to do some easy things with Ajax, so you can see that learning Ajax techniques is well within your reach. But many books have been written that are completely devoted to showing intermediate-to-advanced scripters how to create Ajax applications, and our Ajax chapters are no substitute for that kind of in-depth exploration.

Does that mean that you can't make good use of Ajax on your sites, even though you're not yet a total JavaScript wizard? Not at all! This chapter shows you how to take advantage of *Ajax toolkits*: prewritten, already-programmed libraries of functions that make it easy for you to bring the power of Ajax to your projects.

There are many Ajax toolkits available for download, and most of them are free. For this chapter, we're using the Yahoo! User Interface (YUI) Library (developer.yahoo.com/yui/). YUI is a freely downloadable, open-source set of utilities and controls that help you build interactive Web applications. We think it's one of the best. In this chapter, we'll show you how to use YUI to enable the user to drag-and-drop page elements; add calendar objects; create overlays and pop-up windows; add cool animation effects to your pages; and finally, embed a light-weight debugger right in your page to help you create your applications.

Understanding and Using the Yahoo! Global Object

All of the examples in this chapter require you to download the entire Yahoo! User Interface Library, which is available as a downloadable ZIP archive from Sourceforge (sourceforge.net/projects/yui). When you download and unpack the archive, you'll get a folder with subfolders containing all of the library components (`build`), documentation files (`docs`), and an `examples` folder. You'll need to upload the particular JavaScript and CSS files you'll be using from the `build` folder to your server, and in the `<link>` and `<script>` tags in your XHTML pages, you'll need to specify the paths to those files.

The files you'll need to upload will vary, depending on the library components that you'll be using, but all of them require the Yahoo! Global Object, `yahoo.js`. This file provides the namespace that contains all YUI code (that is, the `YAHOO` objects referred to in step 5 on page 394). You must include the Yahoo! Global Object on every page that uses a YUI component, and it must appear on the page before any of the other components, so that it loads first. YUI components that require other components to work are said to be *dependent* on those components, and a component can require more than one *dependency*.

You include the Yahoo! Global Object by adding a `<script>` tag that specifies it, like so:

```
<script type="text/javascript" src="yui/yahoo.js"></script>
```

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

their dependencies.

Note that this means that you're running these files off your own server, so if and when Yahoo! upgrades its code, you won't get the fixes automatically. Be sure to check back regularly to see if there are newer versions available.

PREV NEXT

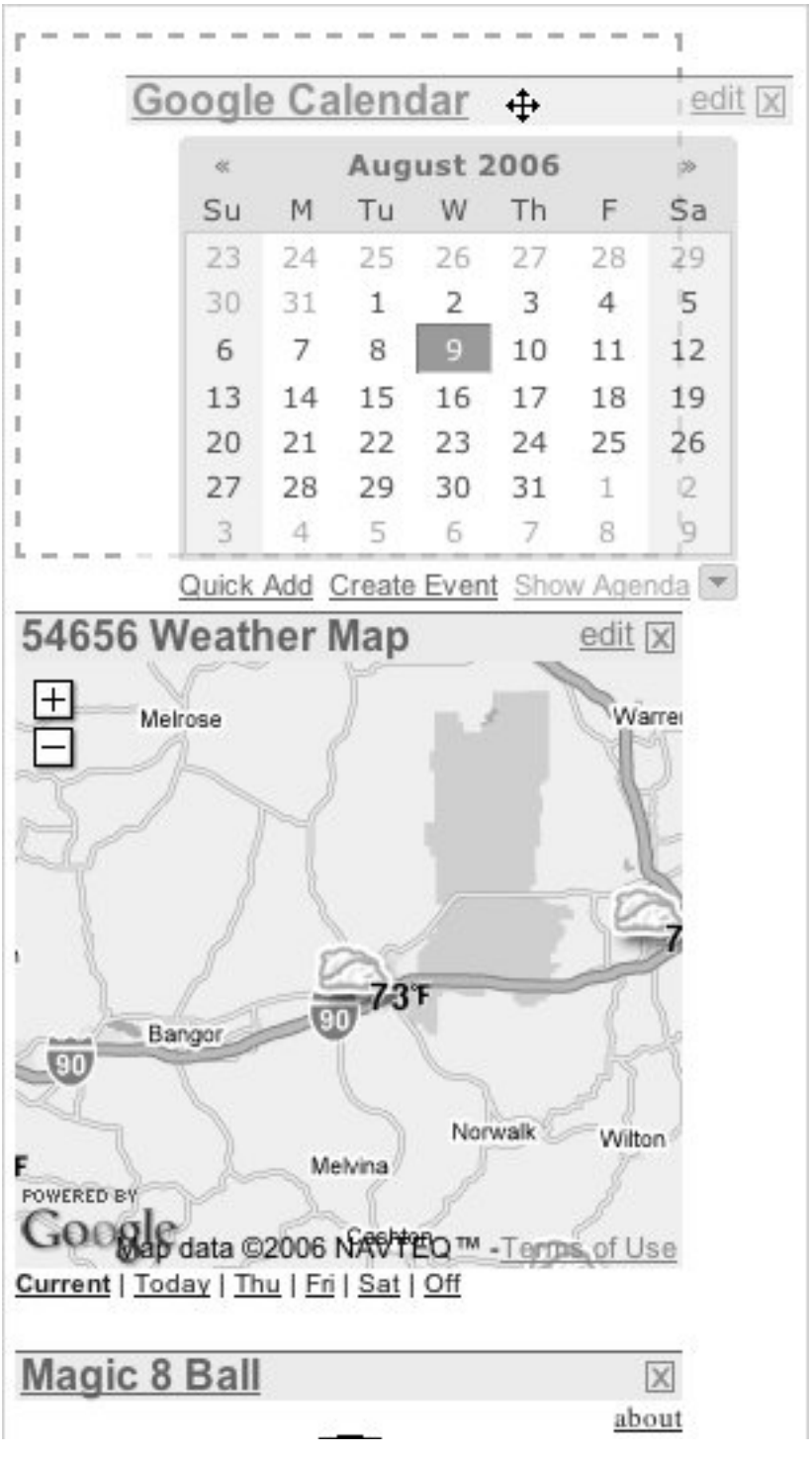
downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Dragging and Dropping Page Elements

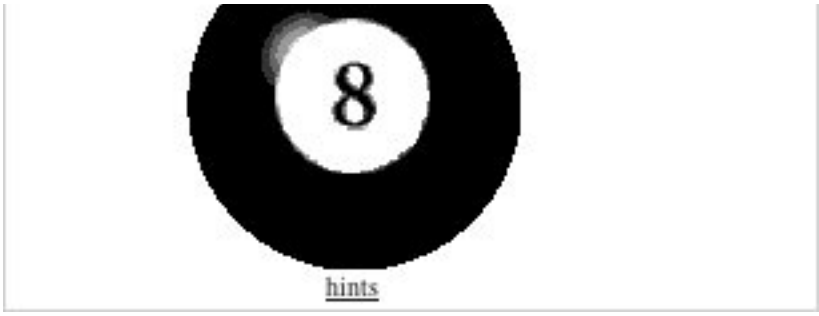
One of the nicest Ajax effects is the ability to drag-and-drop page elements to suit your preferences. You see this implemented on the personalized My Yahoo! and Google pages, which allow you to move around customizable modules (**Figure 16.1**).

Figure 16.1. You can drag modules around on your personalized Google home page.



downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir



In this example, we've created a virtual light-table page for a Web-based slideshow (**Figure 16.2**). You can drag and drop the images into a particular order on the page. If this was a complete Web application, you could then click the Build it! button to create and play the slideshow in the order you chose. The HTML for the page is in **Script 16.1**, the CSS in **Script 16.2**, and the JavaScript in **Script 16.3**.

Figure 16.2. Drag the images around to arrange them in the Slideshow Builder.

[View full size image]

Script 16.1. This HTML creates the Slideshow Builder page and calls six YUI files and two of our own.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN">
<html>
<head>
     <title>Drag and Drop</title>
     <link type="text/css" rel="stylesheet" href="yui/screen.css" />
     <link type="text/css" rel="stylesheet" href="script01.css" />
     <script type="text/javascript" src="yui/yahoo.js"></script>
     <script type="text/javascript" src="yui/event.js"></script>
     <script type="text/javascript" src="yui/dom.js"></script>
     <script type="text/javascript" src="yui/dragdrop.js"></script>
     <script type="text/javascript" src="yui/DDList.js"></script>
     <script type="text/javascript" src="script01.js"></script>
</head>
<body>
     <h1>Slideshow Builder</h1>
     <ul>
        <li id="li0" class="sortList"><img src="images/IMG_1225.jpg" alt="IMG_1225.
jpg"
width="128" height="96"/></li>
        <li id="li1" class="sortList"><img src="images/IMG_1213.jpg" alt="IMG_1213.
jpg"
width="128" height="96"/></li>
        <li id="li2" class="sortList"><img src="images/IMG_1368.jpg" alt="IMG_1368.
jpg"
width="128" height="96"/></li>
        <li id="li3" class="sortList"><img src="images/IMG_1251.jpg" alt="IMG_1251.
jpg"
width="128" height="96"/></li>
        <li id="li4" class="sortList"><img src="images/IMG_1260.jpg" alt="IMG_1260.
jpg"
width="128" height="96"/></li>
        <li id="li5" class="sortList"><img src="images/IMG_1234.jpg" alt="IMG_1234.
jpg"
width="128" height="96"/></li>
        <li id="li6" class="sortList"><img src="images/IMG_1267.jpg" alt="IMG_1267.
jpg"
width="128" height="96"/></li>
     </ul>
     <br clear="all" />
     <div>
        <form action="#">
           <input id="build" type="submit" value="Build it!" />
           <input id="revert" type="reset" value="Revert"/>
        </form>
     </div>
</body>
</html>
```

Script 16.2. Styling for Slideshow Builder is courtesy of this CSS.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
h1, form {
     margin-left: 40px;
}

li {
     list-style-type: none;
     float: left;
     margin: 0 16px 16px 0;
}

.sortList {
     width: 130px;
     }

ul {
     width: 600px;
}
```

Script 16.3. This JavaScript calls the YUI libraries and makes the drag and drop work.

[View full width]

```
YAHOO.DDApp = function() {
     return {
        init: function() {
           for (j=0; j<7; j++) {
              new YAHOO.example.DDList("li" + j);
           }
           YAHOO.util.DDM.mode = 1;
        }
     }
} ();
YAHOO.util.Event.addListener(window, "load", YAHOO.DDApp.init);

YAHOO.example.DDList.prototype.onDragOver = function(e, id) {
     var el;

     el = ("string" == typeof id) ? YAHOO.util.DDM.getElement(id): YAHOO.util.DDM
.getBestMatch(id).getEl();
     var midY = YAHOO.util.DDM.getPosY(el) + (Math.floor(el.offsetTop / 2));
     var midX = YAHOO.util.DDM.getPosX(el) + (Math.floor(el.offsetLeft / 2));

     if (YAHOO.util.Event.getPageY(e) < midY) {
        var el2 = this.getEl();
        var p = el.parentNode;
        p.insertBefore(el2, el);
     }
```

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
        var el2 = this.getEl();
        var p = el.parentNode;
        p.insertBefore(el2, el);
    }
};
```

To enable drag and drop for page elements:

1.
```
<link type="text/css" rel="stylesheet" href="yui/screen.css"/>
<link type="text/css" rel="stylesheet" href="script01.css" />
```

Most of the work done by YUI is handled almost entirely just by including links to its files in our HTML page. Here in Script 16.1, we've added a link to the YUI `screen.css` file, which is then followed by a link to our `script01.css` file. One of the handiest parts of the CSS cascade is that if there's something we don't like about Yahoo!'s styles, all we have to do is override a style in our own style sheet, and then link to it after theirs.

2.
```
<script type="text/javascript" src="yui/yahoo.js"></script>
<script type="text/javascript" src="yui/event.js"></script>
<script type="text/javascript" src="yui/dom.js"></script>
<script type="text/javascript" src="yui/dragdrop.js"></script>
<script type="text/javascript" src="yui/DDList.js"></script>
<script type="text/javascript" src="script01.js"></script>
```

What went for CSS goes for JavaScript as well. However, there's a lot more JavaScript work going on behind the scenes, so we have to bring in several YUI JavaScript libraries. Here, we're bringing in `yahoo.js`, `event.js`, `dom.js`, `dragdrop.js`, and `DDList.js` before ending with our own `script01.js`.

What's in each of those files? One of the best parts of using a toolkit is that you don't have to learn all the detailsfollow Yahoo!'s examples and directions, and your code should work. One thing to always remember, though: you need to start off with Yahoo!'s `yahoo.js` file, as it sets up some global variables used by all of Yahoo!'s components.

3. [View full width]
```
<li id="li0" class="sortList"> <img src="images/IMG_1225.jpg" alt="IMG_1225.jpg"
 width="128" height="96"/></li>
```

Here's one of the images on our page. It's inside a list tag, because we're using YUI's drag-and-drop list handler (see `DDList.js`, above) to handle our dragging and dropping needs.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
  list-style-type: none;
  float: left;
  margin: 0 16px 16px 0;
}
```

Inside Script 16.2, we set the list style to not display as a list. While it needs to be one internally, there's no reason for it to look like one on the screen.

5.
```
YAHOO.DDApp = function() {
  return {
    init: function() {
       for (j=0; j<7; j++) {
         new YAHOO.example.DDList ("li" + j);
       }
       YAHOO.util.DDM.mode = 1;
    }
  }
} ();
```

The code in Script 16.3 may look a little different than what you've seen previously in this book, but it's all a matter of coding style. Here, we're setting up some things to happen when the page first loads: calling `YAHOO.example.DDList()` to set up our `list items`, and setting `YAHOO.util.DDM.mode` to pick one of Yahoo!'s drag-and-drop styles. You'll notice that all of the functions and variables start with `YAHOO`; that's to allow them to coexist with other code and be sure that neither steps on or overwrites the other.

6.
```
YAHOO.example.DDList.prototype. onDragOver = function(e, id) {
```

Once you learn how the Yahoo! naming style works, though, you can use that to your advantage. The method `onDragOver` is normally set deep within the `DDList.js` routinesbut we want to change how it works slightly. To do that, we don't need to step on Yahoo!'s code at all; instead, we just create our own version and put it into our own external `.js` file. Because ours is brought in last, we know that when it comes time to run this function, our version is the one that will be called.

✓ Tips

- In this example, the Build it! button is non-functional; all that works is the drag-and-drop capability. For examples of building slideshows, see Chapters 4 and 14.
- You should also take the time to check out the YUI Library CSS Tools, which are on the same page as the rest of the YUI Library. The CSS Tools include the Grids CSS component, which is a suite of Web page templates that allow you to create grids of one to four columns in each template. This lets you to create more than 100 fully

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

2K in size. There are also the Fonts CSS and CSS Reset components, which give you greater control over font display and HTML rendering, respectively.

- When you download the YUI files, you'll find that they're grouped into various directories depending on what task they're associated with. You don't have to keep them that way, thoughyou can move them around in whatever way works best for your own style. In this chapter, we've moved them all into a `yui` directory of their own, one level below our HTML, CSS, and script pages.

Learning More about YUI

The Yahoo! folks want you to use their toolkit, and they've created a few different places where you can learn about the package and interact with the growing community of users and developers that Yahoo! is building. Check out these resources:

- The main Yahoo! User Interface Library page (`developer.yahoo.com/yui/`) has links to all of the components in the library, with extensive documentation, sample code, and running examples. This should be your first stop.
- The YUI developers have a weblog where they explain how to use the components and highlight innovative uses they've run across. You'll find the blog at `yuiblog.com`.
- If you need a bit more interactivity, there's a Yahoo! Group that allows you to ask and answer questions about YUI. Like all Yahoo! Groups, you can read the discussions on the Web or receive them in your email program as a mailing list. The address for the group is `groups.yahoo.com/group/ydn-javascript/`.

Other Ajax Toolkits

Back in the late 1990s, when Dynamic HTML was the latest rage, there were a variety of DHTML toolkits people wrote and made available. Some of the best were (in effect) written by a couple of guys in a garage somewhere. When the dot-com boom dot-bombed, the toolkits' authors had to get day jobs, and the packages were abandoned and not maintained. So when we looked for Ajax toolkits for this book, we were a bit wary.

We've chosen to discuss the Yahoo! User Interface Library in this chapter, because it is documented, high quality, open-source, and actively supported by a large company, which makes it more likely to stay available for the lifetime of this book. But there are many other good Ajax toolkits available. There are even sites that rate the different toolkits; at press time, our favorite was on the Musings from Mars weblog, at www.musingsfrommars.org/2006/03/ajax-dhtml-library-scorecard.html.

We think that the most important thing you should look for in a toolkit is that it does a great

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

browsers, cross-platform. To us, that list includes Internet Explorer 6 and 7, Firefox for Windows and Mac, Safari for Mac, and Opera for Windows and Mac. It's also important that the toolkit be thoroughly debugged and that it have good documentation.

We suggest that you also take a look at these other toolkits, all of which are popular, are well-supported, have great demos on their sites so you can see if they meet your needs, and are well-documented:

- Dojo (www.dojotoolkit.org)
- MochiKit (www.mochikit.com)
- script.aculo.us (`script.aculo.us`)

If you are working with Adobe Flex and Flash and need an interface between JavaScript and ActionScript, take a look at the Flex-Ajax Bridge (FABridge), an open-source library from Adobe. To find it, go to the Adobe Web site and do a search, or look for the link on the Resources page at www.javascriptworld.com.

Finally, we should mention the Atlas framework from Microsoft (`atlas.asp.net`). It is heavily tied to ASP.NET server-side development. We can only recommend it if you plan to deploy your Web applications only to Microsoft browsers running on Windows, as its cross-platform capabilities, at press time at least, were poor.

PREV NEXT

downloaded from: lib.ommolketab.ir

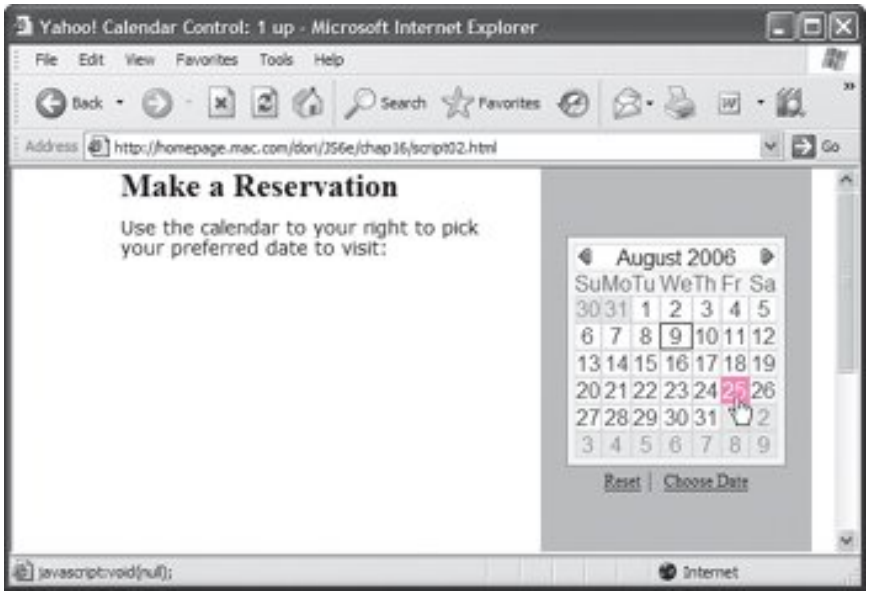
downloaded from: lib.ommolketab.ir

Adding a Calendar to Your Page

Many Web applications need a calendar that the user can refer to and interact with. Reservation forms, to-do lists, navigation for posts on weblogs, the list goes on and on. The YUI library has a good calendar widget that is easy to implement (**Figure 16.3**).

Figure 16.3. When you hover over a future date, the date highlights.

[View full size image]



The simple HTML for our calendar appears in **Script 16.4**. The CSS is in **Script 16.5**, and **Script 16.6** shows you how to add the JavaScript for an interactive, one-up calendar (where only one month appears).

Script 16.4. This relatively simple HTML mostly calls external files for the Calendar example.

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN">
<html>
<head>
     <title>Yahoo! Calendar Control: 1 up</title>
     <link type="text/css" rel="stylesheet" href="yui/reset.css"/>
     <link type="text/css" rel="stylesheet" href="yui/calendar.css"/>
     <link type="text/css" rel="stylesheet" href="script02.css"/>
     <script type="text/javascript" src="yui/yahoo.js"></script>
     <script type="text/javascript" src="yui/event.js"></script>
     <script type="text/javascript" src="yui/dom.js"></script>
     <script type="text/javascript" src="yui/calendar.js"></script>
     <script type="text/javascript" src="script02.js"></script>
</head>
<body>
     <div class="column left">
        <h1>Make a Reservation</h1>
```

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
        <p id="dateClicked"></p>
     </div>
     <div class="column right">
        <div id="cal1Container"></div>
        <a class="navLink" id="resetCal"> Reset</a>|
        <a class="navLink" id="getSelectedDate"> Choose Date</a>
     </div>
</body>
</html>
```

Script 16.5. The Calendar style sheet.

```
a.navLink {
     font-size: 12px;
     text-decoration: underline;
     padding: 5px;
     color: #000;
     cursor:pointer;
}

div.right div {
     margin-left: auto;
     margin-right: auto;
     width: 150px;
}

h1 {
     font-size: 1.5em;
}

.column p {
     margin: 10px 0px;
     font: normal 14px verdana, sans-serif;
     line-height: 15px;
}

.column.right {
     text-align: center;
     background-color: #C2C2D7;
     float: left;
     margin-left: 10px;
     width: 200px;
     padding: 50px 0px;
     height: 425px;
}

.column.left {
     float: left;
     display: inline;
     margin-left: 80px;
     width: 300px;
}
```

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Script 16.6. The JavaScript can get a bit long for the calendar, but it isn't that complex.

[View full width]

```
YAHOO.namespace("calendar");

function init() {
     YAHOO.calendar.cal1 = new YAHOO.widget. Calendar("YAHOO.calendar.cal1", "cal1Container");
     YAHOO.calendar.cal1.render();

     document.getElementById("resetCal"). onclick = YAHOO.calendar.cal1.reset;
     document.getElementById("getSelectedDate"). onclick = showSelected;
}

YAHOO.util.Event.addListener(window, "load", init);

function showSelected() {
     var pickedDate = YAHOO.calendar.cal1. getSelectedDates()[0];
     var outDate = YAHOO.calendar.cal1.Locale. WEEKDAYS_LONG[pickedDate.getDay()] + ", " +
 YAHOO.calendar.cal1.Locale. MONTHS_LONG[pickedDate.getMonth()] + " " + pickedDate.getDate
() + ".";

     document.getElementById("datePicked"). innerHTML = "We're looking forward to seeing
you on " + outDate;
}
```

To add a one-up calendar:

1.
```
<link type="text/css" rel="stylesheet" href="yui/reset.css"/>
<link type="text/css" rel="stylesheet" href="yui/calendar.css"/>
```

   For a calendar, we need to include Yahoo!'s `reset.css` and `calendar.css` files in Script 16.4.

2.
```
<script type="text/javascript" src="yui/yahoo.js"></script>
<script type="text/javascript" src="yui/event.js"></script>
<script type="text/javascript" src="yui/dom.js"></script>
<script type="text/javascript" src="yui/calendar.js"></script>
```

   For scripts, we need `yahoo.js` (as always) and `event.js`, `dom.js`, and `calendar.js`. That's in addition to our own CSS and JavaScript files, of course.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

This line of code that starts off Script 16.6 tells the browser that we're going to be working with variables and objects that have to do with YUI's calendar. This way, we not only can't step on non-YUI code, we can't even interfere with code from YUI's other modules.

4.
```
YAHOO.calendar.cal1 = new YAHOO. widget.Calendar("YAHOO.calendar. cal1","cal1Container");
YAHOO.calendar.cal1.render();

document.getElementById("resetCal"). onclick = YAHOO.calendar.cal1.reset;
document.getElementById("getSelected Date").onclick = showSelected;
```

This code, inside the `init()` function, is all called when the page is first loaded. We start off by creating a new calendar object: `cal1`, and we tell it to render (that is, create itself) on the screen. We also set the event handlers for two links: `resetCal`, which resets the dates on the calendar, and `getSelectedDate`, which allows a user to choose a date on the calendar.

5. [View full width]
```
var pickedDate = YAHOO.calendar. cal1.getSelectedDates()[0];
var outDate = YAHOO.calendar.cal1. Locale.WEEKDAYS_LONG[pickedDate. getDay()] + ", " +
 YAHOO.calendar. cal1.Locale.MONTHS_LONG [pickedDate.getMonth()] + " " + pickedDate.getDate
() + ".";

document.getElementById ("datePicked").innerHTML = "We're looking forward to seeing you
 on " + outDate;
```

Sometimes, you'll want your Web application to do something that isn't already built in to YUI, and that's what's happening here. We want our picked date to display in a friendly manner on the screen after the user selects a date. In step 4, we told the `showSelected()` function that it was to handle that event, and here's the code. The YUI toolkit has the date we want stored in `YAHOO.calendar.cal1.getSelectedDates()[0]`. That's not the friendliest (or the shortest, or most memorable) variable, so we start off by putting it into the `pickedDate` variable instead.

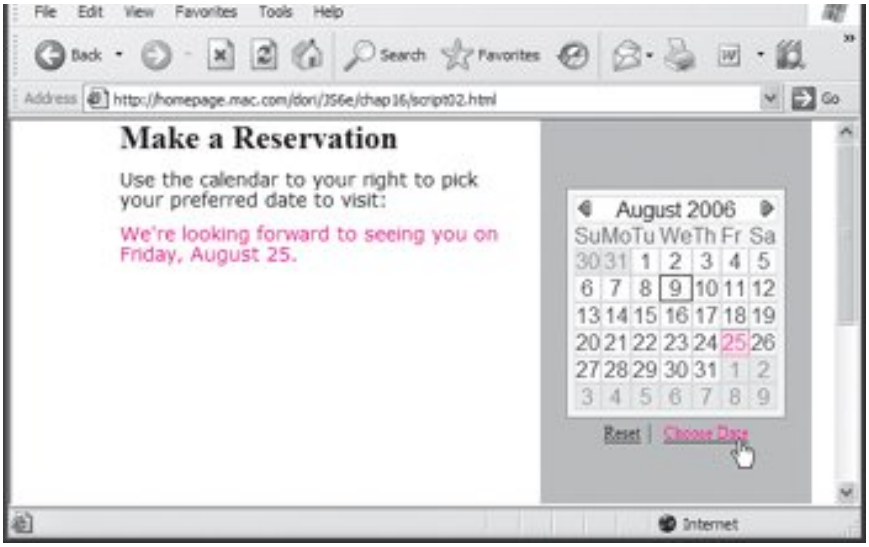
Next, we set `outdate` to be the string that we want displayed on the screen. We could use the date methods you learned in Chapter 13, but it's simpler to use the ones built into YUI: `YAHOO.calendar.cal1.Locale.WEEKDAYS_LONG` and `YAHOO.calendar.cal1.Locale.MONTHS_LONG` are arrays that contain the names of the days of the week and the months of the year, respectively. And to finish, we set `datePicked`'s `innerHTML` to display our message (**Figure 16.4**).

Figure 16.4. Clicking the Choose Date link adds a message to the text and locks the date into the calendar.

[View full size image]

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir



✓ Tip

- It's so simple to do a single calendar with YUI that you'd expect writing a standard 2-up calendar would be similar. Unfortunately, while it's still much easier than writing it from scratch, there's no simple, "just add this" method to go from one to anotherwhich is why it's a task of its own, next.

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Adding a 2-up Calendar to Your Page

Sometimes you only need one calendar: appointments, restaurant reservations, what have you. But 2-up calendars are also seen frequently; they're used for events that begin and end on different dates. You'll often see them used when making hotel reservations and purchasing plane tickets, for instance. **Script 16.7** (HTML), **Script 16.8** (CSS), and **Script 16.9** (JavaScript) show you how to do a two-up calendar (**Figure 16.5**).

Script 16.7. This HTML sets up the pop-up menus and the library calls.

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN">
<html>
<head>
     <title>Yahoo! Calendar Control: 2 up</title>
     <link type="text/css" rel="stylesheet" href="yui/reset.css"/>
     <link type="text/css" rel="stylesheet" href="yui/calendar.css"/>
     <link type="text/css" rel="stylesheet" href="script02a.css"/>
     <script type="text/javascript" src="yui/yahoo.js"></script>
     <script type="text/javascript" src="yui/event.js"></script>
     <script type="text/javascript" src="yui/dom.js"></script>
     <script type="text/javascript" src="yui/calendar.js"></script>
     <script type="text/javascript" src="script02a.js"></script>
</head>
<body>
<h1>Select your check-in and check-out dates:</h1>
<div id="sel1">
     <select id="selMonth1" name="selMonth1">
        <option value="Jan">Jan</option>
        <option value="Feb">Feb</option>
        <option value="Mar">Mar</option>
        <option value="Apr">Apr</option>
        <option value="May">May</option>
        <option value="Jun">Jun</option>
        <option value="Jul">Jul</option>
        <option value="Aug">Aug</option>
        <option value="Sep">Sep</option>
        <option value="Oct">Oct</option>
        <option value="Nov">Nov</option>
        <option value="Dec">Dec</option>
     </select>
     <select name="selDay1" id="selDay1">
        <option value="1">1</option>
        <option value="2">2</option>
        <option value="3">3</option>
        <option value="4">4</option>
        <option value="5">5</option>
        <option value="6">6</option>
        <option value="7">7</option>
        <option value="8">8</option>
```

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
        <option value="10">10</option>
        <option value="11">11</option>
        <option value="12">12</option>
        <option value="13">13</option>
        <option value="14">14</option>
        <option value="15">15</option>
        <option value="16">16</option>
        <option value="17">17</option>
        <option value="18">18</option>
        <option value="19">19</option>
        <option value="20">20</option>
        <option value="21">21</option>
        <option value="22">22</option>
        <option value="23">23</option>
        <option value="24">24</option>
        <option value="25">25</option>
        <option value="26">26</option>
        <option value="27">27</option>
        <option value="28">28</option>
        <option value="29">29</option>
        <option value="30">30</option>
        <option value="31">31</option>
     </select><img id="dateLink1" src="images/ pdate.gif" alt="cal button" border="0" />
</div>
<div id="sel2">
     <select id="selMonth2" name="selMonth2">
        <option value="Jan">Jan</option>
        <option value="Feb">Feb</option>
        <option value="Mar">Mar</option>
        <option value="Apr">Apr</option>
        <option value="May">May</option>
        <option value="Jun">Jun</option>
        <option value="Jul">Jul</option>
        <option value="Aug">Aug</option>
        <option value="Sep">Sep</option>
        <option value="Oct">Oct</option>
        <option value="Nov">Nov</option>
        <option value="Dec">Dec</option>
     </select>
     <select name="selDay2" id="selDay2">
        <option value="1">1</option>
        <option value="2">2</option>
        <option value="3">3</option>
        <option value="4">4</option>
        <option value="5">5</option>
        <option value="6">6</option>
        <option value="7">7</option>
        <option value="8">8</option>
        <option value="9">9</option>
        <option value="10">10</option>
        <option value="11">11</option>
        <option value="12">12</option>
        <option value="13">13</option>
        <option value="14">14</option>
        <option value="15">15</option>
        <option value="16">16</option>
```

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
        <option value="18">18</option>
        <option value="19">19</option>
        <option value="20">20</option>
        <option value="21">21</option>
        <option value="22">22</option>
        <option value="23">23</option>
        <option value="24">24</option>
        <option value="25">25</option>
        <option value="26">26</option>
        <option value="27">27</option>
        <option value="28">28</option>
        <option value="29">29</option>
        <option value="30">30</option>
        <option value="31">31</option>
     </select><img id="dateLink2" src="images/ pdate.gif" alt="cal button" border="0" />
</div>
<div id="container1"></div>
<div id="container2"></div>
</body>
</html>
```

Script 16.8. The CSS for the 2-up calendar.

```
#sel1 {
     position: absolute;
     left: 148px;
     top: 75px;
}
#sel2 {
     position: absolute;
     left: 303px;
     top: 75px;
}

#selMonth1, #selDay1, #selMonth2, #selDay2 {
     vertical-align: middle;
}

#dateLink1, #dateLink2 {
     vertical-align: middle;
     margin: 5px;
}

#container1, #container2 {
     position: absolute;
     display: none;
}

h1 {
    font-size: 1.5em;
    margin: 50px 0 0 50px;
```

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Script 16.9. This JavaScript is where the action happens for the 2-up calendar.

[View full width]

```
YAHOO.namespace("calendar");
function init() {
     this.today = new Date();

     var thisMonth = this.today.getMonth();
     var thisDay = this.today.getDate();
     var thisYear = this.today.getFullYear();

     this.link1 = document.getElementById("dateLink1");
     this.link2 = document.getElementById("dateLink2");

     this.selMonth1 = document.getElementById("selMonth1");
     this.selDay1 = document.getElementById("selDay1");

     this.selMonth1.selectedIndex = thisMonth;
     this.selDay1.selectedIndex = thisDay-1;

     this.selMonth2 = document.getElementById("selMonth2");
     this.selDay2 = document.getElementById("selDay2");

     this.selMonth2.selectedIndex = thisMonth;
     this.selDay2.selectedIndex = thisDay-1;

     this.selMonth1.onchange = changeDate1;
     this.selDay1.onchange = changeDate1;
     this.selMonth2.onchange = changeDate2;
     this.selDay2.onchange = changeDate2;

     YAHOO.calendar.cal1 = new YAHOO.widget.Calendar2up("YAHOO.calendar.cal1","container1"
, (thisMonth+1)+"/"+thisYear,(thisMonth+1)+"/"+thisDay+"/"+thisYear);
     YAHOO.calendar.cal1.title = "Select your desired check-in date:";
     YAHOO.calendar.cal1.setChildFunction("onSelect",setDate1);
     YAHOO.calendar.cal1.render();

     YAHOO.calendar.cal2 = new YAHOO.widget.Calendar2up("YAHOO.calendar.cal2","container2"
, (thisMonth+1)+"/"+thisYear,(thisMonth+1)+"/"+thisDay+"/"+thisYear);
     YAHOO.calendar.cal2.title = "Select your desired check-out date:";
     YAHOO.calendar.cal2.setChildFunction("onSelect",setDate2);
     YAHOO.calendar.cal2.render();

     document.getElementById("dateLink1").onclick = showCalendar1;
     document.getElementById("dateLink2").onclick = showCalendar2;
}

function showCalendar1() {
     YAHOO.calendar.cal2.hide();
```

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
     YAHOO.calendar.cal1.outerContainer.style.display="block";
     YAHOO.util.Dom.setXY(YAHOO.calendar.cal1.outerContainer, [pos[0],pos[1]+link1.
offsetHeight+1]);
}

function showCalendar2() {
     YAHOO.calendar.cal1.hide();

     var pos = YAHOO.util.Dom.getXY(link2);
     YAHOO.calendar.cal2.outerContainer.style.display="block";
     YAHOO.util.Dom.setXY(YAHOO.calendar.cal2.outerContainer, [pos[0],pos[1]+link2
.offsetHeight+1]);
}

function setDate1() {
     var date1 = YAHOO.calendar.cal1.getSelectedDates()[0];
     selMonth1.selectedIndex=date1.getMonth();
     selDay1.selectedIndex=date1.getDate()-1;
     YAHOO.calendar.cal1.hide();
}

function setDate2() {
     var date2 = YAHOO.calendar.cal2.getSelectedDates()[0];
     selMonth2.selectedIndex=date2.getMonth();
     selDay2.selectedIndex=date2.getDate()-1;
     YAHOO.calendar.cal2.hide();
}

function changeDate1() {
     var month = selMonth1.selectedIndex;
     var day = selDay1.selectedIndex + 1;
     var year = today.getFullYear();

     YAHOO.calendar.cal1.select((month+1) + "/" + day + "/" + year);
     YAHOO.calendar.cal1.setMonth(month);
     YAHOO.calendar.cal1.render();
}

function changeDate2() {
     var month = selMonth2.selectedIndex;
     var day = selDay2.selectedIndex + 1;
     var year = today.getFullYear();

     YAHOO.calendar.cal2.select((month+1) + "/" + day + "/" + year);
     YAHOO.calendar.cal2.setMonth(month);
     YAHOO.calendar.cal2.render();
}

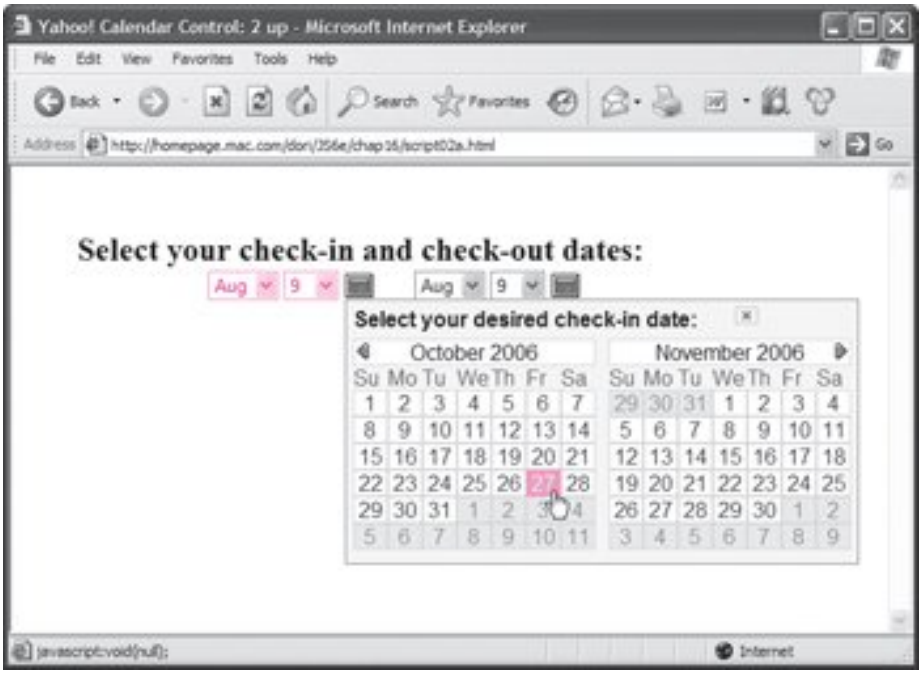
     YAHOO.util.Event.addListener(window, "load", init);
```

Figure 16.5. Click the small calendar icon next to the first set of pop-up menus to bring up the dual calendar, allowing you to choose the first date.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

[View full size image]



To add a two-up calendar:

1.
```
<select id="selMonth1" name= "selMonth1">
   <option value="Jan">Jan</option>
   <option value="Feb">Feb</option>
   <option value="Mar">Mar</option>
   <option value="Apr">Apr</option>
   <option value="May">May</option>
   <option value="Jun">Jun</option>
   <option value="Jul">Jul</option>
   <option value="Aug">Aug</option>
   <option value="Sep">Sep</option>
   <option value="Oct">Oct</option>
   <option value="Nov">Nov</option>
   <option value="Dec">Dec</option>
</select>
```

Script 16.7 needs to allow the user to pick a date, so we have two pop-up menus: one for the month and one for the day of the month.

2.
```
<img id="dateLink1" src="images/pdate.gif" alt="cal button" border="0" />
```

But along with picking a date from pop-ups, it's also possible to click a button and see an actual calendar that lets users pick from a visual display of dates.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
cal1","container1",(thisMonth+1)+ "/"+thisYear,(thisMonth+1)+ "/"+thisDay+"/"+thisYear);
YAHOO.calendar.cal1.title = "Select your desired check-in date:";
YAHOO.calendar.cal1.setChildFunction ("onSelect",setDate1);
YAHOO.calendar.cal1.render();
```

A lot of variables are set in Script 16.9's `init()` routine when the page is loaded, but we're concerned with the ones that handle our new calendars. Here, we create `cal1` (the first of the two 2-up calendars) to be of type `Calendar2up` and initialized to display in the `container1 div`. When it's first displayed, the current month and current day will be selecteddon't let those `+1`'s to the month throw you off; they're there to make the JavaScript month equal to the real-world month. Next we set the title, and then we set the calendar's `onselect` event handler to call the `setDate1()` function. And finally, we render the calendar.

4. [View full width]

```
YAHOO.calendar.cal2.hide(); var pos = YAHOO.util.Dom.getXY (link1);
YAHOO.calendar.cal1.outerContainer. style.display="block";
YAHOO.util.Dom.setXY(YAHOO. calendar.cal1.outerContainer, [pos[0],pos[1]+link1.
  offsetHeight+1]);
```

When it comes time to display the calendar, we're down here in `showCalendar1()`. The first thing that's done here is to hide the second calendar, just in case it's still open. If it's already closed, it doesn't hurt anything. Then we get the X and Y coordinates of the mouse, set the calendar to open as a block, and define where the calendar will display based on where the mouse clicked.

5.

```
var date1 = YAHOO.calendar.cal1. getSelectedDates()[0];
selMonth1.selectedIndex=date1. getMonth();
selDay1.selectedIndex=date1. getDate()-1;
YAHOO.calendar.cal1.hide();
```

We end up in the `setDate1()` function when the user picks a date off the calendar. When that happens, we figure out what date was selected using `YAHOO.calendar.cal1.getSelectedDates()`. Using that, we set the month and day pop-ups to match (**Figure 16.6**) and then hide the calendar.

Figure 16.6. When you click the date in the calendar, it changes the pop-up menus to reflect your choice.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

6.
```
var month = selMonth1.selectedIndex;
var day = selDay1.selectedIndex + 1;
var year = today.getFullYear();

YAHOO.calendar.cal1.select((month+1) + "/" + day + "/" + year);
YAHOO.calendar.cal1.setMonth(month);
YAHOO.calendar.cal1.render();
```

The `changeDate1()` function does the reverse of the `setDate1()` function: given a new pop-up selected date, it changes what will display on the calendar when it's next displayed. The month and day variables are set based on the pop-ups, the year is always set to the current year, and then `YAHOO.calendar.cal1.select()` and `YAHOO.calendar.cal1.setMonth()` are set to change the dates. Finally, `render()` is called to render the calendar display for future use.

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Using the Container Utility

In the parlance of the Yahoo! User Interface Library, a *container* is an object that encloses any kind of content. There are two basic types of containers: *Module* and *Overlay*. The first can appear anywhere on your page, and the user treats it as a single unit (if you allow it to be manipulated). Overlay is an extension of Module that floats above the document's inline content and does not affect the flow of text and images on the page.

There are four other container types related to Overlay. *Tooltip* creates small floating boxes similar to the ones that provide contextual help in operating systems like Windows and Mac OS X. *Panel* mimics an operating system window. *Dialog* creates a standard dialog that can look like a system dialog. And *Simple Dialog* behaves like an operating system alert, with dual choices (Yes/No, OK/Cancel, etc.).

In this example, we've created a new Dialog to act as the preferences for a weather application (**Figures 16.7** and **16.8**). **Script 16.10** shows the HTML, **Script 16.11** the CSS, and **Script 16.12** the JavaScript.

Figure 16.7. The Weather module on this page has an edit link to bring up a preferences dialog.

[View full size image]

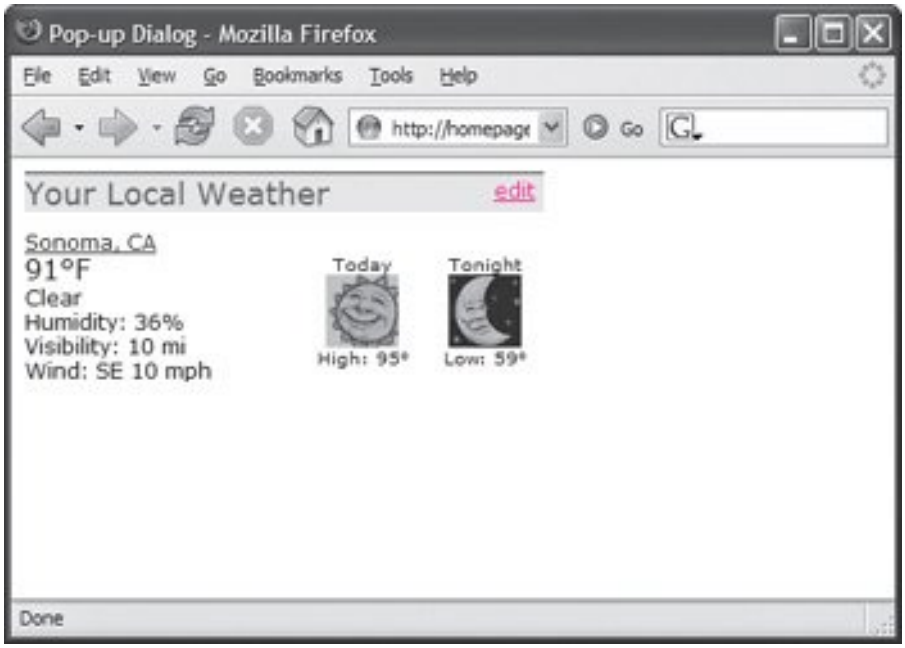
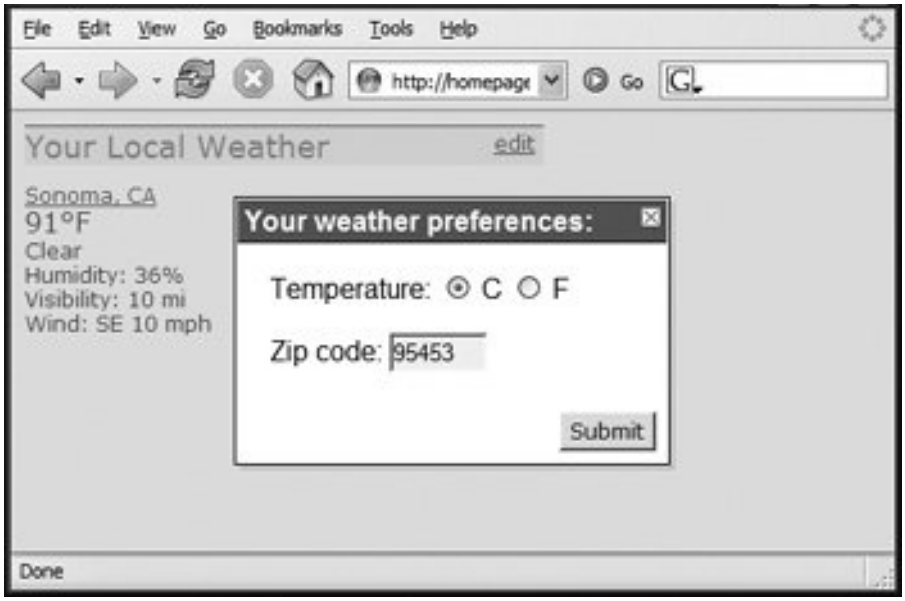


Figure 16.8. The preferences dialog also places an overlay over the rest of the page, bringing the visual focus to the dialog.

[View full size image]

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir



Script 16.10. In this case, we've hard-coded the HTML for the Weather module; in a production application, this would be dynamically generated.

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN">
<html>
<head>
     <title>Pop-up Dialog</title>
     <link type="text/css" rel="stylesheet" href="yui/container.css" />
     <link type="text/css" rel="stylesheet" href="script03.css" />
     <script type="text/javascript" src="yui/yahoo.js"></script>
     <script type="text/javascript" src="yui/event.js"></script>
     <script type="text/javascript" src="yui/dom.js"></script>
     <script type="text/javascript" src="yui/connection.js"></script>
     <script type="text/javascript" src="yui/dragdrop.js"></script>
     <script type="text/javascript" src="yui/container.js"></script>
     <script type="text/javascript" src="script03.js"></script>
</head>
<body>
<div id="WeatherWidget">
     <div id="header">
        <a href="#" id="loadDialog">edit</a>
        <span>Your Local Weather</span>
     </div>
     <a href="#">Sonoma, CA</a><br />
     <div class="weatherFig">
        Tonight<br />
        <img src="images/nt_clear.gif" alt="nt_clear.gif" width="42" height="42" /><br />
        Low: 59&deg;
     </div>
     <div class="weatherFig">
        Today<br />
        <img src="images/clear.gif" alt="clear.gif" width="42" height="42" /><br />
        High: 95&deg;
     </div>
     <span class="big">91&deg;F</span><br />
```

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
     Humidity: 30%<br />
     Visibility: 10 mi<br />
     Wind: SE 10 mph
</div>
<div id="dlg">
     <div class="hd">Your weather preferences:</div>
     <form name="dlgForm" action="#">
        <p><label for="radiobuttons">Temperature:</label>
        <input type="radio" name="radiobuttons[]" value="C" checked="checked" /> C
        <input type="radio" name="radiobuttons[]" value="F" /> F</p>
        <p><label for="zip">Zip code:</label> <input type="text" name="zip" size="5" /></p>
     </form>
</div>
</body>
</html>
```

Script 16.11. This CSS styles the main page and the pop-up dialog.

```
#WeatherWidget {
     font-family: verdana, arial, sans-serif;
     font-size: 12px;
     width: 300px;
}

#header {
     background-color: #E4ECF9;
     border-top: 1px blue solid;
     margin-bottom: 10px;
     color: #36C;
     font-size: 18px;
}

#loadDialog {
     float: right;
     padding: 2px 5px 0 0;
     font-size: 12px;
}

.big {
     font-size: 16px;
}

div.weatherFig {
     float: right;
     text-align: center;
     padding: 0 10px;
     font-size: 10px;
}

form p {
     margin-left: 20px;
}
```

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Script 16.12. The JavaScript for the container.

[View full width]

```
YAHOO.namespace("container");
function init() {
     var handleSubmit = function() {
        this.submit();
     }

     YAHOO.container.dlg = new YAHOO.widget. Dialog("dlg",
        {
          modal:true, visible:false, width:"250px", fixedcenter:true, constraintoviewport:
true, draggable:true
        }
     );

     YAHOO.container.dlg.cfg.queueProperty ("buttons", [ { text:"Submit", handler:
handleSubmit } ]);
     YAHOO.container.dlg.render();

     document.getElementById("loadDialog"). onclick = function() {
        YAHOO.container.dlg.show();
        return false;
     }
}

YAHOO.util.Event.addListener(window, "load", init);
```

To add a pop-up container:

1. `<link type="text/css" rel="stylesheet" href="yui/container.css" />`

   A container has to look like a certain type of container, so here in Script 16.10 is where we bring in `container.css` to handle the style requirements. We'll also bring in `container.js` in the script section.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
  <div class="hd">Your weather preferences:</div>
  <form name="dlgForm" action="#">
     <p><label for="radiobuttons"> Temperature:</label>
     <input type="radio" name="radiobuttons[]" value="C" checked="checked" /> C
     <input type="radio" name="radiobuttons[]" value="F" /> F</p>
     <p><label for="zip">Zip code:</label> <input type="text" name="zip" size="5" /></p>
  </form>
</div>
```

This `div` doesn't look like much when the page first loadsin fact, it doesn't look like anything at all. It's hidden until the user clicks the edit link.

3. [View full width]

```
YAHOO.container.dlg = new YAHOO. widget.Dialog("dlg",
  {
     modal:true, visible:false, width:"250px", fixedcenter: true, constraintoviewport:
  true, draggable:true
  }
);
```

Script 16.12 may look a little odd, but it really is JavaScript, and it's worth getting used to. To be more precise, it's JavaScript Object Notation, or JSON. JSON is a way of treating JavaScript objects as if they were data; that is, they can be passed back and forth as if they were XML. In our standard format, the code above would have been expressed as something like:

```
YAHOO.container.dlg = new YAHOO. widget.Dialog();
YAHOO.container.dlg.modal=true;
YAHOO.container.dlg.visible=false;
YAHOO.container.dlg.width="250px";
YAHOO.container.dlg.fixedcenter= true;
YAHOO.container.dlg. constraintoviewport=true;
YAHOO.container.dlg.draggable=true;
```

4. [View full width]

```
YAHOO.container.dlg.cfg. queueProperty("buttons", [ { text:"Submit", handler: handleSubmit
  } ]);
YAHOO.container.dlg.render();
```

This code adds a Submit button to the dialog and then renders the dialog.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
  YAHOO.container.dlg.show();
  return false;
}
```

When the edit link is clicked, its `onclick` event handler is triggered, which brings us here. The `show()` method simply tells the browser to show the dialog, as seen in Figure 16.8. Lastly, we return false, so that the JavaScript knows to stop processing the link.

✓ Tip

- As we said way back in Chapter 2: there's no one right way to write JavaScript. Some programmers (like the YUI folks) prefer JSON because it's compact and because it does double-duty both as inline code and as a replacement for XML. Due to that, JSON can also be somewhat complex and convoluted, so for the most part we have avoided its use in this book.

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Adding Animation Effects

The Yahoo! User Interface Library's Animation Utility allows you to add many sorts of animated effects to YUI objects. You can make graphics and other objects bigger or smaller; fade them in or out; animate colors; move objects across the page; move them along a specified path; and scroll text fields horizontally, vertically, or both. And of course, the combinations and possibilities are almost endless.

In this example, we're going to show you how to animate the dialog we used in the previous task. The additions to the HTML are in **Script 16.13**, and the ones to the JavaScript are in **Script 16.14**.

Script 16.13. This HTML has a different title and calls additional libraries than Script 16.10, but it is otherwise identical.

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN">
<html>
<head>
     <title>Animation</title>
     <link type="text/css" rel="stylesheet" href="yui/container.css" />
     <link type="text/css" rel="stylesheet" href="script03.css" />
     <script type="text/javascript" src="yui/yahoo.js"></script>
     <script type="text/javascript" src="yui/event.js"></script>
     <script type="text/javascript" src="yui/dom.js"></script>
     <script type="text/javascript" src="yui/connection.js"></script>
     <script type="text/javascript" src="yui/dragdrop.js"></script>
     <script type="text/javascript" src="yui/container.js"></script>
     <script type="text/javascript" src="yui/animation.js"></script>
     <script type="text/javascript" src="script04.js"></script>
</head>
<body>
<div id="WeatherWidget">
     <div id="header">
        <a href="#" id="loadDialog">edit</a>
        <span>Your Local Weather</span>
     </div>
     <a href="#">Sonoma, CA</a><br />
     <div class="weatherFig">
        Tonight<br />
        <img src="images/nt_clear.gif" alt="nt_clear.gif" width="42" height="42" /><br />
        Low: 59&deg;
     </div>
     <div class="weatherFig">
        Today<br />
        <img src="images/clear.gif" alt="clear.gif" width="42" height="42" /><br />
        High: 95&deg;
     </div>
     <span class="big">91&deg;F</span><br />
     Clear<br />
     Humidity: 36%<br />
     Visibility: 10 mi<br />
     Wind: SE 10 mph
</div>
```

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
     <div class= hd >Your weather preferences: </div>
     <form name="dlgForm" action="#">
        <p><label for="radiobuttons"> Temperature:</label>
        <input type="radio" name= "radiobuttons[]" value="C" checked= "checked" /> C
        <input type="radio" name= "radiobuttons[]" value="F" /> F</p>
        <p><label for="zip">Zip code:</label> <input type="text" name="zip" size="5" /></p>
     </form>
</div>
</body>
</html>
```

Script 16.14. The JavaScript that makes the animation happen.

[View full width]

```
YAHOO.namespace("container");
function init() {
     var handleSubmit = function() {
        this.submit();
     }

     YAHOO.container.dlg = new YAHOO.widget. Dialog("dlg",
        {
           modal:true, visible:false, width:"250px", fixedcenter:true, constraintoviewport
:true, draggable:true
        }
     );

     YAHOO.container.dlg.cfg.queueProperty ("buttons", [ { text:"Submit", handler:
 handleSubmit } ]);
     YAHOO.container.dlg.render();

     var myAnim = new YAHOO.util.Anim("dlg");
     myAnim.attributes.opacity = { from: 0, to: 1 };
     myAnim.duration = 2;
     myAnim.method = YAHOO.util.Easing.easeIn;
     myAnim.onComplete.subscribe(showDialog);

     document.getElementById("loadDialog"). onclick = function() {
        myAnim.animate();
        return false;
     }

     function showDialog() {
        YAHOO.container.dlg.show();
     }
}

YAHOO.util.Event.addListener(window, "load", init);
```

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

To add animation to an object:

1. ```
   <script type="text/javascript" src="yui/animation.js"></script>
   ```

   This may be why so much of Web 2.0 is about animating objects such as fade-ins and fade-outs: the only change that needed to be made to Script 16.13 was to bring in YUI's `animation.js` file.

2. ```
   var myAnim = new YAHOO.util.Anim ("dlg");
   myAnim.attributes.opacity = { from: 0, to: 1 };
   myAnim.duration = 2;
   myAnim.method = YAHOO.util.Easing. easeIn;
   myAnim.onComplete.subscribe (showDialog);
   ```

   In Script 16.14, we create a new animation object `myAnim`, based on `dlg`, the dialog object from the previous task. We give it an opacity that will start at zero and end at one (bringing it from invisible to visible), we set the animation's duration to be two seconds, and we set its method to `Easing.easeIn` (a built-in style that tells JavaScript to start off fast but then *ease in* to displaying the object). Finally, we tell the animation that when it's done (that is, when its `onComplete` event handler is triggered), it should call the `showDialog()` function, as it's *subscribed*that is, a function has been signed up to do something after a `myAnim` event has taken place.

3. ```
   myAnim.animate();
   ```

   Now, when someone clicks the edit link, we want the animation to start.

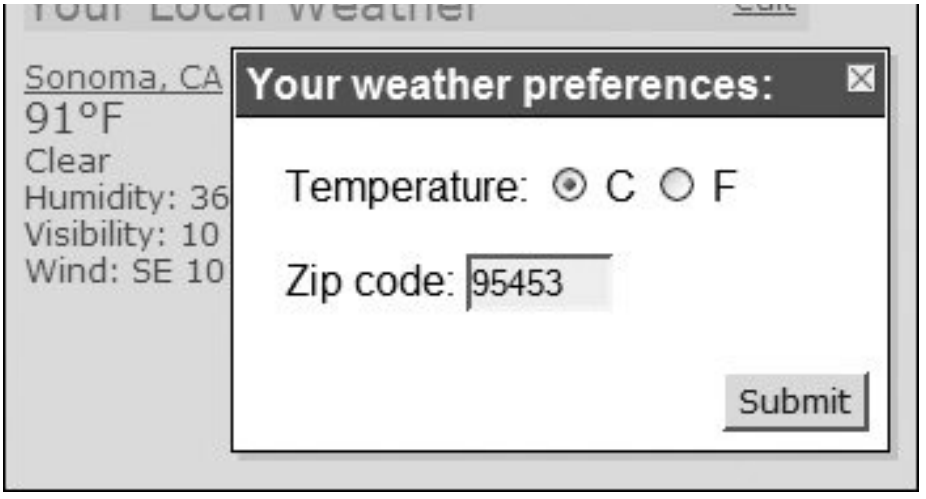
4. ```
   function showDialog() {
     YAHOO.container.dlg.show();
   }
   ```

   When the `showDialog()` event is trigged, we want the `dlg` dialog to display (**Figure 16.9**).

Figure 16.9. We haven't figured out how to add animation on the printed page, but this dialog really did fade in.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir



PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Implementing the Logger Control for Debugging

When you're doing Ajax development, the browser is doing a lot of work behind the scenes, and you can use as much information about what's going on as you can get. That's why we like the Logger control in the Yahoo! User Interface Library. It allows you to see messages about the inner workings of any of the YUI components as they are doing their work. And you can *pipe* (that is, you can write) the output of the Logger to either FireBug (a debugging extension for Firefox) or Safari's JavaScript Console. It's a good tool to help you figure out what's going on when things aren't working exactly as expected.

You can choose to show the Logger on your page if you want instant feedback (**Figure 16.10**), or you can leave it running invisibly in memory and send the output to your external debugger. The HTML in **Script 16.15** and the JavaScript in **Script 16.16** show you how to use the Logger on your development pages.

Figure 16.10. The Logger control can be shown on the page, as here, or it can be hidden to unobtrusively send messages to your debugger.

[View full size image]

Script 16.15. Again, we're calling additional libraries in this HTML page.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
<html>
<head>
     <title>Event Logger</title>
     <link type="text/css" rel="stylesheet" href="yui/container.css" />
     <link type="text/css" rel="stylesheet" href="yui/logger.css" />
     <link type="text/css" rel="stylesheet" href="script03.css" />
     <script type="text/javascript" src="yui/yahoo.js"></script>
     <script type="text/javascript" src="yui/event.js"></script>
     <script type="text/javascript" src="yui/dom.js"></script>
     <script type="text/javascript" src="yui/connection.js"></script>
     <script type="text/javascript" src="yui/dragdrop.js"></script>
     <script type="text/javascript" src="yui/container.js"></script>
     <script type="text/javascript" src="yui/animation.js"></script>
     <script type="text/javascript" src="yui/logger.js"></script>
     <script type="text/javascript" src="script05.js"></script>
</head>
<body>
<div id="WeatherWidget">
     <div id="header">
        <a href="#" id="loadDialog">edit</a>
        <span>Your Local Weather</span>
     </div>
     <a href="#">Sonoma, CA</a><br />
     <div class="weatherFig">
        Tonight<br />
        <img src="images/nt_clear.gif" alt="nt_clear.gif" width="42" height="42" /><br />
        Low: 59&deg;
     </div>
     <div class="weatherFig">
        Today<br />
        <img src="images/clear.gif" alt="clear.gif" width="42" height="42" /><br />
        High: 95&deg;
     </div>
     <span class="big">91&deg;F</span><br />
     Clear<br />
     Humidity: 36%<br />
     Visibility: 10 mi<br />
     Wind: SE 10 mph
</div>
<div id="dlg">
     <div class="hd">Your weather preferences:</div>
     <form name="dlgForm" action="#">
        <p><label for="radiobuttons"> Temperature:</label>
        <input type="radio" name= "radiobuttons[]" value="C" checked="checked" /> C
        <input type="radio" name= "radiobuttons[]" value="F" /> F</p>
        <p><label for="zip">Zip code:</label> <input type="text" name="zip" size="5" /></p>
     </form>
</div>
</body>
</html>
```

Script 16.16. You can specify which messages go to the Logger, as in this

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

[View full width]

```
YAHOO.namespace("container");
function init() {
     var handleSubmit = function() {
        YAHOO.log("Dialog submitted","warn");
        this.submit();
     }

     YAHOO.container.dlg = new YAHOO.widget. Dialog("dlg",
        {
           modal:true, visible:false, width:"250px", fixedcenter:true, constraintoviewport
:true, draggable:true
        }
     );

     YAHOO.container.dlg.cfg.queueProperty ("buttons", [ { text:"Submit", handler
:handleSubmit } ]);
     YAHOO.container.dlg.render();

     var myAnim = new YAHOO.util.Anim("dlg");
     myAnim.attributes.opacity = { from: 0, to: 1 };
     myAnim.duration = 2;
     myAnim.method = YAHOO.util.Easing.easeIn;
     myAnim.onComplete.subscribe(showDialog);

     document.getElementById("loadDialog"). onclick = function() {
        myAnim.animate();
        YAHOO.log("Animation starting now");
        return false;
     }

     var myConfigs = {
        width: "250px",
        right: "10em",
        top: "10%",
        fontSize: "80%"
     };
     var myContainer = null;
     var myLogReader = new YAHOO.widget. LogReader(myContainer, myConfigs);

     function showDialog() {
        YAHOO.container.dlg.show();
        YAHOO.log("Animation ended","warn");
     }
}
YAHOO.util.Event.addListener(window, "load", init);
```

To add the Logger window to your page:

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

By now, you're probably unsurprised that the only changes we need to make to Script 16.15 are to add references to the `logger.css` and `logger.js` files.

2.
```
YAHOO.log("Dialog submitted", "warn");
```

When you want to write out information to the log file, just call `YAHOO.log()`. Here in Script 16.16, we've written a note to ourselves to show that we've hit the code that submits the dialog.

There are five types of messages that logger knows about: info, warn, error, time, and window. This one is a "warn".

3.
```
YAHOO.log("Animation starting now");
```

If we don't include a second parameter at all, the logger will assume that it's an "info" message, and here's one in the `onclick` handler noting that the animation is starting.

4.
```
var myConfigs = {
  width: "250px",
  right: "10em",
  top: "10%",
  fontSize: "80%"
};
```

The code above has used the Logger, but we haven't found the code yet to set it upthat starts here. The configuration setup for the Logger is very flexible; here, we've set it to be 250 pixels wide, 10 ems from the right, and 10% down from the top, and to have fonts that are 80% normal size.

5.
```
var myContainer = null;
var myLogReader = new YAHOO.widget. LogReader(myContainer, myConfigs);
```

And here's where we create the Logger: first we create a new empty container, and then we tell `YAHOO.widget.LogReader()` that that's where we want it to go, and to use the configuration we just created in `myConfigs`. Alternately, we could have created a `div` on the page and then assigned that to the first parameter of `YAHOO.widget.LogReader()`.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Here's another warning message noting that the animation has ended. This one's in the `showDialog()` function.

✓ Tips

- Everyone has their own style of working, and how they like their logs to appear (and even if they like them at all) is a personal choice. What works for us is to create a log file as shown above, but remember: that log file is a movable widget. As such, you can move it almost off the Web page, so you can see what's going on inside your page without the Logger blocking anything. But then when there's a problem, it's right there, and it's easy to bring it back and view its history.
- Now that you've seen a small fraction of what's included in YUI, are you starting to wonder how you'll keep it all straight in your head? The answer is: don't. Instead, grab the downloadable "Cheat Sheets" at `developer.yahoo.com/yui/docs/assets/yui-0.11-cheatsheets.zip`, and you'll have nine single-page PDFs suitable for printing and referring to regularly.

Grading the Browsers

Earlier, we said that an important factor in choosing a toolkit is its support for Web standards and for working cross-browser. Here's how YUI does it:

- **A grade:** These browsers are the most popular and are known and tested by Yahoo!'s QA team. If YUI bugs are found that apply to these browsers, the YUI bugs are fixed.
- **C grade:** These browsers are on the old side and aren't seen muchor at least not currently. Their capabilities are known, and they're not up to snuff to handle the cool modern stuff. They get the "core" experience; that is, they get the content but not the style.
- **X grade:** These browsers are the weird ones. There's always someone out there trying to write their own browser, and Yahoo! can't guarantee what their libraries might do in unknown situations. Because they could be testing versions of new browsers, YUI code serves them as if they're A grademeaning that if they can handle the cutting-edge features, they're fine.

Overall, the breakdown of YUI browser support is at about 96% A grade, 3% C grade, and 1% X grade.

Because Yahoo! has documented its goals and its support requirements, we're comfortable recommending its toolsafter all, you don't want to find yourself in a situation when Firefox 2.0 comes out where your Web application doesn't work and your toolkit's development team is too busy with finals and their high school prom to bring it up to speed to match.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

com/yui/articles/gbs/gbs.html and Yahoo!'s table of graded browsers at developer.yahoo.com/yui/articles/gbs/gbs_browser-chart.html.

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Chapter 17. Bookmarklets

You know that JavaScript can be used to control Web browsers from inside your Web pages. However, you can also use JavaScript to control your browser without using Web pages, by using what are called *bookmarklets*. Bookmarklets are bookmarks (or favorites, if you prefer Internet Explorer's terminology; sometimes bookmarklets are called favelets) that contain a call to the browser's JavaScript interpreter, instead of an external URL. The JavaScript in your bookmarklets can do anything from getting details about images, to giving you the definition of a word, to displaying a graphical chart of all the Web-safe colors. And because you know JavaScript, this functionality is easy to add to make your browser a smarter, better tool.

Bookmarklets differ from other JavaScript code that you'll write because they have a significant and interesting formatting limitation: they must be written all in one line. You'll use semicolons to string commands together.

In this chapter, you'll be introduced to a variety of useful bookmarklets, and with a bit of effort, you'll be able to go forth and write your own.

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Your First Bookmarklet

Okay, **Script 17.1** isn't the most thrilling script you'll ever see. It's a variation on our old friend, the "Hello World" script. But what's important is that you're getting something to happen in a Web browser without ever loading a Web page. This example also demonstrates how to create and use a bookmarklet in the various browsers.

Script 17.1. Yikes! It's the return of "Hello World."

```
javascript:alert('Hello World');
```

To create a bookmarklet (Firefox):

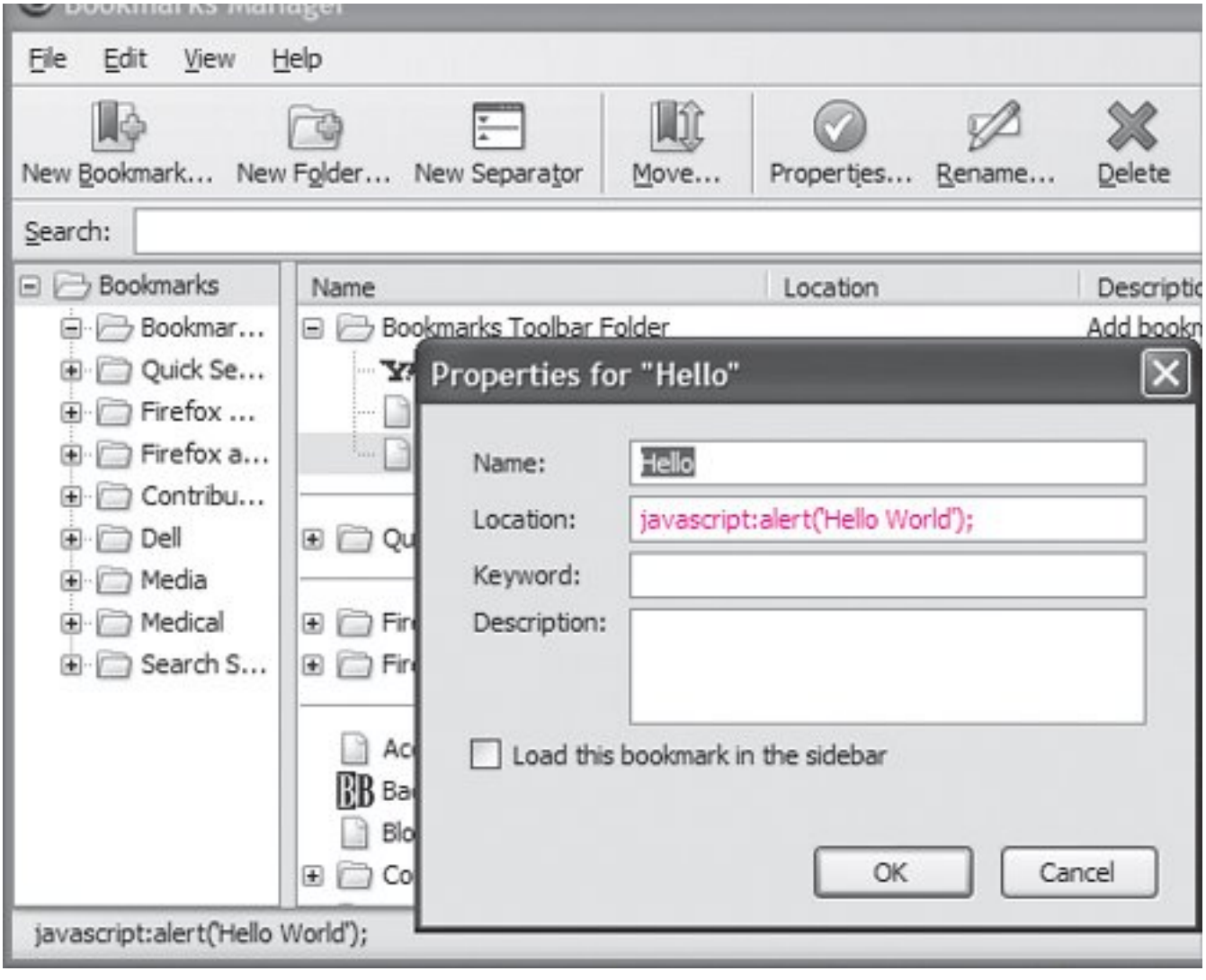
1. From the Bookmarks menu, choose Manage Bookmarks. The Bookmarks Manager opens.
2. From the File menu, choose New Bookmark. The Bookmark Properties dialog opens (**Figure 17.1**).

Figure 17.1. Firefox (for Windows, in this case, but the Mac version is similar) allows you to enter bookmarklets in the Bookmarks Manager.

[View full size image]

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir



3. In the Name field, we type the name we want to appear on the toolbar. In this case, type `Hello`.

4. In the Location field, type `javascript: alert('Hello World');`, and then click OK.

   We'll return to the Bookmarks Manager dialog.

5. Choose the Bookmarks Toolbar Folder to ensure that the new bookmark appears in the Bookmarks Toolbar.

6. Click OK, and close the Bookmarks Manager. Our new button should appear on the Bookmarks Toolbar. Clicking the button activates the command and makes the alert box appear with the text "Hello World."

✓ Tip

- If you can't see the Bookmarks Toolbar in Firefox, choose View > Toolbars > Bookmarks Toolbar to display it.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

To create a bookmarklet (Safari):

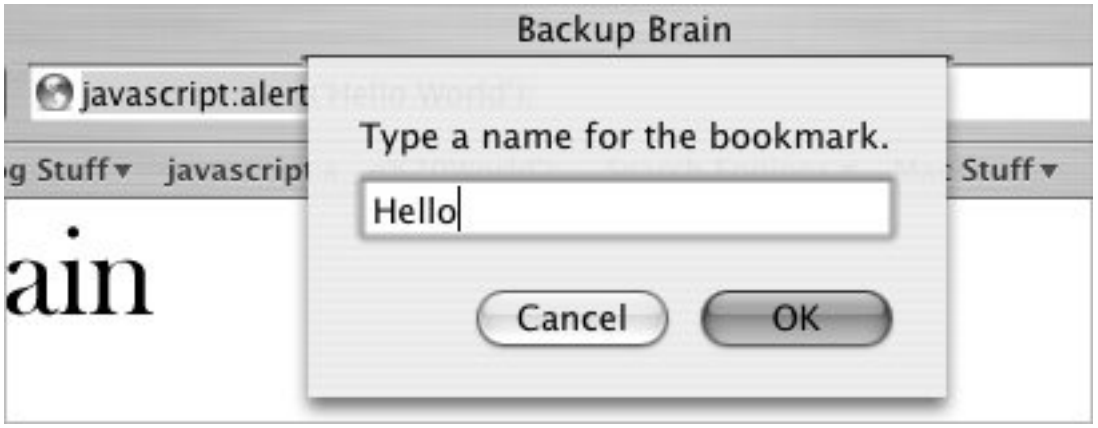
1. Make sure the Bookmarks Bar is visible by making sure that an item in the View menu displays "Hide Bookmarks Bar" and not "Show Bookmarks Bar."

2. In the Address Bar, type `javascript: alert('Hello World');`.

3. Drag the globe icon (to the left of the text you typed) from the Address Bar to the Bookmarks Bar, and release the mouse button.

   A dialog appears, asking us to name the new bookmark (**Figure 17.2**).

Figure 17.2. After entering the bookmarklet code in the Address Bar and dragging it to the Bookmarks Bar, Safari prompts you to enter a name for the bookmarklet.



4. Enter the bookmarklet's name, and then click OK.

   The new bookmarklet appears in the Bookmarks Bar as a button. Click the button to activate the command.

✓ Tips

- You can use Bookmarks > Show All Bookmarks to reposition the bookmarklet from the Bookmarks Bar to the Bookmarks menu, if you prefer.
- To remove a bookmarklet from the Safari Bookmarks Bar, drag it off the bar and into the browser window. It disappears in a puff of animated smoke. If you accidentally delete the wrong bookmark, undo the mistake by pressing Cmd-Z.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

The Origin of Bookmarklets

The original idea came from the Netscape JavaScript Guide, which tells how to add JavaScripts to the Personal Toolbar. Steve Kangas, who now runs the site Bookmarklets.com, coined the term "bookmarklets." His Web site at http://www.bookmarklets.com contains hundreds of useful bookmarklets; this chapter just touches on the possibilities. Some of the examples in this chapter are loosely based on scripts on his site and are used by permission.

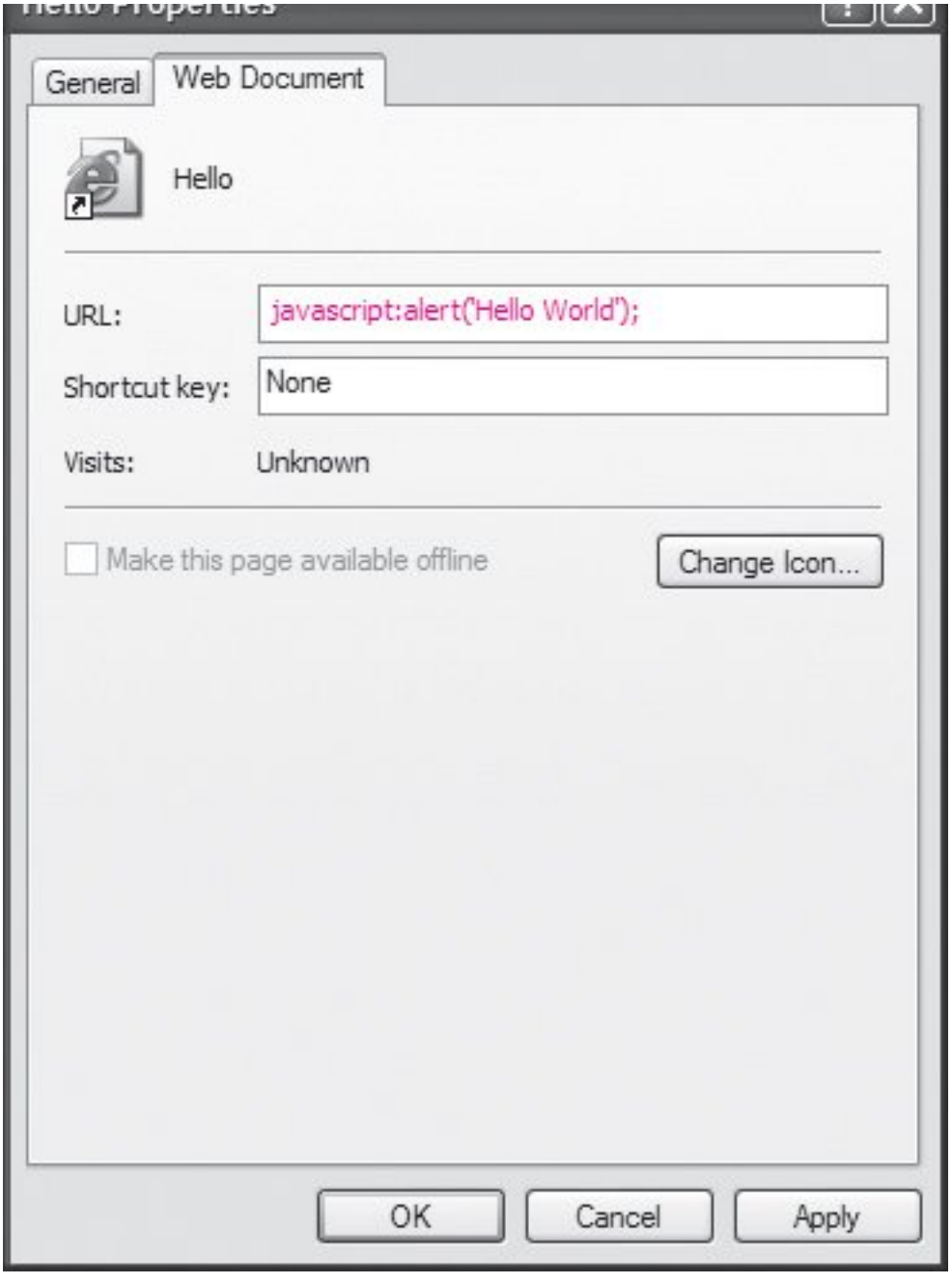
To create a bookmarklet (Internet Explorer 6):

1. From the Favorites menu, choose Add to Favorites. The Add Favorite dialog appears.
2. In the Name field, type `Hello`.
3. In the Create in section of the dialog, choose the Links Folder to ensure that the new bookmark appears in the Links Toolbar, and click OK.
4. Right-click the new "Hello" book- marklet in the Links Toolbar, and choose Properties. The Properties dialog appears. In the URL field, type `javascript:alert('Hello World');`, as shown in **Figure 17.3**, and click OK.

Figure 17.3. Internet Explorer 6 requires you to edit a bookmarklet's properties to add the code.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir



downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

shown in **Figure 17.4**. This is to help prevent malicious scripts from being added to our browser. We're not malicious (at least towards our own computer!), so everything is OK. Click Yes.

Figure 17.4. Internet Explorer adds an extra security dialog.

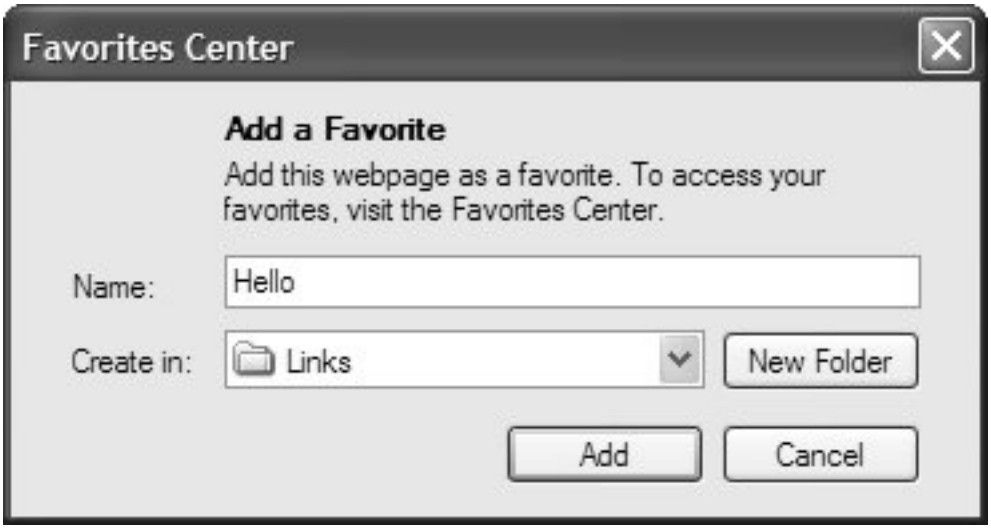
[View full size image]

6. Click the "Hello" button in the Links Toolbar to activate the command.

To create a bookmarklet (Internet Explorer 7):

1. From the Favorites menu, choose Add to Favorites. The Favorites Center dialog appears (**Figure 17.5**).

Figure 17.5. Internet Explorer 7 changes the Favorites dialog a bit.



2. In the Name field, type `Hello`.

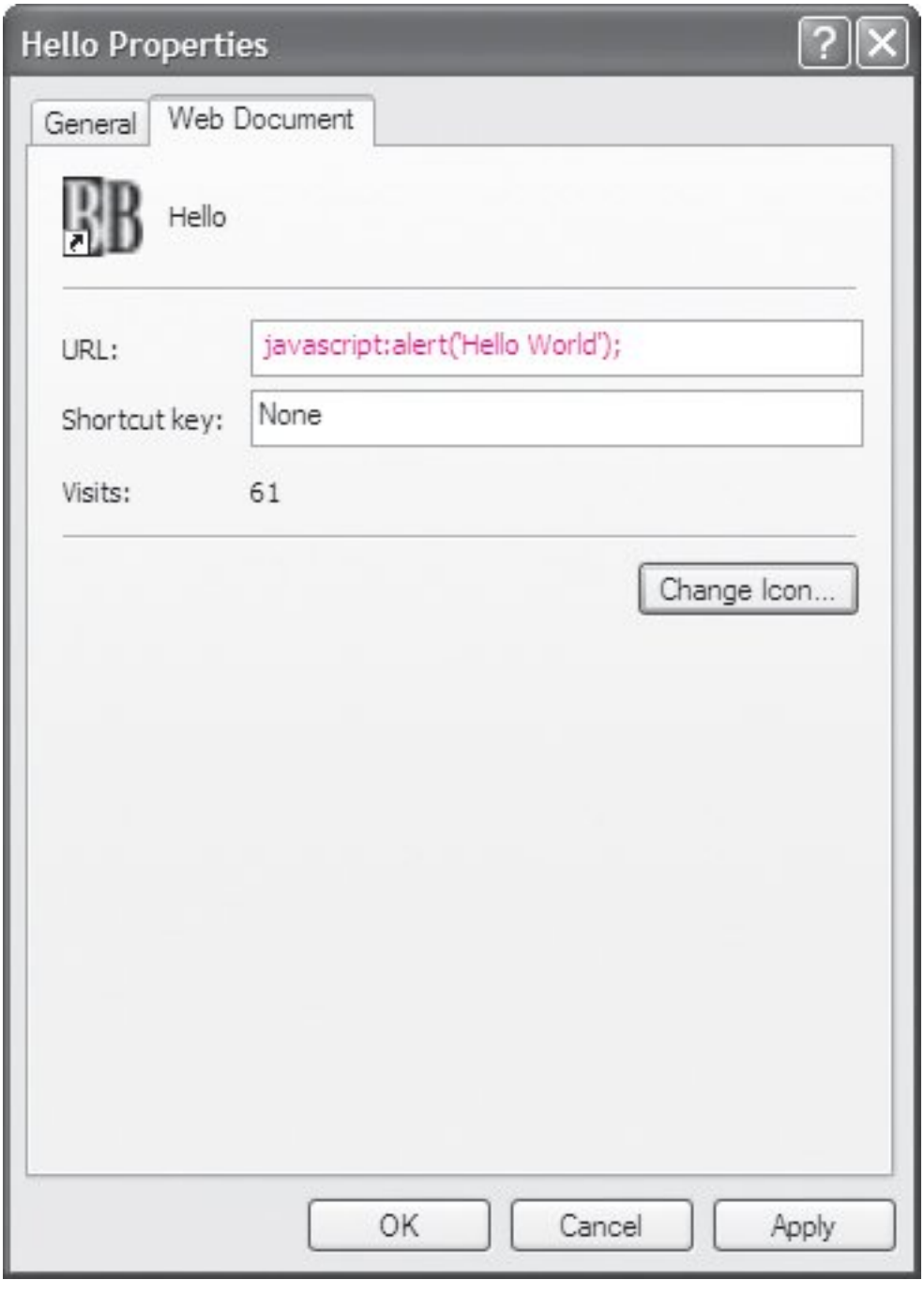
3. In the Create in section of the dialog, choose the Links Folder to ensure that the new bookmark appears in the Links Toolbar, and click Add.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

dialog appears. In the URL field, we type `javascript:alert('Hello World');` (**Figure 17.6**) and, if we're fine with the icon IE assigns to the button (it's usually the icon of the current Web page you're on), click OK.

Figure 17.6. Add the code in IE 7's Properties dialog.

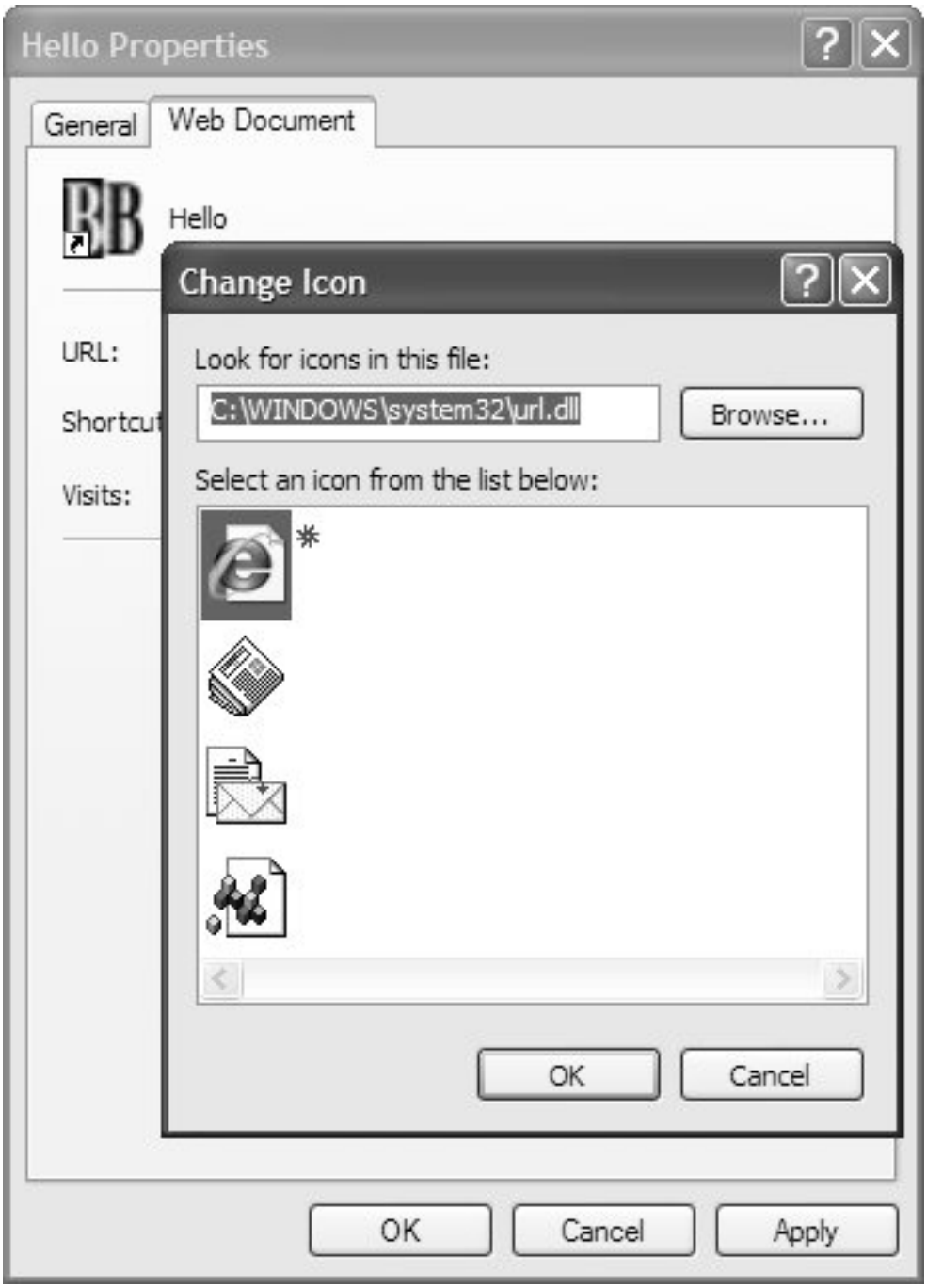


downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

dialog appears (**Figure 17.7**); we choose the icon we want, click OK, and then click OK again to dismiss the Properties dialog.

Figure 17.7. If you want a different icon than the one IE assigns to the bookmarklet, use the Change Icon dialog.



6. The Problem with Shortcut dialog should appear, if IE's security settings are appropriately set. Click Yes.

7. Click the "Hello" button in the Links Toolbar to activate the command.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Bookmarklets vs. IE Security

It's no secret that every version of Microsoft Internet Explorer for Windows has had many security problems, which have been addressed in various ways by Microsoft. Windows XP Service Pack 2 was heavily devoted to beefing up security throughout Windows, including in IE6, and IE7, incorporating more security features, was not even planned to come out before Windows Vista, though Microsoft had to change those plans when Vista was repeatedly delayed.

As of this writing, we're working with a public beta of IE7, and the behavior of bookmarklets between IE6 and IE7 is, in our tests, inconsistent. We've discovered that some bookmarklets can only be run on some pages, and some bookmarklets can't be run at all, depending on a complex combination of which security settings you have enabled in IE. These settings include whether or not you have the pop-up blocker turned on and the many settings in the Security tab of Tools > Internet Options. In short, by adding successive layers of security to IE6 and IE7, Microsoft has made it harder for bookmarklets to work in Internet Explorer. It's possible to get more bookmarklets to work in IE by changing security settings, but because IE has such a terrible history of security problems, we don't recommend that course of action.

Here's our advice: if you have to make a choice between lowering your security levels in IE or not running bookmarklets, we recommend using Firefox instead. This pretty much solves your browser security problems, and you'll get consistent bookmarklet functionality.

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Changing a Page's Background Color

Script 17.2 is simple but powerful. Have you ever visited a site that you knew had lots of useful information, but the background color was so close to the text color that the information was unreadable? Or worse, the page's author used violently clashing colors that made your eyes water? This little bookmarklet solves those problems. Note that at this point, using the bookmarklet changes the way that you're viewing someone else's pagethat's part of the power of bookmarklets. Of course, it doesn't change the actual page, just the way that your browser displays it.

Script 17.2. This script, which changes the background color to white, improves many a design-impaired page.

```
javascript:void(document.bgColor='#FFFFFF');
```

To change the background color:

- `javascript:void(document.bgColor= '#FFFFFF')`;

  This script uses the `document.bgColor` object and resets it to white. Now, we can see what's actually written, as shown in **Figures 17.8** and **17.9**.

Figure 17.8. It's difficult to read the text on the page's original background color.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

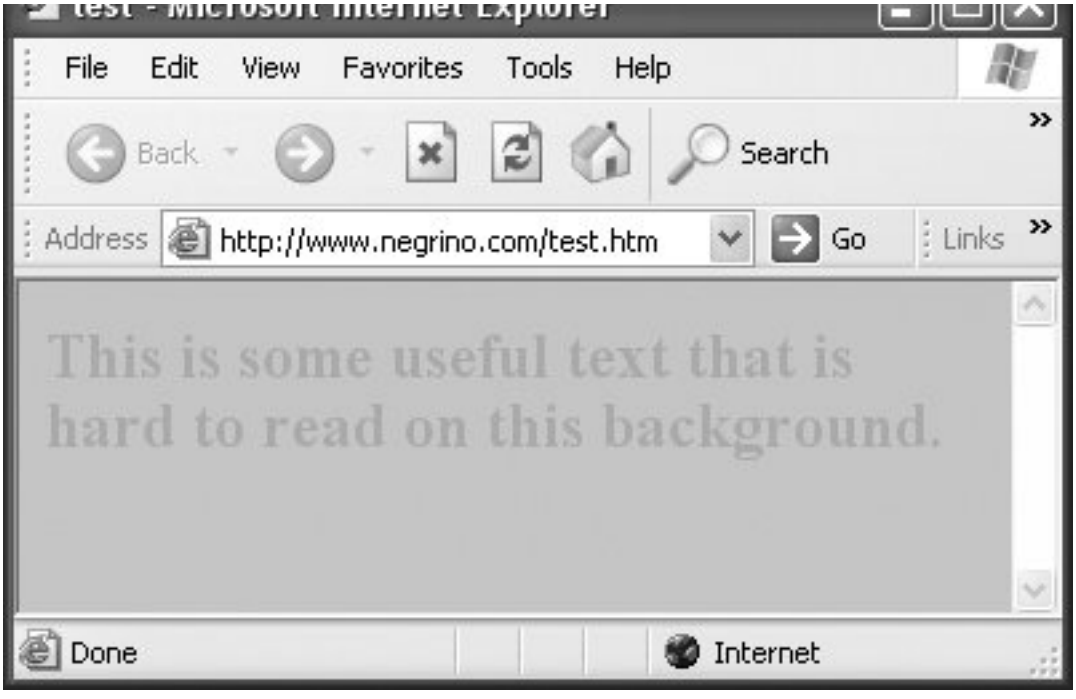


Figure 17.9. Against white, the text is much more legible.

✓ Tips

- Note that the bookmarklet uses the form `javascript:void(command);`. This is because a bookmarklet must return some value, which would normally be used to overwrite the contents of the current page. By using the `void()` method, nothing is returned, and nothing is overwritten.
- Bookmarklets use single quotes, not double quotes. This is because, behind the scenes,

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

bookmarklet prematurely.

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Changing a Page's Styles

The previous example works fine if the background color of an offensive page is set in the page's HTML. But it's ineffective if the page uses style sheets to change the background color. This next bookmarklet (**Script 17.3**) replaces the CSS styles for a page's background color, text color, and link colors. The background color changes to white and the text color to black; links will be blue; and visited links will be purple. For example, you can see these sorts of changes in **Figures 17.10** and **17.11**.

Script 17.3. Don't be thrown off by the gray arrows; they're only there because of the limited size of this book's pages. Remember that the actual bookmarklet is all on one line. This script changes the styles on a page to make it more readable.

[View full width]

```
javascript:var nuStyle=document.createElement ('link');nuStyle.rel='stylesheet';nuStyle.
 href='data:text/css,* {background:#FFF !important; color:#000 !important} :link {color:#00F
  !important} :visited {color:#93C !important}';void (document.documentElement.childNodes[0]
 . appendChild(nuStyle));
```

Figure 17.10. The original page can be a bit difficult to read, so we want to swap out the CSS styles to make it more readable.

[View full size image]

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Figure 17.11. By changing the background and link colors, the page is easier to read.

[View full size image]

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

If you have trouble reading Web pages that use white text on a black background, or you get annoyed at sites that use too-similar colors for links and body text, this is the perfect bookmarklet for you. We use this one more than any other bookmarklet in our day-to-day Web browsing. Once again, we remind you that the bookmarklet just changes the look of the page in your browser, not the page itself. In fact, if you reload the page, it reappears in its original, hard-to-read glory. But with this bookmarklet, visual relief is just a button click away.

To change a page's styles:

1. `var nuStyle=document. createElement('link');`

   This line creates a new `link` element on the page and then stores that element in the new variable `nuStyle`.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

This line creates a new `rel` attribute for the newly created link and then sets its value to `'stylesheet'`. Here, the `rel` attribute tells the browser that we're linking to a style sheet.

3. [View full width]
```
nuStyle.href='data:text/css,* {background:#FFF !important; color:#000 !important} :link
 {color:#00F !important} : visited {color:#93C !important}';
```

This line creates a new `HRef` attribute for the newly created link and sets the styles that we want to add to the page: the background will be white, the text color black, the links blue, and visited links purple. The `! important` forces these styles to override all other styles, and the `*` says that these new styles apply to all elements on the page.

4.
```
void(document.documentElement. childNodes[0].appendChild(nuStyle));
```

This line inserts the new link element into the Web page, causing the new styles to take effect and make the page readable.

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Web-safe Colors

Have you ever wished for a handy online table of Web-safe colors, complete with hex codes? The ones printed in books (and magazines, and even mousepads) never quite match the colors of your monitor. **Script 17.4** shows how you can use a bookmarklet to display a Web-safe color table at any time.

Script 17.4. This script creates a table of Web-safe colors.

[View full width]

```
javascript:var i,j,k,l,t='<table width=100%>', c=new Array('00','33','66','99','CC','FF');
 for(i=0;i<6;i++){for(j=0;j<6;j++){t+= '<tr>';for(k=0;k<6;k++){l=c[i]+c[j]+c[k];t+=
'<td
bgcolor=#'+l+'>'+l+'</td>'}t+= '</tr>'}}void(document.body.innerHTML= t+'</table>');
```

To show a Web-safe color chart:

1. `javascript:var i,j,k,l,t='<table width=100%>',`

   The bookmarklet, as always, starts with `javascript:`. This line also declares the variables `i`, `j`, `k`, `l`, and `t`. That last variable starts to create the table that's later going to be written out.

2. `c=new Array('00','33','66','99', 'CC','FF');`

   Here we create a new array, `c`, which contains all the valid Web-safe color values for red, green, and blue.

3. `for(i=0;i<6;i++){`

   The `i` loop follows the red values. Note that when it is appropriate to use a `{`, it also serves as a separator.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

The `j` loop follows the green values.

5. `t+='<tr>';`

Each row will contain the six color values where the red and green values stay constant, but the blue values vary.

6. `for(k=0;k<6;k++){`

The `k` loop follows the blue values.

7. `l=c[i]+c[j]+c[k];`

The variable `l` will contain each of the 216 values, from "000000" to "FFFFFF", as the three loops vary.

8. `t+='<td bgcolor=#'+l+'>'+l+'</td>'}`

Each cell in the table is assigned a background color and contains the hex value of that color. This step also ends the `k` loop.

9. `t+='</tr>'}}`

The table row ends here, as do the `j` and `i` loops.

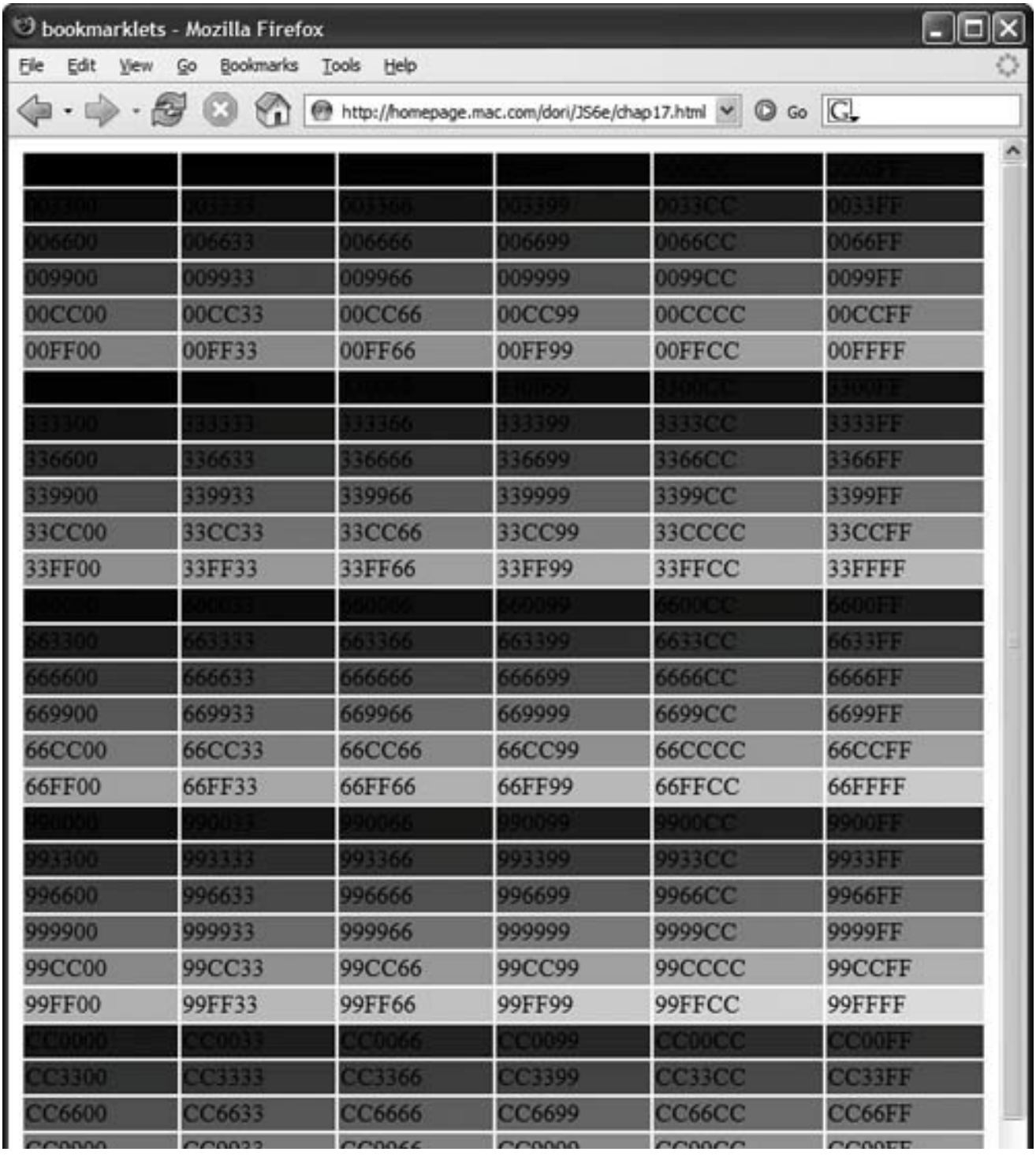
downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

When all the loops are complete, reset `document.body.innerHTML` with the contents of our color chart plus a closing table tag. This displays the entire page, as shown in **Figure 17.12**.

Figure 17.12. The result of this script is a nicely laid out table of Web-safe colors.

[View full size image]



downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

✓ Tip

- As mentioned in this chapter's introduction, a bookmarklet must be a single line of code. Putting the semicolons between statements allows you to put all the commands on a single line.

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Word Lookups

If you use your Web browser for writing (email in particular), you'll find that you wish you had the dictionary and thesaurus tools that are available in most word processors. With **Scripts 17.5**, **17.6**, and **17.7**, you'll be able to have this functionality in all your writing. You do it using a bookmarklet to query an online dictionary or thesaurus. Because the scripts are so similar, we've presented them all in one task. Script 17.5 shows how to do a dictionary lookup in Safari and Firefox, Script 17.6 does a dictionary lookup in IE, and Script 17.7 shows how to do a thesaurus lookup in Safari and Firefox. Because the code is virtually identical to Script 17.6, we've omitted a script to do a thesaurus lookup in IE, trusting you'll be able to figure it out.

Script 17.5. This bookmarklet performs a dictionary lookup in Safari and Firefox.

[View full width]

```
javascript:var inText=window.getSelection()+''; if(!inText){inText=prompt('Word:','')}; if
(inText){void(window.open('http://www. dictionary.com/cgi-bin/dict.pl?db=*&term= '+escape(
inText)+'&x=13&y=11','dictWin', 'width=650,height=600,left=75,top=175, scrollbars=yes'));}
```

Script 17.6. This script does a dictionary lookup in Internet Explorer.

[View full width]

```
javascript:inText=document.selection. createRange().text;if(!inText){inText= prompt('Word:
','')};if(inText){void(window. open('http://www.dictionary.com/cgi-bin/dict.
 pl?db=*&term='+escape(inText)+'&x=13&y= 11','dictWin','width=650,height=600, left=75,
top=175'));}
```

Script 17.7. This bookmarklet performs a thesaurus lookup in Safari and Firefox.

[View full width]

```
javascript:var inText=window.getSelection()+''; if(!inText){inText=prompt('Word:','')} if(
inText){window.open('http://www.thesaurus.com/cgi-bin/search?config=roget&words= '+escape(
inText),'thesWin','width=650, height=600,left=75,top=175')}void(null);
```

To look up a word:

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Here's the standard beginning for all bookmarklets.

2. `var inText=window.getSelection()+'';`

or

```
inText=document.selection. createRange().text;
```

Our code will then use one of the above two lines. The latter works in IE, the former in Safari and Firefox. This line creates a new variable, `inText`, which is set to the value of the selected text in the browser.

Note that in the first line, that very last bit is two single quotes, not one double-quote. That's done because both Safari and Firefox may return something that isn't a string, and this forces the result to be a string.

3. `if(!inText){`

If we didn't select any text, then we'll get the following prompt.

4. `{inText=prompt('Word:','')};`

This prompts the user for the word to look up.

5. `if(inText){`

The user has had two chances, so they should have entered something to look up by now. Even so, we check before doing the look up.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
void(window.open('http://www.dictionary.com/cgi-bin/dict.pl?db= *&term='+escape
(inText)+'&x=13&y= 11','dictWin','width=650,height= 600,left=75,top=175,scrollbars= yes'));}
```

or

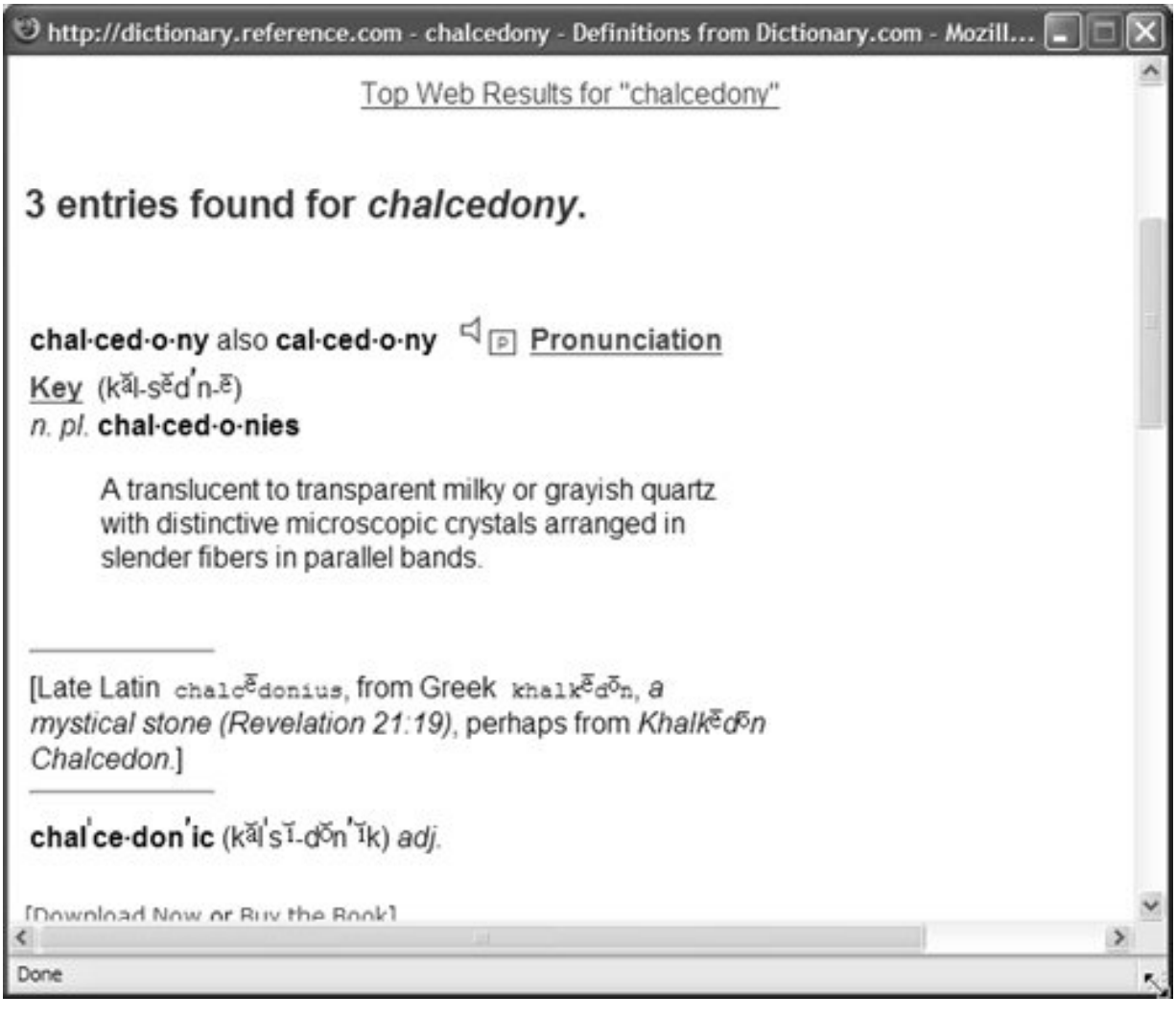
[View full width]

```
window.open('http://www.thesaurus.com/cgi-bin/search?config= roget&words='+escape(inText),
 'thesWin','width=650,height= 600,left=75,top=175')}void(null);
```

We pick one of these two, depending on whether we want to do a dictionary or thesaurus lookup, as shown in **Figures 17.13** and **17.14**. Either opens a new window, with the information that we requested. You can change the window dimensions to fit the size of your screen by changing the `height` and `width` attributes of the `window.open()` call.

Figure 17.13. Triggering the dictionary bookmarklet returns this window with the lookup's results.

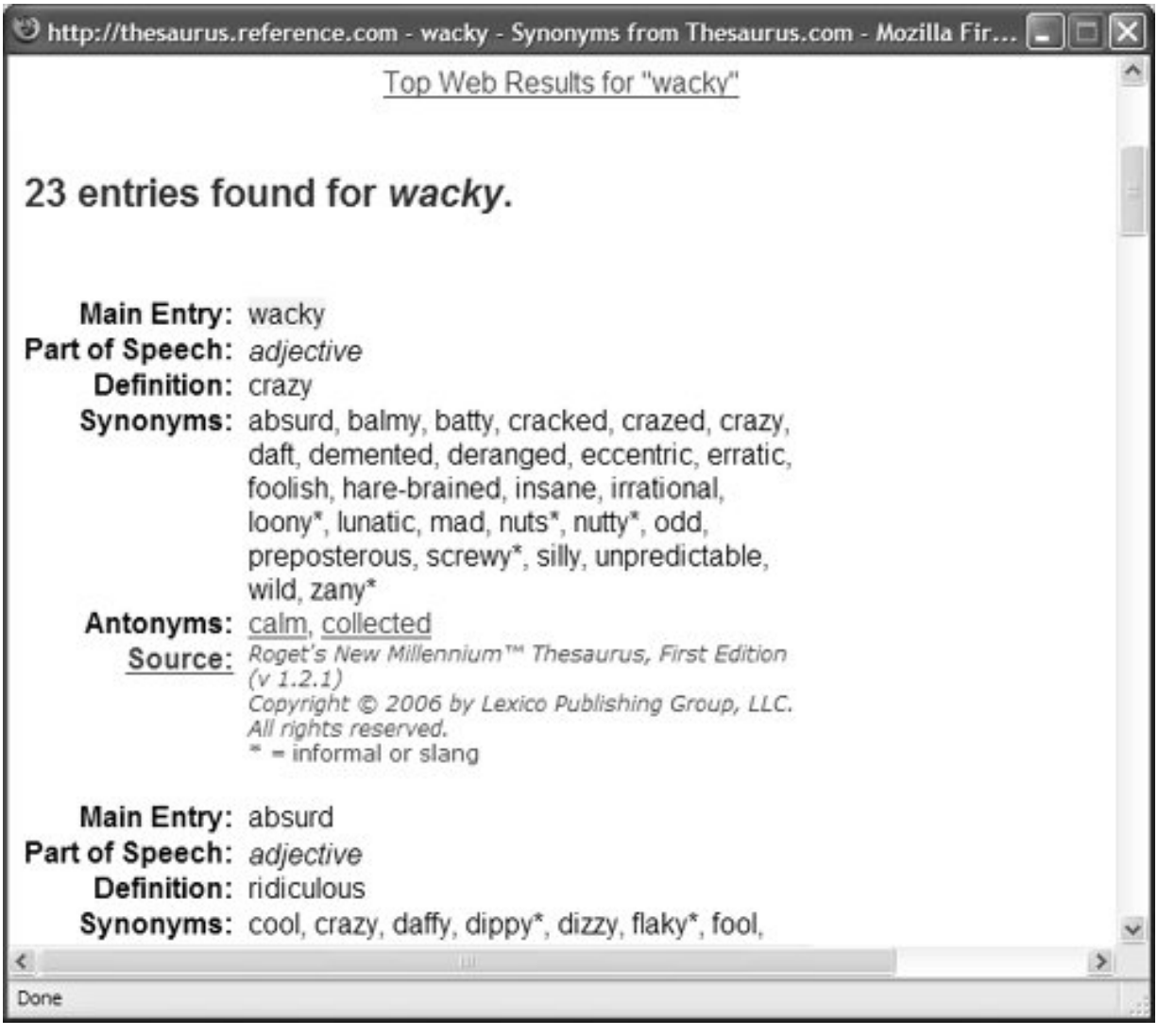
[View full size image]



downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

[View full size image]



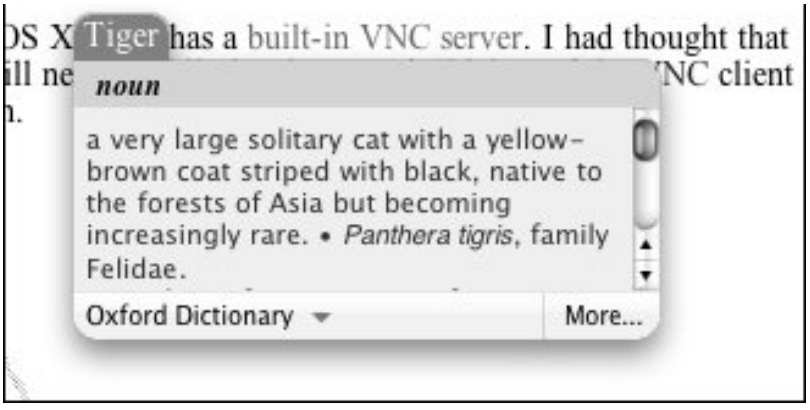
✓ Tip

- This has nothing to do with JavaScript, but it's cool and worth mentioning: if you're on a Mac running Mac OS X 10.4 or later, in Safari or many other programs, you can just place the cursor over a word and press Cmd-Ctrl-D, and the OS pops up a dictionary/thesaurus window, based on the Dictionary application (**Figure 17.15**). This works in any Cocoa-based program (great), so if you use Firefox on the Mac, it doesn't work (bummer). If you don't know what a "Cocoa-based program" is, don't worry about it; just give it a try and see if it works for the program you're in.

Figure 17.15. Under Mac OS X Tiger, a dictionary and thesaurus are built-in.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir



Why the Different Code?

The reason for the variations of the code for different browsers is, as usual, Microsoft's insistence on doing things its way, instead of following agreed-upon Web standards. Differences between browser's DOMs (Document Object Models) dictate that commands with the same results be written differently. That's moreand needlesswork for coders everywhere. Arrrgh.

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Viewing Images

A useful tool for designers is the ability to view all the images on a page, apart from the layout of the page. **Script 17.8** allows you to peek behind the scenes of someone else's page and see a list of the page's individual images, the height and width of the images (in modern browsers), and their URLs.

Script 17.8. You can view a table of page images with this script.

[View full width]

```
javascript:var imgWin,i,outText='',di=document. images;for (i=0;i<di.length;i++){if(
outText. indexOf(di[i].src)<0){outText+='<tr><td> <img src='+di[i].src+'/></td><td>'+di[i].
 height+'</td><td>'+di[i].width+'</td> <td>'+di[i].src+'</td></tr>'}};if(outText
==''){alert('No images!');}else{imgWin= window.open('','IW','width=800,height=600,
 scrollbars=yes');void(imgWin.document.body. innerHTML='<table border=1 cellpadding=10>
<tr><th>Image</th><th>Height</th><th>Width </th><th>URL</th></tr>'+outText+'</table>');}
```

To view images:

1. `javascript:var imgWin,i,outText= '',di=document.images;`

   The bookmarklet starts and initializes four variables: `imgWin`; `i`; `outText`, which will later contain all the output; and `di`, which contains the `document.images` object.

2. `for (i=0;i<di.length;i++){`

   We now loop through each image in the document.

3. `if(outText.indexOf(di[i].src)<0){`

   In this step, we check to see if we've already put the image on the page. This line of code keeps that from happening more than once.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
outText+='<tr><td><img src='+di[i]. src+'/></td><td>'+di[i].height+ '</td><td>'+di[i].
width+'</td><td>' +di[i].src+'</td></tr>'}};
```

All the information we want is written out here, in a nice table format. The first cell contains the image; the second contains the height; the third, the width; and the last contains the URL of the image.

5. `if(outText==''){`

When the loop completes, check to see if we've found any images.

6. `alert('No images!');`

If there weren't any images found in step 5, an alert window that says "No images!" is displayed.

7. `else{imgWin=window.open('','IW', 'width=800,height=600,scrollbars= yes');`

If we found images, open up a new window for the image information.

8. [View full width]

```
void(imgWin.document.body. innerHTML='<table border=1 cellpadding=10><tr><th>Image </
th><th>Height</th><th>Width </th><th>URL</th></tr>'+outText+ '</table>');}
```

Here is where the new window is created and displayed. The image information, with heading information for each column, is written out, as shown in **Figure 17.16**.

Figure 17.16. This script formats the images and information into an attractive table.

[View full size image]

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Image	Height	Width	URL
XML	14	36	http://www.scripting.com/images/xml.gif
MY YAHOO!	17	91	http://us.i1.yimg.com/us.yimg.com/i/us/my/addtomyyahoo4.gif
B subscribe with bloglines	29	94	http://www.bloglines.com/images/sub_modern2.gif
WEBSTOCK 23-26 MAY 2006	90	120	http://www.backupbrain.com/images/webstock.gif
	60	46	http://www.backupbrain.com/images/dw8Sm.jpg
KEYNOTE	60	46	http://www.backupbrain.com/images/keynote2VQS.jpg
	60	47	http://www.backupbrain.com/images/dashboardVQS.jpg

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Displaying ISO Latin Characters

If you're authoring Web pages by hand, it can be a hassle to remember codes for different characters like á and à. **Script 17.9** shows you a list of common variations of the vowels.

Script 17.9. Rather than look up an accented character in a book, let JavaScript generate a list whenever you need one.

[View full width]

```
javascript:var i,j,w,t='',v=new Array('a','A', 'e','E','i','I','o','O','u','U'),s=new
Array ('grave','acute','uml','circ');for(i=0; i<10;i++){for(j=0;j<4;j++){w=v[i]+s[j];t
+=
'&'+w+' is &'+'amp;'+w+';<br/>';}}void (document.body.innerHTML=t);
```

To display ISO Latin characters:

1. `javascript:var i,j,w,t='',`

   Start off the bookmarklet by initializing four variables.

2. `v=new Array('a','A','e','E','i','I', 'o','O','u','U'),`

   Initialize an array, `v`, which contains all the vowels.

3. `s=new Array('grave','acute','uml', 'circ');`

   Here's another array, `s`, which contains all the diacritical character codes.

4. `for(i=0;i<10;i++){`

   This line sets up `i` to loop through the `v` array.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

And this line sets up `j` to loop through the `s` array.

6. `w=v[i]+s[j];`

In this line, we set up the variable `w` to be the vowel concatenated with the code.

7. `t+='&'+w+' is &'+'amp;'+w+';<br />';`

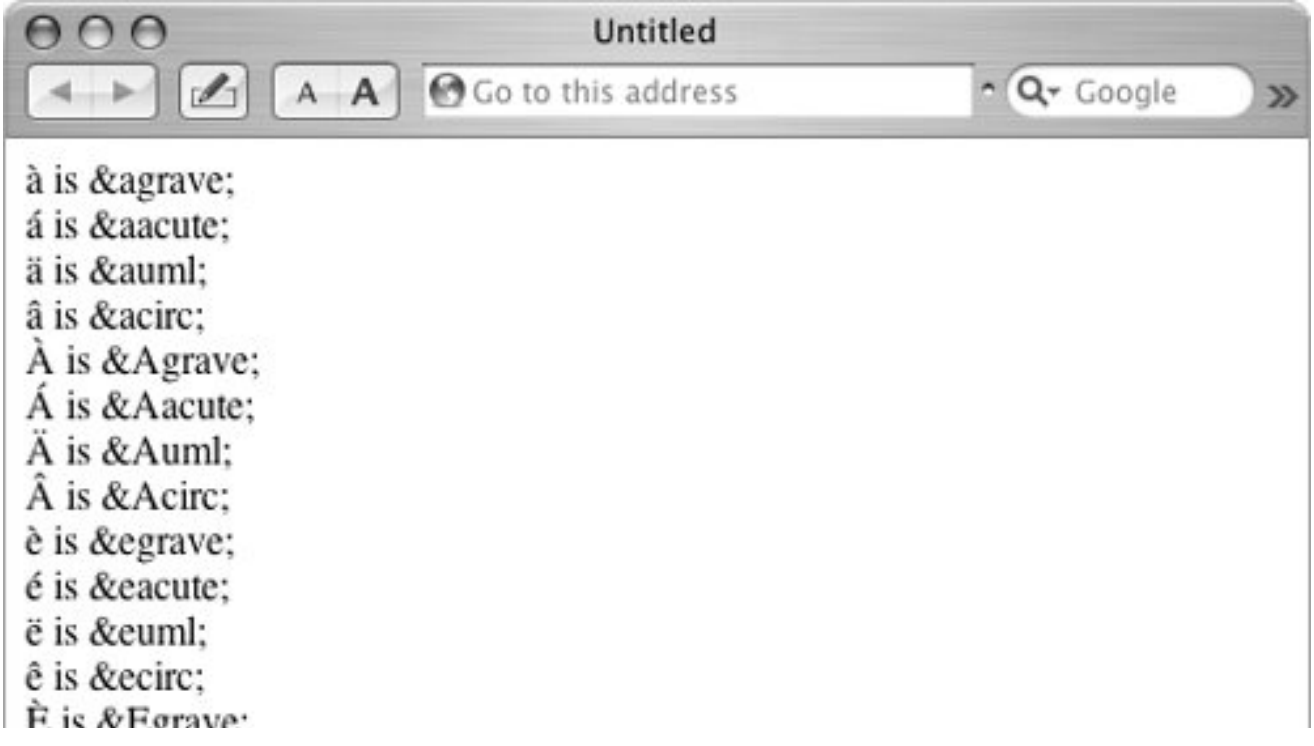
So the output is the character, followed by the HTML code required to display that character. All of these codes are preceded by an ampersand (&).

8. `}}void(document.body.innerHTML=t);`

And finally, the document gets displayed, as shown in **Figure 17.17**.

Figure 17.17. The result of this script is a new window with all the possible accented characters.

[View full size image]



downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Ë is Ë
Ê is Ê
ì is ì
í is í
ï is ï
î is î
Ì is Ì
Í is Í
Ï is Ï
Î is Î
ò is ò
ó is ó
ö is ö
ô is ô
Ò is Ò
Ó is Ó
Ö is Ö
Ô is Ô
ù is ù
ú is ú
ü is ü
û is û
Ù is Ù
Ú is Ú
Ü is Ü
Û is Û

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Converting RGB Values to Hex

Another useful little widget Web developers frequently wish they had on hand is an RGB-to-hexadecimal converter. This is useful whenever you need to translate a color value from a graphics program like Adobe Photoshop or Macromedia Fireworks into a browser color, for page backgrounds or text colors. **Script 17.10** shows the conversion calculator done in JavaScript and turned into a bookmarklet.

Script 17.10. This script takes RGB color values and turns them into their hexadecimal equivalents.

[View full width]

```
javascript:var s,i,n,h='',x='0123456789ABCDEF',c= prompt('R,G,B:',');if(c){s=c.split(',
'); for(i=0;i<3;i++){n=parseInt(s[i]);h+=x.charAt (n>>4)+x.charAt(n&15)}void(prompt (
'Hexcolor:','#'+h))}else{void(null);}
```

To convert RGB values to hexadecimal:

1. `javascript:var s,i,n,h='',`

   Start off the bookmarklet by initializing four variables.

2. `x='0123456789ABCDEF',`

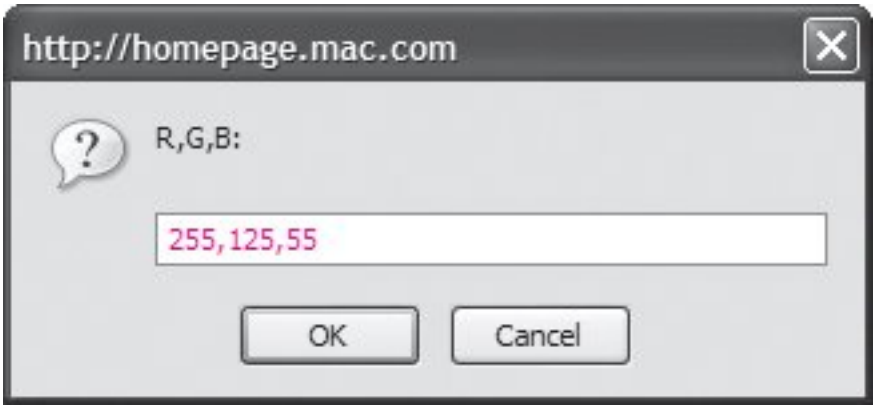
   The variable `x` is set to the valid hexadecimal values.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

This line prompts the user for the requested RGB values, separated by commas, as shown in **Figure 17.18**.

Figure 17.18. The first part of the script prompts the user for the RGB values.



4. `if(c){`

If the user entered anything, continue with the code. Otherwise, the value of `c` will be null, and the bookmarklet ends, as in step 10, below.

5. `s=c.split(',');`

Split the entry in `c`, separated by commas, and put the result into the `s` array.

6. `for(i=0;i<3;i++){`

Loop around the following lines once for each of the three red, green, and blue color values.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Turn the current element of `s` into a number, and save it as `n`.

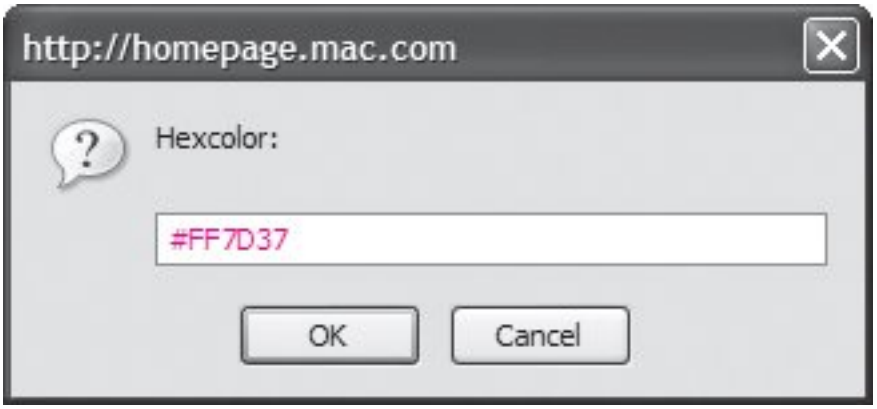
8. `h+=x.charAt(n>>4)+x.charAt(n&15)}`

This line converts `n` into 2 hexadecimal digits and adds the result to `h`.

9. `void(prompt('Hexcolor:','#'+h))}`

The result (preceded by a pound sign, ready to be copied into an HTML page) is displayed via a prompt command, as shown in **Figure 17.19**. It's done this way instead of with an alert, so that we can copy the code and paste it later.

Figure 17.19. Another prompt box provides the calculated hex value.



10. `else{void(null);}`

If nothing was entered in step 3, step 4 causes the code to jump to this step, where nothing happens.

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Converting Values

The possibilities are endless for the types of values that can be converted from one form to another. **Script 17.11** shows just one example: how to convert kilometers to miles.

Script 17.11. You can create bookmarklets for almost any kind of unit conversion. This script converts kilometers to miles.

[View full width]

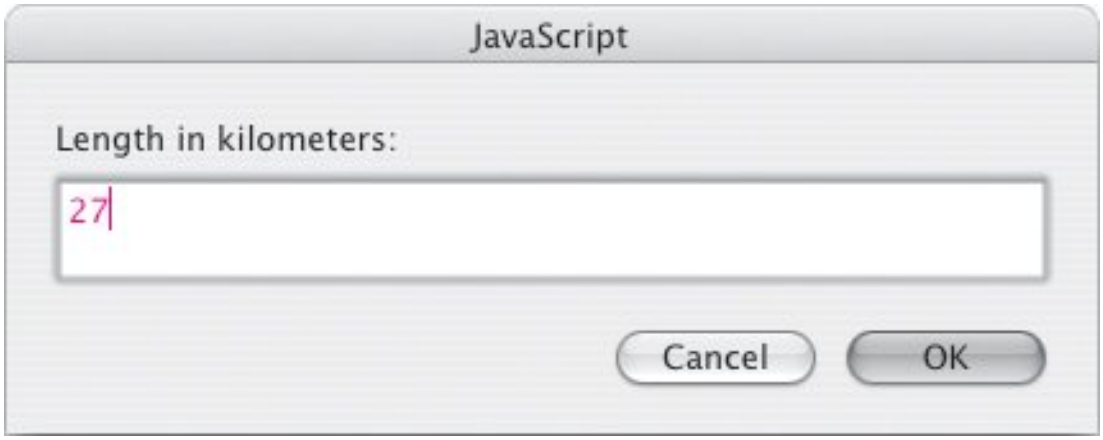
```
javascript:var expr=prompt('Length in kilometers:','');if(isNaN(parseFloat(expr))) {alert(
 expr+' is not a number')}else {alert('Length in miles is '+Math.round (expr*6214)/10000);}
```

To convert kilometers to miles:

1. `javascript:var expr=prompt('Length in kilometers:','');`

   The bookmarklet starts by prompting the user for a length in kilometers (**Figure 17.20**).

Figure 17.20. First, ask for the number to be converted.



downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Check to see if the user entered a numeric value.

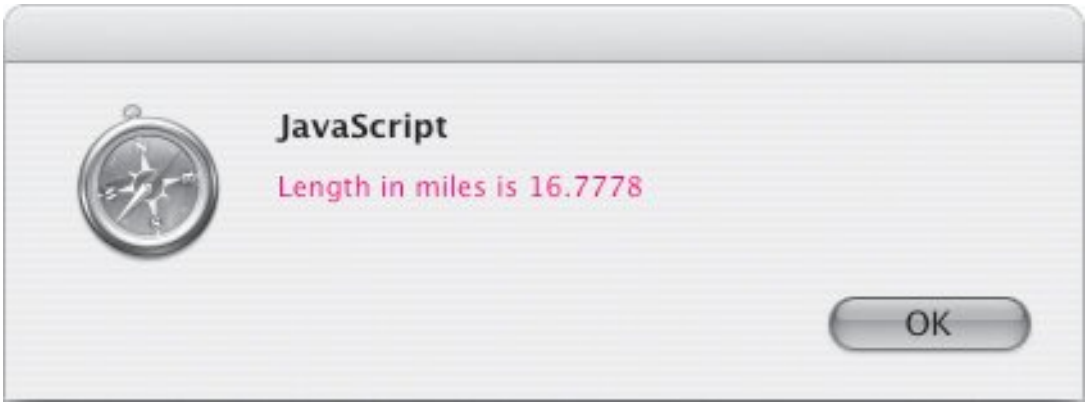
3. `{alert(expr+' is not a number')}`

If not, put up an error message.

4. `else{alert('Length in miles is '+Math.round(expr*6214)/10000);}`

Otherwise, convert the value to miles and display it as an alert, as shown in **Figure 17.21**.

Figure 17.21. JavaScript returns the result of the conversion.



✓ Tips

- It's a straightforward process to adapt this script into any kind of conversion you need. Just change the label in step 1, and replace the math expression in step 4 to the correct expression for the particular conversion you're looking for.
- You can make up a bunch of book- marklets with different conversions and then organize them all into folders in your Bookmarks or Favorites menu. Conversions can be just a mouse click away.

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

A Bookmarklet Calculator

If you think about it, it's really a bit too difficult to do a full-fledged calculator with buttons and a running value on just one long line of code. However, you can use a bookmarklet like **Script 17.12** to do fairly complex calculations, using JavaScript's built-in Math functions, as described in **Table 17.1**.

Script 17.12. Surprisingly complex equations can be evaluated with this bookmarklet.

[View full width]

```
javascript:var evl,em,expr=prompt('Formula... (eg: 2*3 + 7/8)','');with(Math)try{evl=
parseFloat(eval(expr));if(isNaN(evl)) {throw Error('Not a number!');}void(prompt ('Result:'
,evl));}catch(em){alert(em);}
```

Table 17.1. JavaScript's Math Functionality

Function	Description
abs	Absolute value
sin, cos, tan	Standard trigonometric functions; arguments in radians
acos, asin, atan	Inverse trigonometric functions; return values in radians
exp, log	Exponential and natural logarithm, base e
ceil	Returns least integer greater than or equal to argument
floor	Returns greatest integer less than or equal to argument
min	Returns lesser of two arguments
max	Returns greater of two arguments
pow	Exponential; first argument is base, second is exponent
round	Rounds argument to nearest integer
sqrt	Square root

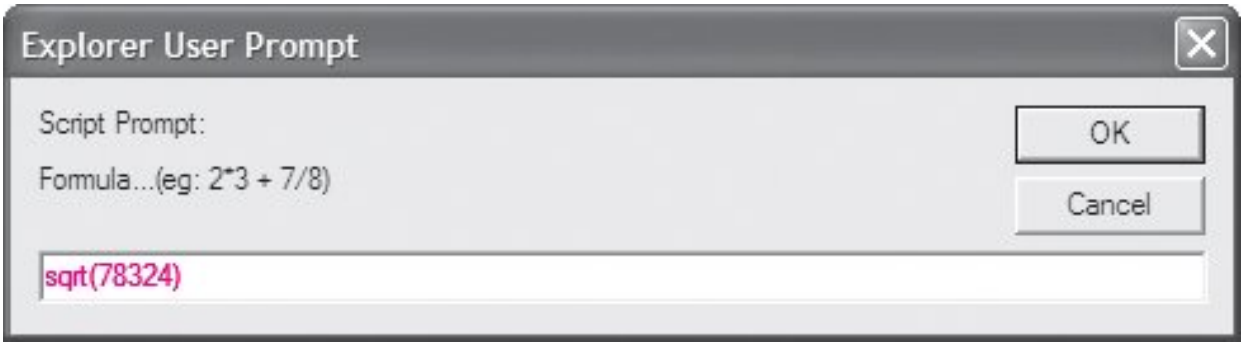
To use a JavaScript calculator:

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

This line sets up two variables and then prompts the user for an expression or formula, as shown in **Figure 17.22**, which is stored in `expr`.

Figure 17.22. The user must be prompted for a formula.



2. `with(Math)try{`

The next few lines need to be evaluated using JavaScript's built-in Math routines. The `with(Math)` line tells the interpreter that when any of these functions are seen, to evaluate them as Math commands.

The `try{}` warns JavaScript that what we're doing may well fail, and if so, don't panic. In fact, don't even put up an error message if there's a problem, as we'll be handling the errors ourselves.

3. `evl=parseFloat(eval(expr));`

Evaluate the expression, and turn it into a floating-point number, which is then stored in `evl`.

4. `if(isNaN(evl))`

If the resulting value in `evl` is not a number (`NaN`), do the following line.

5. `{throw Error('Not a number!');}`

If we're here, for some reason what the user entered didn't work out to a number. When that happens we want to force an error message of "Not a number!" to display. Here's where the message is set; it will be displayed in step 7.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Otherwise, the expression was valid, so display the result, as shown in **Figure 17.23**.

Figure 17.23. JavaScript returns the result of the calculation.

7. `}catch(em){alert(em);}`

Here's the end of that `try{}` block that started in step 2. To get here, one of two things happened: either we ran into the error in step 5, or some other error entirely occurred. Either way, we "catch" the error that was "thrown" and put it up on the screen in an alert.

✓ Tip

- Trying to remember where you've seen that `try`/`throw`/`catch` syntax before? It was originally covered way back in the "Handling Errors" section of Chapter 3.

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Validating Pages

When creating your pages, it's a great idea to make sure that you're making pages that adhere to Web standards; such pages load quicker in modern browsers and are easier to maintain. The easiest way to check a page that you're working on for valid code is by running it against the page validator maintained by the World Wide Web Consortium (W3C), at http://validator.w3.org. This bookmarklet, **Script 17.13**, checks the page currently shown in your browser for validity. It does this by taking the URL of the current page, passing it to the validator, and then opening a new window with the validator's results, as shown in **Figure 17.24**.

Script 17.13. Use this script to make sure your pages contain Web-standard, valid markup.

[View full width]

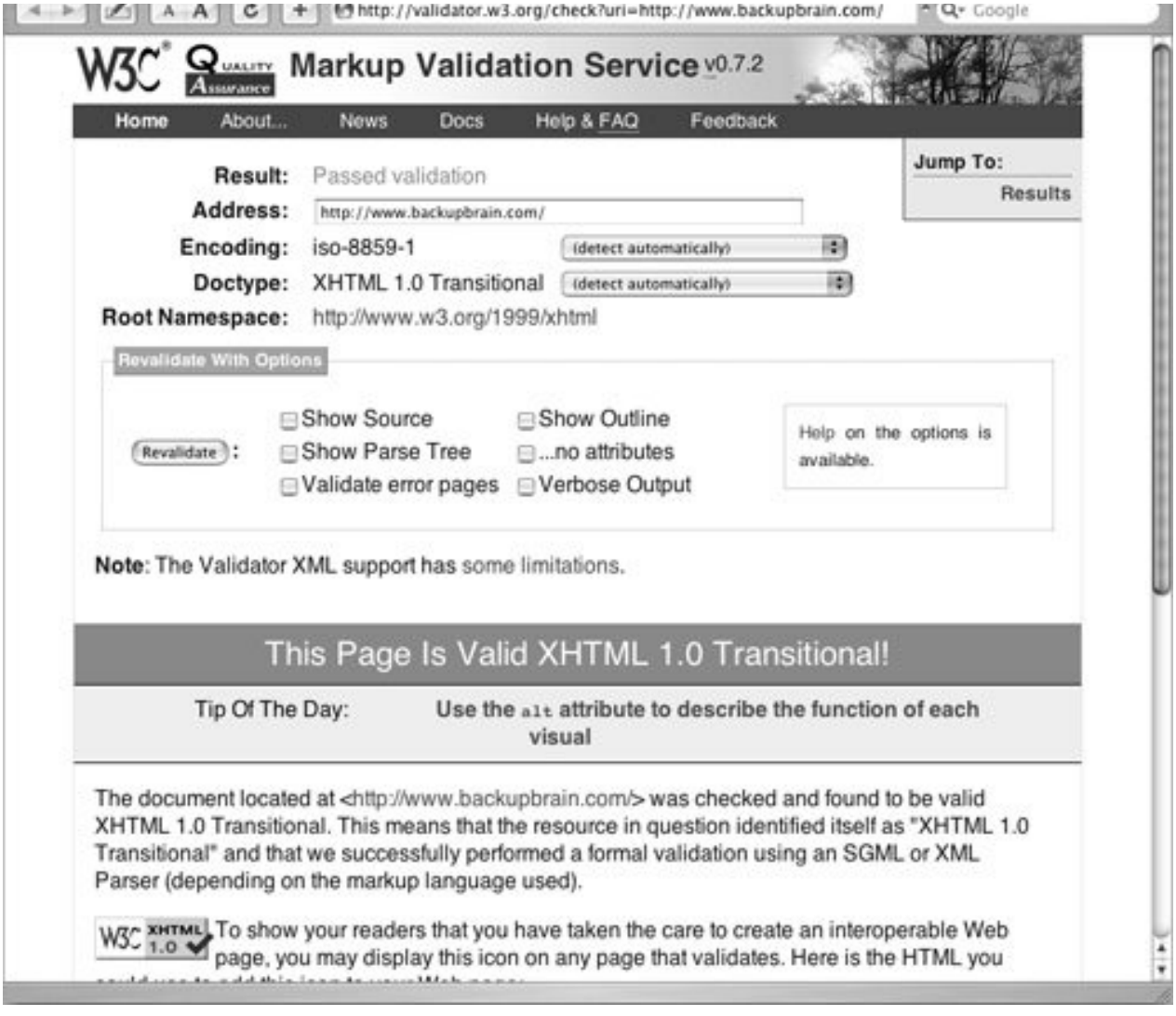
```
javascript:void(window.open('http://validator.w3.org/check?uri='+window.location.
href,'',
 'width=800,height=900,status=yes,resizable=yes,scrollbars=yes,location=yes'));
```

Figure 17.24. Running your page against the W3C validator returns this happy result, if you've coded your page correctly.

[View full size image]

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir



To validate your pages:

- [View full width]

```
javascript:void(window.open('http://validator.w3.org/check?uri= '+widdow.location.href,''
,'width= 800,height=900,status=yes, resizable=yes,scrollbars=yes, location=yes'));
```

This one, useful as it is, isn't exactly rocket science. First, we open a window and pass that window the URL to the validator. You'll note the validator has a parameter, `uri`, which accepts the URL of the current page, which we pass as `window.location.href`. The plus sign between the two concatenates the location object to the validator's URL. The rest of the line is just parameters for the window's size and other attributes.

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

A. JavaScript Genealogy and Reference

JavaScript has been transformed over the past several years, since its introduction as part of Netscape Navigator 2.0. This appendix briefly discusses the different versions of JavaScript and which browsers include which version of JavaScript.

You'll also find a JavaScript object flowchart as well as a table listing most of the JavaScript software objects up to and including JavaScript version 1.5, along with their properties, methods, and event handlers.

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

JavaScript Versions

The scripting language that you think of as JavaScript has several different names (depending on whose product you have) and almost a dozen different versions. Besides JavaScript, there are also JScript and ECMAScript. Here's a guide to which version does what.

Netscape's JavaScript

The first version of JavaScript, originally called LiveScript, was first released in Netscape Navigator 2.0. Netscape intended LiveScript to be a way to extend the capabilities of browsers, and to allow Web designers to add some interactivity to their sites. The JavaScript version in Navigator 2.0 is JavaScript 1.0.

Along with Navigator 3.0 came JavaScript 1.1, which added support for images, arrays, Java applets, and plug-ins, among many other changes.

With the release of Navigator 4.0 (also known as Netscape Communicator), JavaScript 1.2 was born, with more enhancements and refinements. Netscape 4.5 later shipped with JavaScript 1.3. JavaScript 1.4 was server-side only, and Netscape 6 introduced JavaScript 1.5.

Current versions of JavaScript are being developed by the open-source Mozilla project, mainly for the benefit of its Firefox browser. Firefox (and its spinoffs, such as Camino for Mac OS X) uses ECMAScript-262 Edition 3 (see below), which corresponds to JavaScript 1.6 (Netscape 6 and later versions are based upon Mozilla). At press time for this book, the current version of JavaScript was 1.6.

Microsoft's JScript

As is so often the case, Microsoft implemented JavaScript in its own fashion, which is not always compatible with the Netscape version. Called JScript version 1, the Microsoft version of JavaScript was more-or-less compatible with JavaScript 1.0; there were some differences. Naturally, JScript appears only in versions of Microsoft Internet Explorer (MSIE).

On Windows, there was also a JScript version 2 (somewhat comparable to JavaScript 1.1) for Windows 95/NT that came with upgraded versions of MSIE 3.02 and later. Not all versions of MSIE 3.02 have JScript 2.0. In order to tell what version of JScript you have installed, search your disk for "jscript.dll". Get the file's properties, and click the Version tab. If the file version does not begin with at least 2, it's long past time to upgrade your browser.

On the Macintosh, MSIE 3.0 had no JScript, but version 3.01 did. That included JScript 1.0, but not the identical version as on Windows; there were differences between the Mac and Windows versions of JScript (for example, the Mac version supported the Image object for mouse rollovers, while the Windows JScript 1.0 did not). In 2003, Microsoft discontinued MSIE for Mac, ending official support in 2005.

Confused yet? You're in good company. But wait, there's more: MSIE 4.0 included JScript 3.0, and MSIE 5.0 included JScript 5.0. JScript 3.0 is roughly equivalent to JavaScript 1.2, and JScript 5.0 is roughly equivalent to JavaScript 1.5. MSIE 5.5 came with JScript 5.5, and MSIE 6.0 introduced JScript 5.6, both of

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Some versions of Windows are also associated with particular JScript versions (JScript is one of the scripting languages that can be used to script Windows itself). Windows 2000 shipped with JScript 5.1. Windows ME contained JScript 5.5, and Windows XP uses JScript 5.6.

AOL

Which versions of JavaScript do AOL browsers support? Given that AOL owns Netscape, you might guess that it ships with that browser, but you'd be wrong, unless you're talking about AOL for Mac OS X. For contractual reasons, AOL uses Microsoft's Internet Explorer. **Table A.1** shows which browsers shipped with which versions of AOL.

Table A.1. AOL/MS IE Browser Chart

AOL Version	16-bit PC	32-bit PC	Mac
3.0	3.0	3.0	2.1
		3.01	
		3.02	
		4.01	
4.0	3.0	n/a	3.01
5.0		n/a	4.01

According to AOL, the Mac (for Mac OS 9 and earlier) and 16-bit PC versions come with MSIE embedded into the client, but 32-bit PC versions since AOL version 3 can use whatever version of MSIE is on the user's system. Consequently, these folks may have anything from MSIE 3 to MSIE 6 or later installed. AOL for Mac OS X uses Netscape technology to provide an embedded browser, which from the JavaScript standpoint is functionally equivalent to Netscape 7.

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

ECMAScript

In 1996, Web developers began to complain that Netscape was going in one direction with JavaScript, and Microsoft in a somewhat-compatible but different direction with JScript. Nobody likes to have to code pages to handle different dialects of JavaScript, or have their code work in one browser but not another. Developers wanted a standard. So Netscape went to an international standards body called ECMA and submitted the JavaScript language specification to it, and Microsoft threw in its own comments and suggestions. ECMA did whatever it is that standards bodies do and in June of 1997 produced a standard called ECMA-262 (also known as ECMAScript, a term that just dances off the tongue). This standard closely resembled JavaScript 1.1, but (sigh) was not exactly the same; subsequent versions rectified this problem. If you're interested in reading the official ECMAScript specification, you can download it from http://www.ecma-international.org/. Look for the Standards link and then follow it to the ECMA-262 specification.

ECMAScript also has several flavors, the most current of which is the third edition. At press time, work on the fourth edition was in progress but not yet finalized. It's important to note that ECMAScript is now driving the JavaScript standards process; all current browser makers have made their implementation of JavaScript ECMAScript compliant.

Microsoft claims that Internet Explorer versions 4.0 and up are ECMAScript-compliant, along with some extra, proprietary features that are specific to MSIE. So as long as you write ECMAScript-compatible code, it should run just fine under MSIE 4.0+ and Netscape Navigator 6.0+ (and its successors, the Firefox and Mozilla browser families). But you should always test your code with different browsers, platforms, and versions just to be sure.

Apple's Safari has always supported ECMAScript. The current Safari 2.0, which shipped with Mac OS X 10.4 ("Tiger"), supports ECMAScript-262 Edition 3.

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Browsers and JavaScript

Table A.2 shows you which versions of which browsers support a given version of JavaScript. This table is just a rough guide, because as mentioned in the JScript section above, Mac and Windows implementations of JScript have been different.

Table A.2. Netscape JavaScript Versions

Netscape Browser	JavaScript Version
2.0	1.0
3.0	1.1
4.04.05	1.2
4.064.7	1.3
6.0, 7.0, Mozilla, Firefox 1.01.41	1.5
Firefox 1.5	1.6

Internet Explorer JScript Versions	
MSIE Browser	**JScript Version**
3.x/1	1.0
3.x/2	2.0
4.0	3.0
5.0	5.0
5.1	5.1
5.5	5.5
6.0, 7.0	5.6

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Object Flowchart

Throughout this book, we've primarily used DOM scripting, relying on looking for particular `id`s versus particular objects. It's simply easier to use `getElementByID()` and access the element you want directly, rather than descending the object tree, as with `document.form.button.radio`. We recommend that you use DOM scripting in your code, as well.

If you want information about what objects are available to you, check out the Firefox DOM Inspector. While not everything is cross-browser, it will give you a number of places to start.

For older browsers, however, those options aren't available, and you need to know what properties exist and how they all fit together, and that's where this section fits in, as a reference to the older method of doing things.

JavaScript objects are connected together in a particular order, which you can think of in terms of an organization chart. The primary object in JavaScript is the current window, and all other software objects flow from that window, as seen in **Figure A.1**. This order of objects is often called the JavaScript object hierarchy, but that name is just a tad too self-important for this book.

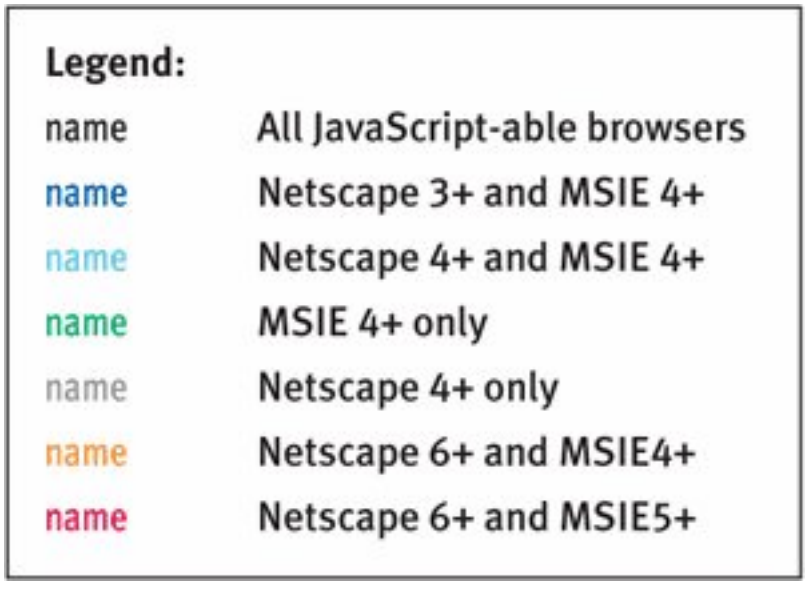


Figure A.1.

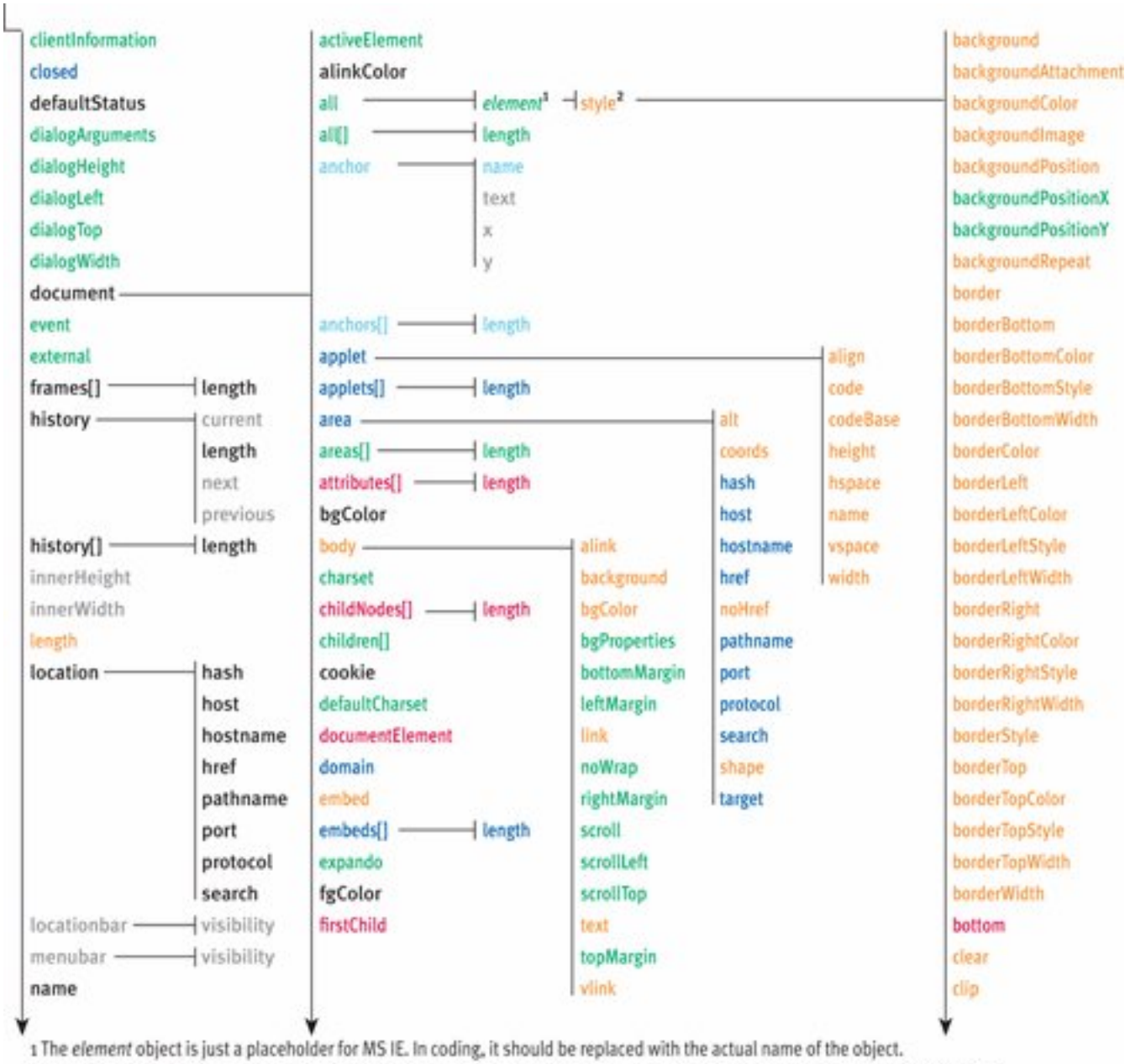
1 The *element* object is just a placeholder for MS IE. In coding, it should be replaced with the actual name of the object.

2 `Style` and its properties are available in Netscape 6+, but only through `document.getElementById`, as described in Chapter 2.

[View full size image]

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir



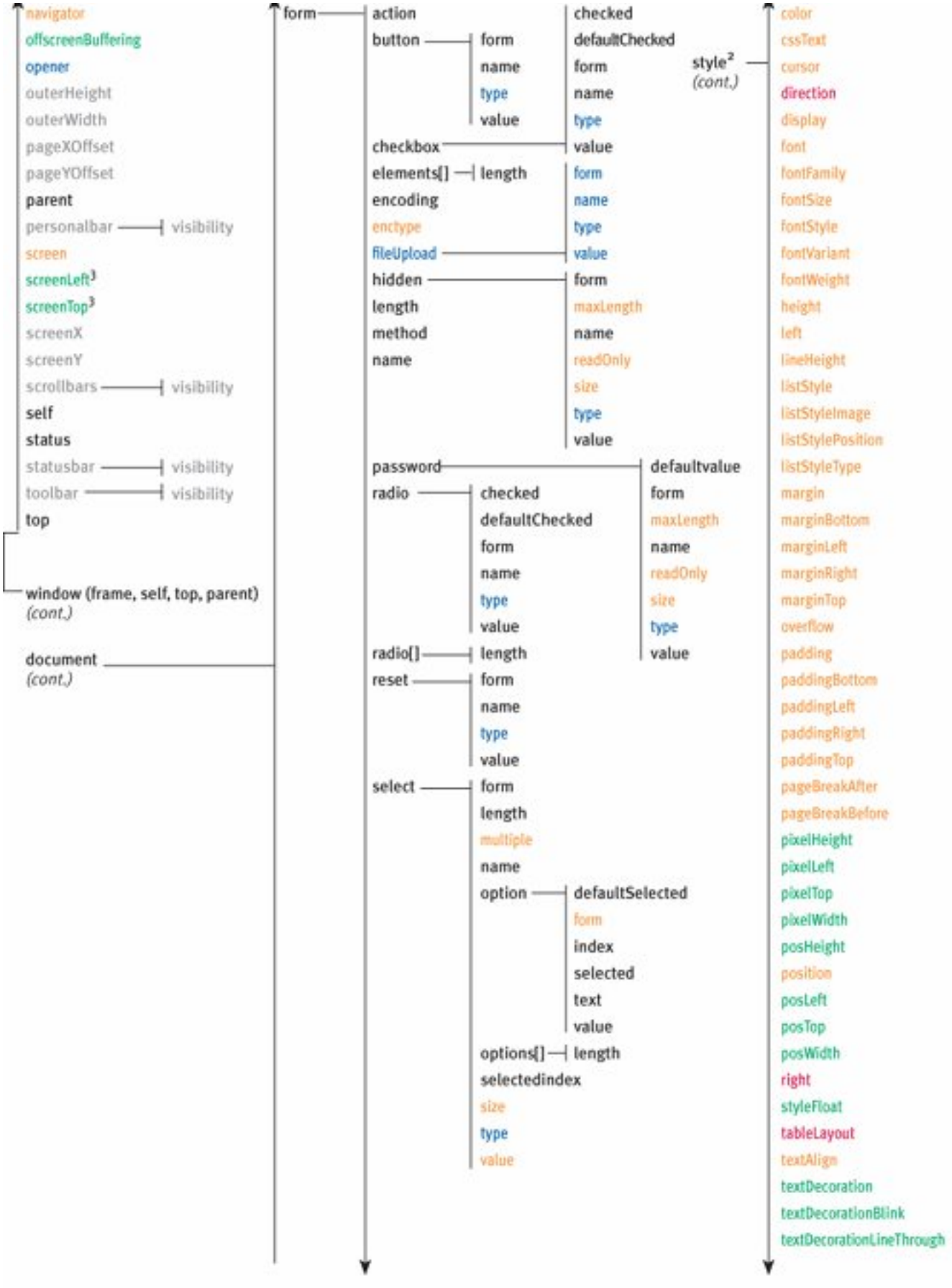
1 The *element* object is just a placeholder for MS IE. In coding, it should be replaced with the actual name of the object.
2 `Style` and its properties are available in Netscape 6+, but only through `document.getElementById`, as described in Chapter 2.

3 Exists as of MS IE 5+.

[View full size image]

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir



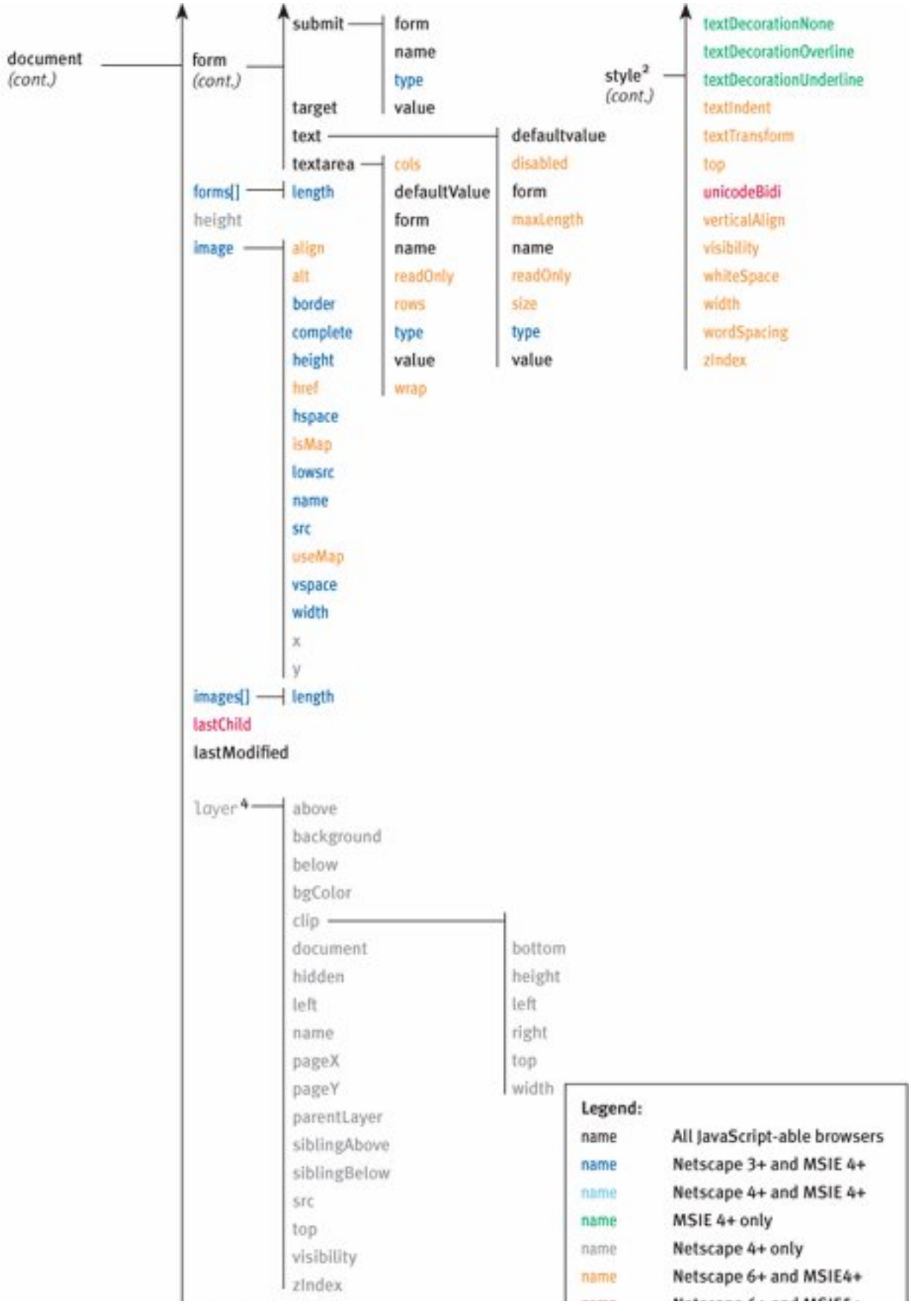
3. Exists as of MS IE 5+.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

versions

[View full size image]



downloaded from: lib.ommolketab.ir

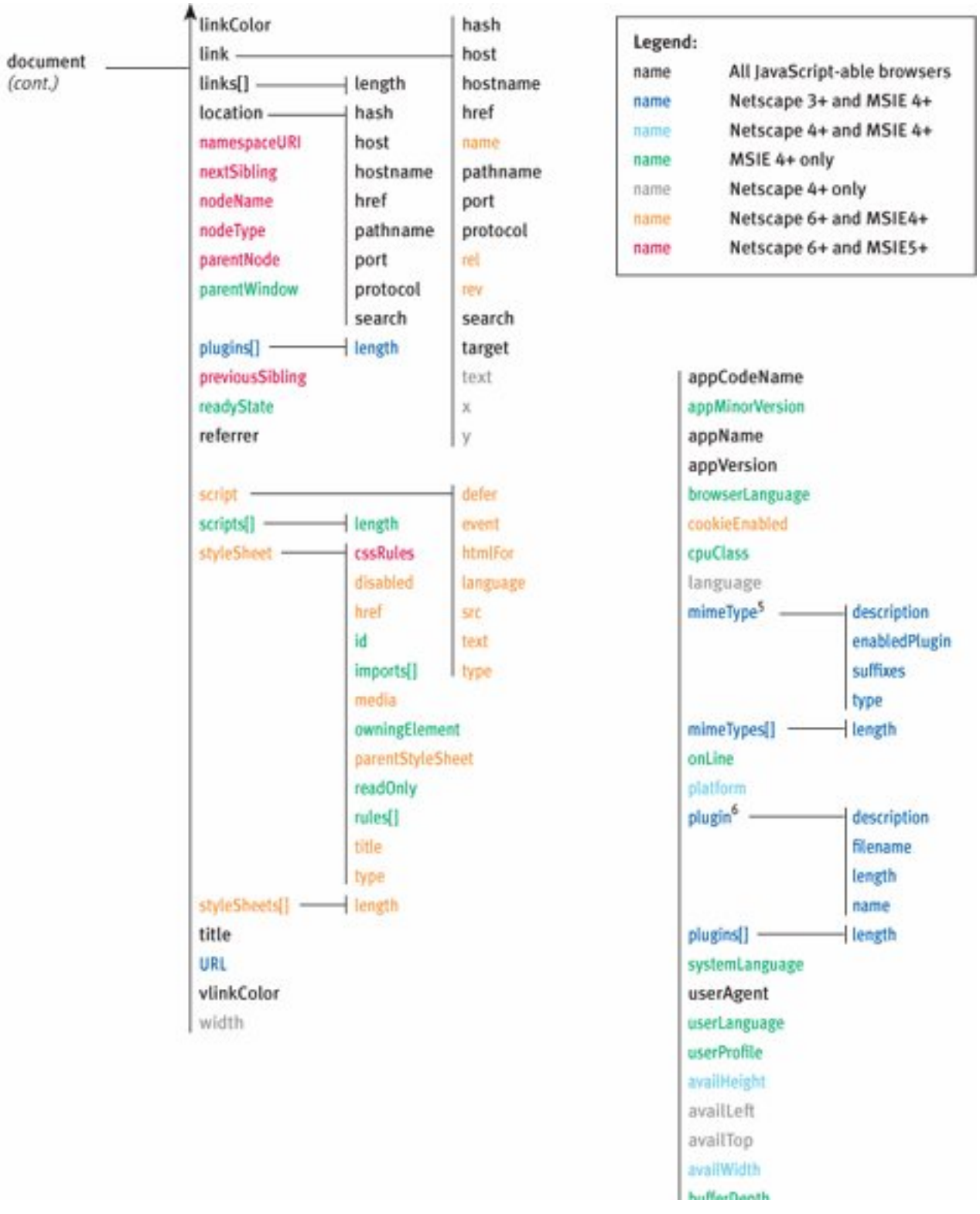
downloaded from: lib.ommolketab.ir

4 The `layer` (and `layers[]`) object and its properties only existed in Netscape 4.x and were not included in later versions.

5 This object (and its properties) exist in Netscape 3+ and MSIE 4+ (Mac).

6 This object (and its properties) exist in Netscape 3+ and MSIE 5+ (Mac).

[View full size image]



downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

navigator

fontSmoothingEnabled
height
pixelDepth
updateInterval
width

5 This object (and its properties) exist in Netscape 3+ and MSIE 4+ (Mac).
6 This object (and its properties) exist in Netscape 3+ and MSIE 5+ (Mac).

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

The Big Object Table

No JavaScript book is complete without the whopping big table of JavaScript objects, along with their associated properties, methods, and event handlers (check Chapter 1 for definitions of these terms). Table A.3 covers most of the JavaScript objects in the language up through and including JavaScript 1.5. We've omitted a few very obscure objects, as well as some older objects from earlier versions that have been superseded by new or extended objects in version 1.5.

Legend:

name	All JavaScript-able browsers
name	Netscape 3+ and MSIE 4+
name	Netscape 4+ and MSIE 4+
name	MSIE 4+ only
name	Netscape 4+ only
name	Netscape 6+ and MSIE4+
name	Netscape 6+ and MSIE5+

Table A.3. JavaScript Object Table

Object	Properties	Methods	Event Handlers
Anchor	name	none	none
	text		
	x		
	y		
anchors array	length	none	none
Applet	align	applet's methods	onblur
	code	blur	onclick

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

	height		onfocus
	hspace		onhelp
	name		onkeydown
	vspace		onkeypress
	width		onkeyup
			onload
			onmousedown
			onmousemove
			onmouseout
			onmouseover
			onmouseup
			onresize
			onscroll
applets array	length	none	none
Area	alt	none	onblur
	cords		onclick
	hash		ondblclick
	host		onfocus
	hostname		onhelp
	href		onkeydown
	noHref		onkeypress
	pathname		onkeyup
	port		onload
	protocol		onmousedown
	search		onmousemove

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

	target		onmouseover
			onmouseup
			onresize
Array	length	concat	none
		join	
		pop	
		push	
		reverse	
		shift	
		slice	
		sort	
		splice	
		toLocaleString	
		toString	
		unshift	
Body	alink	createTextRange	onblur
	background		onclick
	bgColor		ondblclick
	bgProperties		onfocus
	bottomMargin		onhelp
	leftMargin		onkeydown
	link		onkeypress
	noWrap		onkeyup
	rightMargin		onmousedown
	scroll		onmousemove

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

	scrollTop		onmouseover
	text		onmouseup
	topMargin		onresize
	vlink		onscroll
Button	form	blur	onblur
	name	click	onchange
	type	focus	onclick
	value	handleEvent	ondblclick
			onfocus
			onhelp
			onkeydown
			onkeypress
			onkeyup
			onmousedown
			onmousemove
			onmouseout
			onmouseover
			onmouseup
			onselect
Checkbox	checked	blur	onblur
	defaultChecked	click	onchange
	form	focus	onclick
	name	handleEvent	ondblclick
	type		onfocus
	value		onhelp

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

			onkeypress
			onkeyup
			onmousedown
			onmousemove
			onmouseout
			onmouseover
			onmouseup
			onselect
Date	none	getDate	none
		getDay	
		getFullYear	
		getHours	
		getMilliseconds	
		getMinutes	
		getMonth	
		getSeconds	
		getTime	
		getTimezoneOffset	
		getUTCDate	
		getUTCDay	
		getUTCFullYear	
		getUTCHours	
		getUTCMilliseconds	
		getUTCMinutes	
		getUTCMonth	

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

		getYear	
		parse	
		setDate	
		setFullYear	
		setHours	
		setMilliseconds	
		setMinutes	
		setMonth	
		setSeconds	
		setTime	
		setUTCDate	
		setUTCFullYear	
		setUTCHours	
		setUTCMilliseconds	
		setUTCMinutes	
		setUTCMonth	
		setUTCSeconds	
		setYear	
		toGMTString	
		toLocaleDateString	
		toLocaleString	
		toLocaleTimeString	
		toString	
		toUTCString	
		UTC	

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

document	activeElement	clear	onblur
	alinkColor	close	onclick
	all	createElement	oncut
	Anchor	createStylesheet	ondblclick
	anchors	createTextNode	onfocus
	Applet	elementFromPoint	onhelp
	applets	focus	onkeydown
	Area	getElementById	onkeypress
	areas	getElementsByName	onkeyup
	attributes	getElementsByTagName	onmousedown
	bgColor	getSelection	onmousemove
	Body	handleEvent	onmouseout
	charset	open	onmouseover
	childNodes	write	onmouseup
	children	writeln	onpaste
	cookie		onresize
	defaultCharset		
	documentElement		
	domain		
	embed		
	embeds		
	expando		
	fgColor		
	firstChild		
	Form		

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

	height		
	Image		
	images		
	lastChild		
	lastModified		
	Layer		
	layers		
	linkColor		
	Link		
	links		
	location		
	namespaceURI		
	nextSibling		
	nodeName		
	nodeType		
	parentNode		
	parentWindow		
	plugins		
	previousSibling		
	readyState		
	referrer		
	Script		
	scripts		
	StyleSheet		
	styleSheets		

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

	URL		
	vlinkColor		
	width		
FileUpload	form	blur	onblur
	name	focus	onchange
	type	handleEvent	onclick
	value	select	ondblclick
			onfocus
			onhelp
			onkeydown
			onkeypress
			onkeyup
			onmousedown
			onmousemove
			onmouseout
			onmouseover
			onmouseup
			onselect
Form	action	handleEvent	onclick
	Button	reset	ondblclick
	Checkbox	submit	onhelp
	elements		onkeydown
	encoding		onkeypress
	encType		onkeyup
	FileUpload		onmousedown

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

	length		onmouseout
	method		onmouseover
	name		onmouseup
	Password		onreset
	Radio		onsubmit
	Reset		
	Select		
	Submit		
	target		
	Text		
	Textarea		
forms array	length	none	none
frames array	length	none	none
Hidden	form	none	none
	maxLength		
	name		
	readOnly		
	size		
	type		
	value		
History	current	back	none
	length	forward	
	next	go	
	previous		
history array	length	none	none

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

	alt		onblur
	border		onchange
	complete		onclick
	height		ondblclick
	href		onerror
	hspace		onfocus
	isMap		onhelp
	lowsrc		onkeydown
	name		onkeypress
	src		onkeyup
	useMap		onload
	vspace		onmousedown
	width		onmousemove
	x		onmouseout
	y		onmouseover
			onmouseup
			onreset
			onresize
			onscroll
			onsubmit
images array	length	none	none
Layer	above	load	onblur
	background	moveAbove	onfocus
	below	moveBelow	onload
	bgColor	moveBy	onmouseout

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

	document	moveToAbsolute	onmouseup
	hidden	resizeBy	
	left	resizeTo	
	name		
	pageX		
	pageY		
	parentLayer		
	siblingAbove		
	siblingBelow		
	src		
	top		
	visibility		
	zIndex		
layers array	length	none	none
Link	hash	none	onblur
	host		onclick
	hostname		ondblclick
	href		onfocus
	name		onhelp
	pathname		onkeydown
	port		onkeypress
	protocol		onkeyup
	rel		onmousedown
	rev		onmousemove
	search		onmouseout

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

	text		onmouseup
	x		
	y		
links array	length	none	none
location	hash	assign	none
	host	reload	
	hostname	replace	
	href		
	pathname		
	port		
	protocol		
	search		
Math	E	abs	none
	LN2	acos	
	LN10	asin	
	LOG2E	atan	
	LOG10E	atan2	
	PI	ceil	
	SQRT1_2	cos	
	SQRT2	exp	
		floor	
		log	
		max	
		min	
		pow	

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

		round	
		sin	
		sqrt	
		tan	
MimeType	description	none	none
	enabledPlugin		
	suffixes		
	type		
mimeTypes array	length	none	none
navigator	appCodeName	javaEnabled	none
	appMinorVersion	preference	
	appName	taintEnabled	
	appVersion		
	browserLanguage		
	cookieEnabled		
	cpuClass		
	language		
	MimeType		
	mimeTypes		
	onLine		
	platform		
	Plugin		
	plugins		
	systemLanguage		
	userAgent		

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

	userProfile		
Number	MAX_VALUE	toExponential	none
	MIN_VALUE	toFixed	
	NaN	toLocaleString	
	NEGATIVE_INFINITY	toPrecision	
	POSITIVE_INFINITY	toString	
		valueOf	
Option	defaultSelected	remove	none
	form		
	index		
	selected		
	text		
	value		
options array	length	none	none
Password	defaultValue	blur	onblur
	form	focus	onchange
	maxLength	handleEvent	onclick
	name	select	ondblclick
	readOnly		onfocus
	size		onhelp
	type		onkeydown
	value		onkeypress
			onkeyup
			onmousedown
			onmousemove

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

			onmouseover
			onmouseup
			onselect
Plugin	description	refresh	none
	filename		
	length		
	name		
plugins array	length	none	none
Raido	checked	blur	onblur
	defaultChecked	click	onchange
	form	focus	onclick
	name	handleEvent	ondblclick
	type		onfocus
	value		onhelp
			onkeydown
			onkeypress
			onkeyup
			onmousedown
			onmousemove
			onmouseout
			onmouseover
			onmouseup
			onselect
radio array	length	none	none
RegExp	input	none	none

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

	lastParen		
	leftContext		
	multiline		
	rightContext		
	$1		
	$2		
	$3		
	$4		
	$5		
	$6		
	$7		
	$8		
	$9		
regular expression	global	compile	none
	ignoreCase	exec	
	lastindex	test	
	source		
Reset	form	blur	onblur
	name	click	onclick
	type	focus	ondblclick
	value	handleEvent	onfocus
			onhelp
			onkeydown
			onkeypress
			onkeyup

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

			onmousemove
			onmouseout
			onmouseover
			onmouseup
			onselect
screen	availHeight	none	none
	availLeft		
	availTop		
	availWidth		
	bufferDepth		
	colorDepth		
	fontSmoothingEnabled		
	height		
	pixelDepth		
	updateInterval		
	width		
Script	defer	none	onerror
	event		onload
	htmlFor		
	language		
	src		
	text		
	type		
Select	form	blur	onblur
	length	focus	onchange

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

	name		ondblclick
	Option		onfocus
	options		onhelp
	selectedIndex		onkeydown
	size		onkeypress
	type		onkeyup
	value		onmousedown
			onmousemove
			onmouseout
			onmouseover
			onmouseup
			onresize
String	lenght	anchor	none
		big	
		blink	
		bold	
		charAt	
		charCodeAt	
		concat	
		fixed	
		fontcolor	
		fontsize	
		fromCharCode	
		indexOf	
		italics	

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

		link	
		localeCompare	
		match	
		replace	
		search	
		slice	
		small	
		split	
		strike	
		sub	
		substr	
		substring	
		sup	
		toLocaleLowerCase	
		toLocaleUpperCase	
		toLowerCase	
		toString	
		toUpperCase	
		valueOf	
Style	background	none	none
	backgroundAttachment		
	backgroundColor		
	backgroundImage		
	backgroundPosition		
	backgroundPositionX		

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

	backgroundRepeat		
	border		
	borderBottom		
	borderBottomColor		
	borderBottomStyle		
	borderBottomWidth		
	borderColor		
	borderLeft		
	borderLeftColor		
	borderLeftStyle		
	borderLeftWidth		
	borderRight		
	borderRightColor		
	borderRightStyle		
	borderRightWidth		
	borderStyle		
	borderTop		
	borderTopColor		
	borderTopStyle		
	borderTopWidth		
	borderWidth		
	bottom		
	clear		
	clip		
	color		

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

	cursor		
	direction		
	display		
	font		
	fontFamily		
	fontSize		
	fontStyle		
	fontVariant		
	fontWeight		
	height		
	left		
	lineHeight		
	listStyle		
	listStyleImage		
	listStylePosition		
	listStyleType		
	margin		
	marginBottom		
	marginLeft		
	marginRight		
	marginTop		
	overflow		
	padding		
	paddingBottom		
	paddingLeft		

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

	paddingTop		
	pageBreakAfter		
	pageBreakBefore		
	pixelHeight		
	pixelLeft		
	pixelTop		
	pixelWidth		
	posHeight		
	position		
	posLeft		
	posTop		
	posWidth		
	right		
	styleFloat		
	tableLayout		
	textAlign		
	textDecoration		
	textDecorationBlink		
	textDecorationLineThrough		
	textDecorationNone		
	textDecorationOverline		
	textDecorationUnderline		
	textIndent		
	textTransform		
	top		

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

	verticalAlign		
	visibility		
	whiteSpace		
	width		
	wordSpacing		
	zIndex		
StyleSheet	cssRules	addImport	none
	disabled	addRule	
	href	removeRule	
	id		
	imports		
	media		
	owningElement		
	parenStyleSheet		
	readOnly		
	rules		
	title		
	type		
Submit	form	blur	onblur
	name	click	onclick
	type	focus	ondblclick
	value	handleEvent	onfocus
			onhelp
			onkeydown
			onkeypress

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

			onmousedown
			onmousemove
			onmouseout
			onmouseover
			onmouseup
			onselect
Text	defaultValue	blur	onblur
	disabled	click	onchange
	form	focus	onclick
	maxLength	handleEvent	ondblclick
	name	select	onfocus
	readOnly		onkeydown
	size		onkeypress
	type		onkeyup
	value		onmousedown
			onmousemove
			onmouseout
			onmouseover
			onmouseup
			onselect
Textarea	cols	blur	onblur
	defaultValue	click	onchange
	form	createTextRange	onclick
	name	focus	ondblclick
	readOnly	handleEvent	onfocus

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

	type		onkeydown
	value		onkeypress
	wrap		onkeyup
			onmousedown
			onmousemove
			onmouseout
			onmouseover
			onmouseup
			onscroll
			onselect
window	clientInformation	alert	onblur
	closed	back	onerror
	defaultStatus	blur	onfocus
	dialogArguments	clearInterval	onhelp
	dialogHeight	clearTimeout	onload
	dialogLeft	close	onmove
	dialogTop	confirm	onresize
	dialogWidth	focus	onscroll
	document	forward	onunload
	event	handleEvent	
	external	home	
	frames	moveBy	
	history	moveTo	
	innerHeight	navigate	
	innerWidth	open	

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

	location	prompt	
	locationbar	resizeBy	
	menubar	resizeTo	
	name	scroll	
	navigator	scrollBy	
	offscreenBuffering	scrollTo	
	opener	setInterval	
	outerHeight	setTimeout	
	outerWidth	stop	
	pageXOffset		
	pageYOffset		
	parent		
	personalbar		
	screen		
	screenLeft		
	screenTop		
	screenX		
	screenY		
	scrollbars		
	self		
	status		
	statusbar		
	toolbar		
	top		

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

B. JavaScript Reserved Words

Reserved words are words that have special meaning to JavaScript. Therefore, they cannot be used as variable or function names.

You'll recognize many of the reserved words from previous chapters, but others will be unfamiliar. Some of the latter group are future reserved words; i.e., it's expected that they'll be commands in future versions of JavaScript. They're being set aside now so that you won't have to revise your code when new revisions are released.

JavaScript reserved words:

These words are part of the JavaScript language as of ECMAScript version 3.

```
break     for         throw
case      function    try
catch     if          typeof
continue  in          var
default   instanceof  void
delete    new         while
do        return      with
else      switch
finally   this
```

Additional words reserved for future use by ECMAScript 3:

```
abstract  final       protected
boolean   float       public
byte      goto        short
char      implements  static
class     import      super
const     int         synchronized
debugger  interface   throws
double    long        TRansient
enum      native      volatile
```

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

```
extends   private
```

ECMAScript 4:

As of this writing, ECMAScript version 4 has not been finalized. These words are likely to be added to the reserved words list, so you should avoid using them:

```
as     namespace  use

false  null

is     TRue
```

These words are likely to no longer be reserved, but we recommend that you still avoid using them:

```
boolean  final  short

byte     float  static

char     int

double   long
```

Other identifiers to avoid:

The object names used in Appendix A aren't officially reserved (outside of the keywords above), but as they are part of the JavaScript language, you shouldn't use them as function or variable names. If you do, abandon all hope; the results will be unpredictable.

In addition, most browsers are case-sensitive, which means that they differentiate between `Document` and `document`. Internet Explorer is only sometimes case-sensitive, which means that, for example, it may not understand any difference between `Document` and `document`. Consequently, be aware that just because it works in one browser doesn't mean that it'll always work in others. Test, test, test.

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

C. Cascading Style Sheets Reference

This appendix lists the CSS2 properties as defined by the W3C at http://www.w3.org/TR/REC-CSS2. The specification was standardized all the way back in May 1998, but as of this writing, many of these properties aren't implemented in any browser. The next version, CSS 2.1, was still at the Working Draft stage at the time this was written. The goal of the CSS 2.1 specification is to clarify CSS2 so that it is closer to what browser makers have actually implemented. This list is complete except for the aural properties (those used for speech synthesis for the visually disabled), which are not (at this time) modifiable by JavaScript.

Because this is a book about JavaScript, we've only touched on a few of the cool things you can do with CSS. If you want to learn more, we recommend *Cascading Style Sheets: The Definitive Guide*, *Second Edition*, by Eric A. Meyer. The book lives up to its name, with exhaustive descriptions of CSS1 and CSS2. The in-progress CSS 2.1 standard is also discussed in the book.

Table C.1. Basic Concepts

Property Name	Value
In HTML	link
	<style>...</style>
	< x style= "declaration;">
Grouping	x, y, z {declaration;}
Contextual selectors	x y z {declaration;}
Class selector	.class
ID selector	#ID
At-rules	@import
	@font-face
	@media
	@page
Important	!important

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Elements and Pseudo-Classes

Property Name	Value
after	:after
anchor	a:active
	a:focus
	a:hover
	a:link
	a:visited
before	:before
first	:first
first-child	:first-child
left	:left
paragraph	p:first-letter
	p:first-line
right	:right

Table C.3. Color and Background Properties

Property Name	Value
background	< background-color>
	< background-image>
	< background-repeat>
	< background-attachment>

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

background-attachment	scroll
	fixed
background-color	< color>
	transparent
background-image	< url>
	none
background-position	< percentage>
	< length>
	top
	center
	bottom
	left
	right
background-repeat	repeat
	repeat-x
	repeat-y
	no-repeat
color	< color>

Table C.4. Font Properties

Property Name	Value
font	< font-style>
	< font-variant>
	< font-weight>

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

	< font-family>
	caption
	icon
	menu
	message-box
	small-caption
	status-bar
font-family	< family-name>
	cursive
	fantasy
	monospace
	sans-serif
	serif
font-size	< absolute-size> (xx-smallxx-large)
	< relative-size> (smallerlarger)
	< length>
	< percentage>
font-size-adjust	< number>
	none
font-stretch	normal
	wider
	narrower
	ultra-condensed
	extra-condensed
	condensed

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

	semi-expanded
	expanded
	extra-expanded
	ultra-expanded
font-style	normal
	italic
	oblique
font-variant	normal
	small-caps
font-weight	normal
	bold
	bolder
	lighter
	100 900

Table C.5. Text Properties

Property Name	Value
content	< string>
	< url>
	< counter>
	open-quote
	close-quote
	no-open-quote
	no-close-quote

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

	< integer>
	none
counter-reset	< identifier>
	< integer>
	none
direction	ltr
	rtl
letter-spacing	normal
	< length>
line-height	normal
	< number>
	< length>
	< percentage>
quotes	< string>
	none
text-align	left
	right
	center
	justify
text-decoration	none
	underline
	overline
	line-through
	blink
text-indent	< length>
	< percentage>

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

	< color>
	< length>
text-transform	capitalize
	uppercase
	lowercase
	none
unicode-bidi	normal
	embed
	bidi-override
vertical-align	baseline
	sub
	super
	top
	text-top
	middle
	bottom
	text-bottom
	< percentage>
	< length>
white-space	normal
	pre
	nowrap
word-spacing	normal
	< length>

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Property Name	Value
border	< border-width>
	< border-style>
	< color>
border-bottom	< border-width>
	< border-style>
	< color>
border-bottom-color	< color>
border-bottom-style	< border-style>
border-bottom-width	< border-width>
border-collapse	collapse
	separate
border-color	< color>
	transparent
border-left	< border-top-width>
	< border-style>
	< color>
border-left-color	< color>
border-left-style	< border-style>
border-left-width	< border-width>
border-right	< border-top-width>
	< border-style>
	< color>
border-right-color	< color>
border-right-style	< border-style>

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

border-spacing	< length>
border-style	none
	dotted
	dashed
	solid
	double
	groove
	ridge
	inset
	outset
border-top	< border-top-width>
	< border-style>
	< color>
border-top-color	< color>
border-top-style	< border-style>
border-top-width	< border-width>
border-width	thin
	medium
	thick
	< length>
bottom	< length>
	< percentage>
clear	none
	left
	right

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

float	left
	right
	none
height	< length>
	< percentage>
	auto
margin	< margin-width>
margin-bottom	< margin-width>
margin-left	< margin-width>
margin-right	< margin-width>
margin-top	< margin-width>
max-height	< length>
	< percentage>
	none
max-width	< length>
	< percentage>
	none
min-height	< length>
	< percentage>
min-width	< length>
	< percentage>
padding	< padding-width>
padding-bottom	< padding-width>
padding-left	< padding-width>
padding-right	< padding-width>

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

width	< length>
	< percentage>
	auto

Table C.7. Positioning Properties

Property Name	Value
caption-side	top
	bottom
	left
	right
clip	auto
	< shape>
display	block
	inline
	list-item
	run-in
	compact
	marker
	table
	inline-table
	table-row-group
	table-header-group
	table-footer-group

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

	table-column-group
	table-column
	table-cell
	table-caption
	none
empty-cells	show
	hide
left	< length>
	< percentage>
	auto
overflow	visible
	hidden
	scroll
	auto
position	static
	absolute
	relative
	fixed
right	< length>
	< percentage>
	auto
table-layout	auto
	fixed
top	auto
	< length>
	< percentage>

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

	visible
	hidden
z-index	auto
	< integer>

Table C.8. List Properties

Property Name	Value
list-style	< list-style-type>
	< list-style-position>
	< list-style-image>
list-style-image	< url>
	none
list-style-position	inside
	outside
list-style-type	disc
	circle
	square
	decimal
	decimal-leading-zero
	lower-roman
	upper-roman
	lower-greek
	lower-alpha
	lower-latin

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

	upper-latin
	hebrew
	armenian
	georgian
	cjk-ideographic
	hiragana
	katakana
	hiragana-iroha
	katakana-iroha
	none

Table C.9. Page Properties

Property Name	Value
marks	crop
	cross
	none
orphans	< integer>
page	< identifier>
	auto
page-break-after	auto
	always
	avoid
	left

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

page-break-before	auto
	always
	avoid
	left
	right
page-break-inside	avoid
	auto
size	< length>
	auto
	portrait
	landscape
widows	< integer>

Table C.10. User Interface Properties

Property Name	Value
cursor	< url>
	auto
	crosshair
	default
	pointer
	move
	e-resize
	ne-resize

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

	n-resize
	se-resize
	sw-resize
	s-resize
	w-resize
	text
	wait
	help
outline	< outline-color>
	< outline-style>
	< outline-width>
outline-color	< color>
	invert
outline-style	< border-style>
outline-width	< border-width>

Table C.11. Units

Property Name	Value
Length Units	em
	ex
	px
	in
	cm

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

	pt
	pc
Color Units	#000
	#000000
	(RRR,GGG,BBB)
	(R%,G%,B%)
	< keyword>
URLs	< url>

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

D. Where to Learn More

Once you've worked through this book, you should be well on your way to spicing up your Web sites with JavaScript. But there's a lot more to learn about the JavaScript language, and you'll probably have questions as you write your own code.

The best place to get those questions answered is online, as you might expect. There are many resources on the Web and elsewhere on the Internet that can help you out and deepen your understanding of JavaScript.

In this appendix, we'll point you to several of the most helpful JavaScript-oriented Web sites and some online forums where you can interact with other scripters, and we'll even mention a few other books that the authors found helpful.

But first, a gentle reminder: the Net is not a static, unchanging place. Web sites can and often do change the addresses of their pages, so it's possible that the URLs we list will become out of date by the time you use them. We're just reporting the URLs; we have no control over them. Sometimes, entire Web sites disappear. If you find a link that's become stale, check our companion Web site at http://www.javascriptworld.com/ to see if we have posted a new location for the page you were looking for.

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Finding Help on the Web

The original JavaScript documentation is found at Netscape's Web site, but there's a lot of good information at sites from Microsoft and independent JavaScript pages. Here are some of the best JavaScript Web sites.

Mozilla sites

Since Netscape developed JavaScript, it's no surprise that the Mozilla project, the open-source creators of Mozilla and Firefox (the successors to Netscape's browser), has lots of great information about the language and further development.

Core JavaScript Guide 1.5

http://developer.mozilla.org/en/docs/Core_JavaScript_1.5_Guide

This site (**Figure D.1**) is designed for the beginning JavaScript user. It gives you a rundown on the basics of the language, and definitions and explanations of the concepts used in JavaScript. Overall, the Core JavaScript Guide suffers from a moderately geeky difficulty level and sketchy examples, but you should be able to puzzle it out once you've digested this book. For you harder-core programming types, this site will be a piece of cake.

Figure D.1. Mozilla's Core JavaScript Guide is a good place for you to start furthering your knowledge of JavaScript.

[View full size image]

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Core JavaScript Reference 1.5

http://developer.mozilla.org/en/docs/Core_JavaScript_1.5_Reference

This is a reference guide to JavaScript 1.5. When you need to look up the syntax of a particular object, you'll find it here. **Figure D.2** gives you a look at the Core JavaScript Reference site.

Figure D.2. Mozilla's Core JavaScript Reference is the definitive place to find the answers to questions about the JavaScript language.

[View full size image]

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Using Web Standards in Your Web Pages

http://www.mozilla.org/docs/web-developer/upgrade_2.html

This Mozilla-hosted site is a great guide to making the transition to writing pages that adhere to current Web standards. By writing standards-compliant JavaScript and XHTML, your pages will operate on the widest possible set of browsers. **Figure D.3** shows the Spartan front page of this site.

Figure D.3. This Mozilla site has lots of good tips on keeping your pages working across platforms.

[View full size image]

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Venkman, the Mozilla JavaScript debugger

http://developer.mozilla.org/en/docs/Venkman

When you need to debug your JavaScript, it certainly would be nice to have a good tool to use to help you. Wish no longer; Venkman, the JavaScript debugger from the Mozilla project, is a pretty good tool that works with Firefox, Thunderbird, Mozilla, and Netscape 7 and allows you to step through your code, setting breakpoints, inspecting objects and variables as the script executes, and working with JavaScript source code. **Figure D.4** shows you the Venkman home page.

Figure D.4. When you need a JavaScript debugger, Mozilla's Venkman is a good choice.

[View full size image]

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Other great JavaScript sites

When you get away from the Netscape sites, you'll find an amazing number of places where you can pick up script examples, find tutorials, and ask questions of JavaScript experts. Here are some of the best sites at the time we wrote this, but as usual on the Web, these sites could change or even go away by the time you read this.

Microsoft's Scripting Languages page

http://msdn.microsoft.com/ie/SCR/

Microsoft's competing version of JavaScript, called JScript, has its own pages on the Microsoft Developer network site (**Figure D.5**), where you can learn the similarities to (and differences from) from Mozilla's JavaScript. You'll find a detailed JScript Language Reference and the JScript Users Guide.

Figure D.5. Microsoft's Scripting Languages Web page gives you the lowdown on JScript, Microsoft's important JavaScript variant.

[View full size image]

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Yahoo! User Interface Library

http://developer.yahoo.com/yui/

Yahoo! JavaScript Developer Center

http://developer.yahoo.com/javascript/

Yahoo! Design Pattern Library

http://developer.yahoo.com/ypatterns/

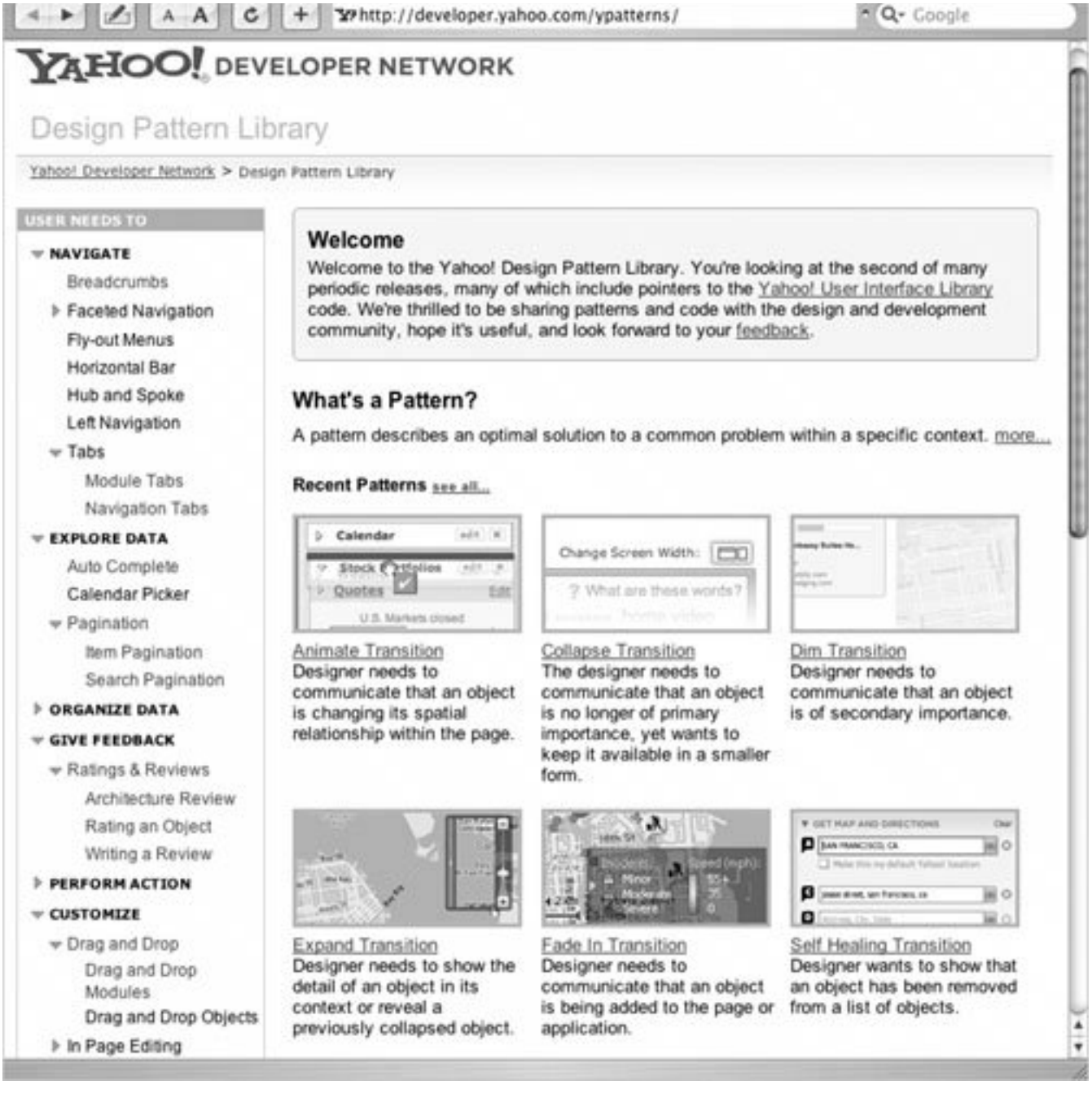
These three sites are excellent resources for JavaScript and new Ajax developers. The Yahoo! User Interface Library is a set of utilities and controls, written in JavaScript, for building richly interactive Web applications using techniques such as DOM scripting and AJAX. All of the examples are open source and can be used freely in your pages. The Yahoo! JavaScript Developer Center provides documentation for using Yahoo!'s JavaScript frameworks and APIs, and many code samples you can use to learn about JavaScript and Ajax. The Yahoo! Design Pattern Library (**Figure D.6**) provides many usable examples of JavaScript interface solutions that can be downloaded and dropped into your sites.

Figure D.6. You'll find many great JavaScript and Ajax examples at Yahoo!'s JavaScript developer pages. The Design Pattern Library gives you access to premade user interface solutions that you can integrate into your own sites.

[View full size image]

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir



QuirksMode

http://www.quirksmode.org/

Peter-Paul Koch is a JavaScript developer in the Netherlands. The best thing about his site (**Figure D.7**) is that it is amazingly upto-date with the latest news about browsers and their JavaScript capabilities. It has many excellent scripts for your copying pleasure. It's not a tutorial site, but there is a great deal of basic information that will be helpful to the beginning scripter.

Figure D.7. Peter-Paul Koch's QuirksMode site often has JavaScript information well ahead of any others.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Web Standards Project's DOM Scripting Task Force

http://domscripting.webstandards.org/

The Web Standards Project lobbies browser and tool makers to make their products adhere to Web standards, and the DOM Scripting Task Force (**Figure D.8**) works to educate users and manufacturers on the benefits of DOM scripting and to promote best practices for scripting. One of the authors of this book (Dori) is co-leader of the Task Force.

Figure D.8. The Web Standards Project's DOM Scripting Task Force is fighting the good fight for better scripting practices and better scripting tools.

[View full size image]

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Weblogs

There are many weblogs devoted to JavaScript, Ajax, and DOM Scripting. Here are a few of our favorites, but these by no means form an exhaustive list.

DOM Scripting: The Blog

http://domscripting.com/blog/

You'll find lots of current information and news on DOM scripting in this blog, written by Jeremy Keith, a Web developer and book author living in Brighton, England. He also plays bouzouki, but he saves writing about it for one of his other blogs (he's the other co-lead of the DOM Scripting Task Force, by the way).

Ajaxian

http://ajaxian.com/

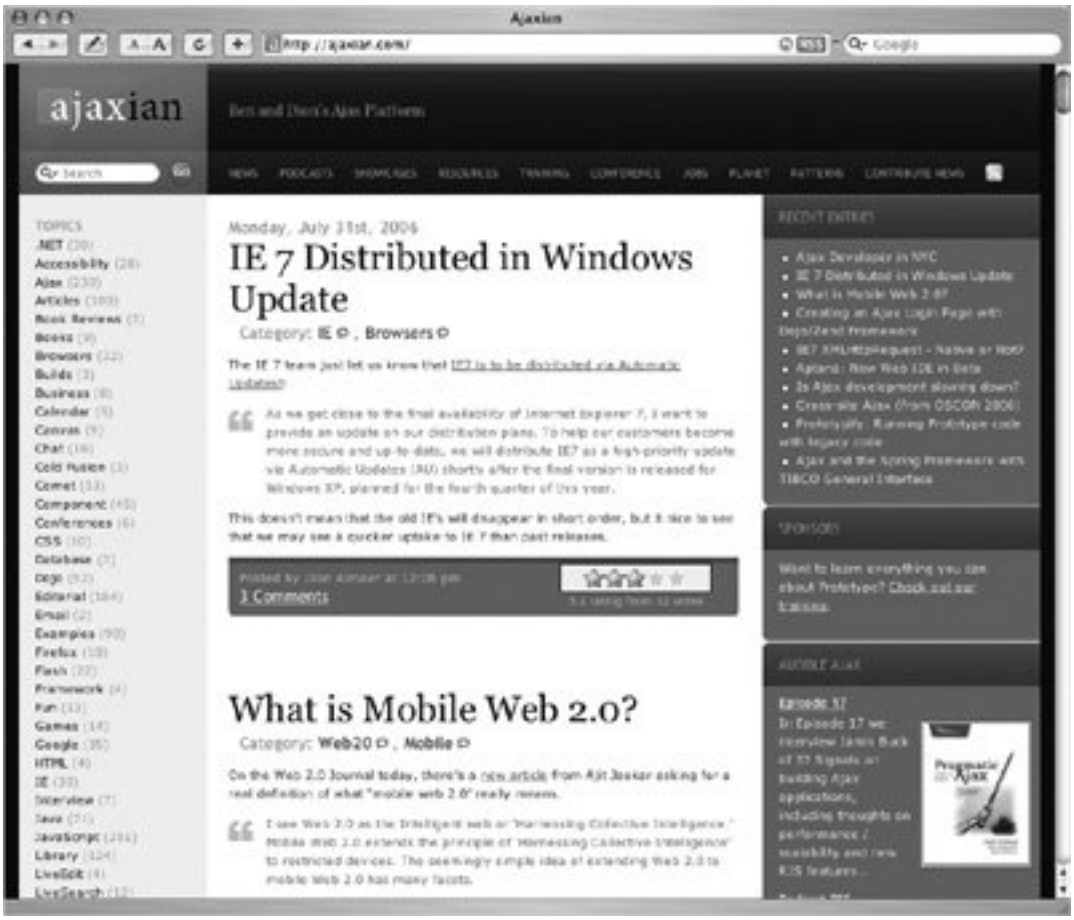
This is a very good blog with news, lists of JavaScript and Ajax resources, podcasts with JavaScript and Ajax luminaries, and much more (**Figure D.9**). It can sometimes get a bit breathless over the fabulousness of Ajax, making you think that it's the cure for cancer and a terrific dessert topping all rolled into one, but we're sure that the blog's perspective will mellow over time. It also has a bad habit of being a little confused about what Ajax actually *is* (no, Flash is *not* any part of Ajax); but we're hoping that it will also learn a little more about that as well. Until then, it's a great site to find out who's doing cool user interface tricks.

Figure D.9. The Ajaxian blog is a good destination for JavaScript and Ajax news and information.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

[View full size image]



Yahoo! User Interface Blog

http://yuiblog.com/blog/

This blog is the companion blog for the Yahoo! libraries we discuss in Chapter 16. It has discussions about the Yahoo! Design Pattern Library and the Yahoo! User Interface Library, which help you to efficiently get the most out of today's browsers. The Yahoo! developers are regularly posting, answering questions, and discussing better ways to use their libraries.

JavaScript World Scripting Forums

http://www.javascriptworld.com/forums/

JavaScript World has long been the companion site for this book, where you'll find all the scripts in the book and also resources to help you learn more about JavaScript. In 2006, we added the JavaScript World Forums, a bulletin board where scripters can help each other out when they get stumped with a script problem. Come join our lively community!

JavaScript Usenet Newsgroup

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

last count, there were more than 100,000 newsgroups, covering virtually every subject you can imagine. Naturally, we're interested here in the few newsgroups that are devoted to JavaScript.

The main Usenet newsgroup for JavaScript is `news:comp.lang.javascript`, where there are many discussions about scripting, people asking questions about problems that have them stymied, and general talk among JavaScript developers. It's a good place to get answers and pick up tips. Within the newsgroup, there are different discussion topics, or threads. You'll often find that threads begun by other people will apply to your own questions.

✓ Tip

- Usenet can be a wild place, and old-timers can be merciless to new people ("newbies") who ask what (to the old-timers) seem to be foolish questions. It's best to hang around and just read other people's messages before you post your first message in a newsgroup. You may save yourself a lot of grief and avoid many nasty messages (called flames). Never forget that your messages can be read potentially by millions of people worldwide. If one is available, read the FAQ file for any newsgroup. Chances are, you'll find that some of your questions will be answered in the FAQ, plus there's always other interesting information there. You can find the latest FAQ files for most newsgroups on the `news.answers` newsgroup.

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Books

Though the authors would naturally like to think that the book you've got in your hands is all you'll ever need to become a JavaScript expert, they recognize that you might just want a bit more information after you've eagerly devoured this book. There are approximately a zillion JavaScript books on the market; here (in no particular order) are some of the books that we think are the best.

JavaScript, The Definitive Guide

Written by David Flanagan and published by O'Reilly Media, this is an exhaustive reference to the JavaScript language. Not for the faint of heart, this is where the experts turn to look up those weird operators and nail down that odd syntax. The 5th Edition of this book, the latest available as we write, covers JavaScript 1.5. We don't know why there is a Javan rhinoceros on the cover of this book; shouldn't that be on the Java book?

JavaScript & DHTML Cookbook

This O'Reilly book by Danny Goodman is an excellent compendium of real-world problems and solutions. We know this book is worth your time because Dori was one of the book's technical reviewers.

The JavaScript Anthology: 101 Essential Tips, Tricks & Hacks

Once you're past the basics of JavaScript and Ajax, you'll be ready for this book, written by Cameron Adams and James Edwards and published by SitePoint. You'll find many well-written examples and bits of code you can use in your own sites.

Ajax in Action

This Manning Publications book by Dave Crane, Eric Pascarello, and Darren James is a deep exploration of Ajax for experienced JavaScript developers who are getting into Ajax. This book helps take you past the cut-and-paste scripting stage to creating your own Ajax applications.

ppk on JavaScript

Peter-Paul Koch is one of the acknowledged masters of JavaScript. In this book from New Riders, he uses real-world script examples he created for paying clients to take you through a journey that is both theoretical and practical. Recommended.

Head Rush Ajax

This is a very readable and even fun introduction to Ajax by Brett McLaughlin. The Head First and Head Rush series style is to use lots of visuals, repetition, and humor to get past their possibly dry subjects, and applying this to Ajax works well. It's another O'Reilly Media book.

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Index

[SYMBOL] [A] [B] [C] [D] [E] [F] [G] [H] [I] [J] [K] [L] [M] [N] [O] [P] [Q] [R] [S] [T] [U] [V] [W] [X] [Y] [Z]

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Index

[**SYMBOL**] [A] [B] [C] [D] [E] [F] [G] [H] [I] [J] [K] [L] [M] [N] [O] [P] [Q] [R] [S] [T] [U] [V] [W] [X] [Y] [Z]

$ (dollar sign), in RegExp
&& (double ampersand) operator 2nd
() parentheses
    in functions 2nd
    in loops
    indicating methods with
* (asterisk) operator
    in JavaScript
    in RegExp
    styling changes and
+ (plus sign) operator 2nd
++ operator 2nd
. (periods) [See dot syntax.]
/ (slash) operator, in RegExp
' (single quotes) in bookmarklets
1-up calendars, adding
12-hour time format
    converting to
    vs. 24-hour format
2-up calendars, adding
; (semicolon)
    for ending statements
    in JavaScript 2nd 3rd
? (question mark), in RegExp
@ sign
    in RegExp
@import syntax, CSS
[] (brackets) operator, in RegExp
\ (backslash)
    before a special character, in RegExp
    to escape slash
\w operator, in RegExp

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

{} (braces), in conditional statements

|| logical or operator 2nd

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Index

[SYMBOL] [**A**] [B] [C] [D] [E] [F] [G] [H] [I] [J] [K] [L] [M] [N] [O] [P] [Q] [R] [S] [T] [U] [V] [W] [X] [Y] [Z]

`<a>` tags 2nd 3rd
absolute positioning
absolute sizes
accented characters
`action` attribute, and form tag 2nd
ActiveX
  ActiveX object
  `XMLHttpRequest` object and
Adams, Cameron
Adaptive Path
Adobe GoLive
Ajax
  auto-completing form fields
  basics of 2nd
  caching peculiarities of
  history of
  interactive Web applications and
  links, previewing with
  problems with
  server data and
    parsing
    reading
    refreshing
Ajax in Action
Ajax toolkits 2nd [See also Yahoo! User Interface (YUI) Library.]
Ajaxian
`align` attribute 2nd 3rd
`alt` attribute 2nd 3rd
alternate stylesheet attribute
AM/PM
  vs. 24-hour format
  converting to

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

anchor tags, testing for
animation
adding with YUI Library
animated GIF files
cycling banners and
defined
animating graphics [See images.]
creating smoother
anonymous functions, defined
AOL browsers, and JavaScript versions
`appendChild()` function 2nd
applets, Java
arrays
definition and example 2nd
in name generator example
updating
assignment operators, defined
asterisk (`*`) operator
in JavaScript
in RegExp
styling changes and
Asynchronous JavaScript and XML [See Ajax.]
asynchronous server calls
at sign (`@`), in RegExp
Atlas framework toolkit
attributes
`align`
`alt` 2nd 3rd
alternate stylesheet
`autocomplete`
`bgcolor`
`class`, defined
`frame` tag
`href`
`id` 2nd 3rd
`img` tag
`language`
`src` 2nd 3rd 4th 5th

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

`type` 2nd

auto-completing form fields, Ajax

`autocomplete` attribute

availHeight property

availWidth property

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Index

[SYMBOL] [A] [**B**] [C] [D] [E] [F] [G] [H] [I] [J] [K] [L] [M] [N] [O] [P] [Q] [R] [S] [T] [U] [V] [W] [X] [Y] [Z]

back button problem, in Ajax
background
  adding images using CSS
  changing color of
  properties (CSS) listed
backslash (\)
  in RegExp
  to escape slash
banners, cycling
  adding links to
  creating
bar graphs, generating
Bare Bones Software, and BBEdit
BBEdit
`bgcolor` attribute
`blur()` method
`<body>` tags 2nd 3rd
body scripts, defined
book references [See references.]
bookmarklets
  background color, changing
  calculator
  creating
    in Firefox
    in Internet Explorer
    in Safari
  images, viewing
  ISO Latin characters, displaying
  origin of
  RGB values, converting to hexadecimal
  styles, changing
  validating pages

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

- Web-safe colors
- word lookups with

`border` attribute 2nd

box properties

braces `{}`, in conditional statements

brackets (`[]`), in RegExp

browser detect

browser windows

- closing
- elements of
- loading different contents into
- moving to specified locations
- new
- new pages, creating
- opening
  - in specified locations
  - multiple
- pop-ups
- updating

browsers

- browser detect
- cache files and
- CSS compliant
- grading of by YUI Library
- mouse click codes and
- supporting external JavaScript files

buttons

- `<input>` tags and radio buttons
- back button problem in Ajax
- radio buttons
- Reset button
- submit button

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Index

[SYMBOL] [A] [B] [**C**] [D] [E] [F] [G] [H] [I] [J] [K] [L] [M] [N] [O] [P] [Q] [R] [S] [T] [U] [V] [W] [X] [Y] [Z]

cache files, browser
caching peculiarities, Ajax
calculator, bookmarklet
calendars, adding with YUI Library
  1-up calendars
  2-up calendars
calling scripts multiple ways
Car Picker script
caret (^) operator, in RegExp
Cascading Style Sheets (CSS)
  absolute positioning using
  background images, adding
  changing fonts with
  `class`/`id` attribute and
  defined
  embedding style rules
  history of
  `id` selectors, adding to
  invalid form elements and
  links, enhancing
  Reference
  sizes, relative and absolute
  specifications/standards
  style sheet switcher
  style sheets/styles, adding
  text, formatting with
  Unobtrusive Scripting and
Cascading Style Sheets: The Definitive Guide, Second Edition
case sensitivity
  in IE
  in JavaScript
Castro, Elizabeth 2nd

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

characters
modifiers
special characters
accented
in RegExp
to define `id` selector
`charAt()` method
`charCodeAt()` method
Cheat Sheets
child pages, defined
`class` attribute
defined 2nd
`input` tag and
required fields and
classes, CSS
basics of
pseudo-classes
defined
listed
clicks
double-clicks
mouse clicks [See mouse events.]
client-side language, JavaScript as
client-side programs, defined
cloneNode
color
changing background
properties
Web-safe
`cols` attribute
comments, placing in scripts
Common Gateway Interface (CGI)
defined
for JavaScript-impaired users
for reading/writing on servers
learning to write
password validation and
Perl and CGI for the World Wide Web, Second Edition: Visual QuickStart Guide

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

conditionals
- basics of
- multi-level

`confirm()` method

container utility

`contentType` property

cookies
- basics of
- deleting
- format for multiple
- handling multiple
- "New to You" messages, displaying
- reading
- setting
- showing
- using as counters

Coordinated Universal Time (UTC) 2nd

Core JavaScript Guide and Reference

countdowns, creating

counter variable, defined

counters, using cookies as

Crane, Dave

`createElement()` function

`createTextNode()` function

CSS [See Cascading Style Sheets (CSS).]

cycling banners
- adding links to
- creating

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Index

[SYMBOL] [A] [B] [C] [**D**] [E] [F] [G] [H] [I] [J] [K] [L] [M] [N] [O] [P] [Q] [R] [S] [T] [U] [V] [W] [X] [Y] [Z]

dates
- date object methods
- displaying by time zone
- placing current in Web pages

Daylight Savings Time
days of week 2nd
debugging, logger control for
default blocks
detecting objects
DHTML (Dynamic HTML), defined
Dialog containers
dictionary lookups
`<div>` tags
- defined
- vs. `<span>` tags

`do`/`while` loops
Document Object Model (DOM)
- defined
- DOM scripting
  - defined
  - The Blog
- DOM-2
- DOM-3

`document.write()`
Dojo toolkit
dollar sign (`$`)
DOM [See Document Object Model (DOM).]
dot syntax
- defined 2nd
- event handlers and

double ampersand (`&&`) operator
double-clicks, checking for

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

dragging and dropping page elements
Dreamweaver
jump menus in
WYSIWYG HTML editors and
dynamic frames
Dynamic HTML (DHTML), defined
dynamic pages
countdowns, creating
current date, placing in Web pages
date object methods
days of the week
military time, converting to 12-hour format
objects in documents, moving
time of day, customizing messages for
time zone, displaying dates by

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Index

[SYMBOL] [A] [B] [C] [D] [**E**] [F] [G] [H] [I] [J] [K] [L] [M] [N] [O] [P] [Q] [R] [S] [T] [U] [V] [W] [X] [Y] [Z]

ECMAScript
- as version of JavaScript
- bindings
- reserved words and

editors, text
Edwards, James
element nodes, defined
elements
- replacing
- validating forms with

else section of conditionals
Emacs, as text editor
email addresses, validating 2nd
error messages
event handlers
- assigned functions and
- basics of
- defined 2nd
- form events
  - `onblur`
  - `onchange`
  - `onclick`
  - `onfocus`
  - `onreset`
  - `onselect`
  - `onsubmit`
- key events
  - `onkeydown`
  - `onkeypress`
  - `onkeyup`
- mouse events
  - `onclick`

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

- onmousedown
- onmousemove
- onmouseout
- onmouseover
- onmouseup
- window events
  - onabort
  - onblur
  - onerror
  - onfocus
  - onload
  - onmove
  - onresize
  - onunload

events [See also event handlers.]
- form
- key
- mouse
- window

exec() method

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Index

[SYMBOL] [A] [B] [C] [D] [E] [**F**] [G] [H] [I] [J] [K] [L] [M] [N] [O] [P] [Q] [R] [S] [T] [U] [V] [W] [X] [Y] [Z]

FABridge (Flex-Ajax Bridge)

fields [See also auto-completing form fields, Ajax ; Ajax.]

- comparing
- identifying problem fields
- setting one with another
- specifying required

file names, validating

FireBug and logger control

Firefox

- creating bookmarklets in
- CSS support in
- defaults in
- dictionary lookup in
- event handlers and
- FireBug and logger control
- `focus()` method and
- JavaScript alert boxes and
- `oncontextmenu` and
- support of external JavaScript files
- thesaurus lookup in

Flanagan, David

Flash animations

Flex-Ajax Bridge (FABridge)

`float: left`, for horizontal menus

`focus()` method 2nd

fonts, CSS and

- changing
- properties
- styles and sizes, switching

`for` attribute

`for` loops 2nd

form events

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

form tag 2nd
formatting
multiple cookies
plain text format
strings
basics of
sorting and
validating and
text with CSS
time 2nd
forms [See also regular expressions (RegExp).]
email addresses, validating
fields and
comparing
identifying problem fields
setting one with another
specifying required
form tags and attributes
form validation 2nd
menus, changing dynamically
radio buttons and
select-and-go navigation
zip codes, validating
`frame` attributes
`frameborder` attribute
frames
dynamic frames, creating and loading
forcing into pages
forcing into sites
frameset, defined
iframes
loading JavaScript with
working with
keeping out of pages
loading multiple
sharing functions between
storing in
targets, setting

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

- defined
- frameset pages
- frameset tag
- layout

functions

- anonymous, defined
- basics of
- passing values to
- returning values from
- sharing between frames

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Index

[SYMBOL] [A] [B] [C] [D] [E] [F] [**G**] [H] [I] [J] [K] [L] [M] [N] [O] [P] [Q] [R] [S] [T] [U] [V] [W] [X] [Y] [Z]

Garrett, Jesse James 2nd

`getElementById()` method

`getElementsByTagName()` method

`getFullYear()` method

`getHours()` method

`getTime()` method

`getYear()` method

GIF files

- animated, defined

global variables

GMT (Greenwich Mean Time)

Goodman, Danny

Google

- Ajax and 2nd
- Google Maps
  - Google Maps Mania
  - mashups for
  - vs. Mapquest
- Google Suggest

graphics, animating [See images.]

graphs, bar

Greenwich Mean Time (GMT)

Grids CSS component

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Index

[SYMBOL] [A] [B] [C] [D] [E] [F] [G] [**H**] [I] [J] [K] [L] [M] [N] [O] [P] [Q] [R] [S] [T] [U] [V] [W] [X] [Y] [Z]

handling errors [See error messages.]

`<head>` tags

- defined 2nd
- in HTML pages 2nd

Head Rush Ajax

header scripts, defined

headers, setting request

`height` attribute 2nd 3rd

"Hello World" script 2nd

"Hello, Cleveland!" script

hexadecimal, converting RGB values to

hijacking Web pages

`<hl...h6>` tags

horizontal menus

hours, numbering of

`href` attribute 2nd 3rd

`hspace` attribute

HTML (Hypertext Markup Language)

- `<html>` tags 2nd
- embedding within scripts
- `innerHTML`
  - `innerHTML` property 2nd
  - node manipulation and
  - simple scripting and
  - text nodes vs.
- `readonly` attribute
- text editors
- writing JavaScript-friendly HTML

HTML, XHTML, and CSS, Sixth Edition: Visual QuickStart Guide

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Index

[SYMBOL] [A] [B] [C] [D] [E] [F] [G] [H] [I] [J] [K] [L] [M] [N] [O] [P] [Q] [R] [S] [T] [U] [V] [W] [X] [Y] [Z]

`id` attribute
- defined 2nd
- frames and
- HTML and
- img tag and
- input tag and
- loops and
- rollovers and 2nd
- select tag and
- to specify particular image

`id` selectors, adding to CSS

identifiers to avoid

IE [See Internet Explorer (IE).]

`if`/`then`/`else` conditionals 2nd

`iframe` tag

iframes
- loading JavaScript with
- working with

images
- adding background with CSS
- cycling banners
  - adding links to
  - creating
- `id` attribute, to specify particular
- multiple rollovers
- random images, displaying
- random starts, cycling images with
- rollovers
  - creating more effective
  - creating simple
  - new vs. old-style JavaScript and
  - single, triggering with multiple links

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

- triggering from text links
- viewing on pages
- wraparound slideshows, building

img attributes

index numbers, in arrays

inline frame [See iframes.]

`innerHTML`

- contentWin variable and
- deleting cookies and
- node manipulation and
- property 2nd
- simple scripting and
- text nodes vs.

`<input>` tags 2nd

`insertBefore()` method

inserting text nodes

interactive Web applications

internal scripts

Internet Explorer (IE)

- ActiveX object and
- case sensitivity and
- early versions of
- IE 6 and 7
  - bookmarklet security problems in
  - creating bookmarklets in
  - default in
  - dictionary lookup in
  - security issues
- JavaScript and
- `onmousedown` event and
- pop-up windows and
- support of external JavaScript files
- `XMLHttpRequest` object and 2nd
- year numbering in

`isNaN()` method

ISO Latin characters, displaying

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Index

[SYMBOL] [A] [B] [C] [D] [E] [F] [G] [H] [I] [J] [K] [L] [M] [N] [O] [P] [Q] [R] [S] [T] [U] [V] [W] [X] [Y] [Z]

James, Darren
Java
  applets
  vs. JavaScript
Java 2 for the World Wide Web: Visual QuickStart Guide
JavaScript and DHTML Cookbook
JavaScript fundamentals 2nd
  Ajax, defined
  alert windows for users
  as object-oriented language
  assignments and comparisons, defined
  conditionals
  date methods in
  defined 2nd
  features of
  functions
  handling events in
  JavaScript Console
  JavaScript Object Notation (JSON)
  JavaScript World Forums
  limitations of
  links, enhancing with
  month numbering irregularities in
  operators, defined
  origins of
  referrer pages
  reserved words in
  scope
  scripts [See sample scripts ; scripts.]
  strings
  tags
  terminology

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

- users and
  - prompting for response
  - redirecting with links
- values and variables, defined
- vs. Java
- Web sites [See resources.]
- year numbering irregularities in

JavaScript, genealogy and reference
- browsers and JavaScript versions 2nd
  - AOL browsers
  - ECMAScript
  - Microsoft's JScript
  - Netscape JavaScript
- object hierarchy flowchart
- table of objects

JavaScript, The Definitive Guide

JPEG files, and RegExp

.js files 2nd 3rd

JScript
- as version of JavaScript
- defined
- JScript Language Reference
- JScript Users Guide

jump menus

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Index

[SYMBOL] [A] [B] [C] [D] [E] [F] [G] [H] [I] [J] [**K**] [L] [M] [N] [O] [P] [Q] [R] [S] [T] [U] [V] [W] [X] [Y] [Z]

Kangas, Steve

Keith, Jeremy

key events

- `onkeydown` events
- `onkeypress` events
- `onkeyup` events

keyboard events [See key events.]

keywords

- `this` keyword 2nd
- `var` keyword 2nd

kilometers, converting to miles

Koch, Peter-Paul 2nd

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Index

[SYMBOL] [A] [B] [C] [D] [E] [F] [G] [H] [I] [J] [K] [**L**] [M] [N] [O] [P] [Q] [R] [S] [T] [U] [V] [W] [X] [Y] [Z]

`label` tag

`language` attribute

languages

- JavaScript as
  - client-side language
  - object-oriented language
- LiveScript language

Latin characters (ISO), displaying

`<li>` tags

`<link>` tags 2nd

links

- CSS and enhancement of
- enhancing with JavaScript
- previewing with Ajax
- redirecting users with
- text links
  - triggering rollovers from
  - triggering rollovers with multiple

list properties, CSS

LiveScript language

local variables

logger control for debugging, YUI

logical or operator (`||`)

loops

- `do`/`while` loops
- `for` loops
- fundamentals of
- in bar graph script

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Index

[SYMBOL] [A] [B] [C] [D] [E] [F] [G] [H] [I] [J] [K] [L] [**M**] [N] [O] [P] [Q] [R] [S] [T] [U] [V] [W] [X] [Y] [Z]

Macintosh
- defaults in
- Mac OS X
  - Java and
  - setting time in
- Mac OS X Tiger, dictionary and thesaurus
- text editors for
- TextWrangler

Macromedia
- Dreamweaver
  - jump menus in
  - WYSIWYG HTML editors and
- Flash animations

Macromedia Dreamweaver 8 for Windows and Macintosh: Visual QuickStart Guide

main modifiers (RegExp), listed and defined

Mapquest, vs. Ajax Google maps

mashups, for Google Maps

math functionality in JavaScript

`Math.floor()` function

`Math.random()` function 2nd 3rd

`maxlength` attribute

McLaughlin, Brett

menus
- horizontal
- jump
- pull-down
- select-and-go 2nd
- sliding

messages, customizing for time of day

meta characters, RegExp

methods [See also *specific* methods.]
- date object methods

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

- indicating methods with ( )
- string methods of RegExp object

Meyer, Eric A.

Microsoft [See also Internet Explorer (IE).]
- FrontPage
- JScript
  - as version of JavaScript
  - defined
  - JScript Language Reference
  - JScript Users Guide
- scripting language Web page
- Windows
  - Java and
  - setting time in
- Word, as text editor

miles, converting from kilometers

military time, converting

Mochikit toolkit

modifiers in RegExp

Module containers

months, numbering of 2nd

mouse clicks [See mouse events.]

mouse events
- `onclick` events
- `ondblclick` events
- `onmousedown` events
- `onmousemove` events
- `onmouseout` events
- `onmouseover` events
- `onmouseup` events

`moveTo()` method

moving objects in documents

Mozilla
- JavaScript debugger
- sites

multi-level conditionals

multi-line comments

Musings From Mars weblog

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Index

[SYMBOL] [A] [B] [C] [D] [E] [F] [G] [H] [I] [J] [K] [L] [M] [**N**] [O] [P] [Q] [R] [S] [T] [U] [V] [W] [X] [Y] [Z]

`name` attribute 2nd 3rd 4th
name generator
navigation
  bar, replaced with content pages
  frames 2nd
  select-and-go
Navigator Web browser
Netscape
  creation of JavaScript and
  early versions of
  `evt` parameter and
  Navigator Web browser
  Netscape JavaScript
  support of external JavaScript files
  version 4.X
    `@import` syntax (CSS), and
    dynamic content redraw bug
  year numbering in
"New to You" messages, displaying
nodes
  adding
  deleting
  DOM and
  element nodes
  inserting
  manipulating
  replacing
  text nodes
`<noscript>` tags 2nd
Notepad, and plain text
null values, and prompting users
numbers

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

numbering in JavaScript
phone numbers, formatting and validating
year/month numbering irregularities

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Index

[SYMBOL] [A] [B] [C] [D] [E] [F] [G] [H] [I] [J] [K] [L] [M] [N] [**O**] [P] [Q] [R] [S] [T] [U] [V] [W] [X] [Y] [Z]

`<object>` HTML tags
object hierarchy flowchart
object-oriented language, JavaScript as
objects [See also *specific* objects.]
- adding animation to
- basics of
- date object methods
- detecting
- in documents, moving 2nd
- naming
- table of
- z-index for superimposed objects 2nd

`onabort` events 2nd
`onblur` events 2nd 3rd
`onchange` events 2nd
`onclick` events 2nd 3rd
`onclick` handlers 2nd
`ondblclick` events
one-up calendars, adding
`onerror` events 2nd
`onfocus` events 2nd 3rd
`onkeydown` events
`onkeypress` events
`onkeyup` events
online references, YUI Library
`onload` events 2nd
`onmousedown` events
`onmousemove` events
`onmouseout` events 2nd 3rd 4th 5th
`onmouseover` events 2nd 3rd 4th 5th
`onmouseup` events

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

`onpagehide` event handlers

`onpageshow` event handlers

`onreset` events

`onresize` events

`onselect` events 2nd

`onsubmit` events 2nd

`onunload` events 2nd 3rd

`open()` command 2nd

`opener` property

operators [See also *specific* operators.]

- assignment and comparison
- defined
- RegExp 2nd

`option` tag

Overlay containers

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Index

[SYMBOL] [A] [B] [C] [D] [E] [F] [G] [H] [I] [J] [K] [L] [M] [N] [O] [**P**] [Q] [R] [S] [T] [U] [V] [W] [X] [Y] [Z]

page properties, CSS
pages [See also dynamic pages ; Web pages.]
  page validator
  parent pages, defined
Panel containers
parameters
  defined
  spaces in width/length parameters
  `window.open()` command and 2nd
parentheses `()`
  in functions 2nd
  in loops
  indicating methods with
`parentNode` property
`parseInt()` method 2nd 3rd 4th
parsing server data
Pascarello, Eric
passwords, checking 2nd
periods (.) [See dot syntax.]
Perl and CGI for the World Wide Web, Second Edition: Visual QuickStart Guide
phone numbers, formatting/validating
plain text format
plus sign (+) operator, RegExp
Pop-up containers
pop-up menus, choice of inputs via
pop-up windows
  as link preview
  in auto-completing form fields
positioning properties, CSS
ppk on JavaScript
preferred stylesheet
Previous link

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

properties [See also *specific* properties.]
- CSS
  - box properties
  - color/background properties
  - font properties
  - list properties
  - page properties
  - positioning properties
  - text properties
  - user interface properties
- defined
- of RegExp object

pseudo-classes, CSS
- defined
- listed

pseudo-elements, CSS

pull-down menus

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Index

[SYMBOL] [A] [B] [C] [D] [E] [F] [G] [H] [I] [J] [K] [L] [M] [N] [O] [P] [**Q**] [R] [S] [T] [U] [V] [W] [X] [Y] [Z]

question mark (?), in RegExp

QuirksMode

quotes, and fonts

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Index

[SYMBOL] [A] [B] [C] [D] [E] [F] [G] [H] [I] [J] [K] [L] [M] [N] [O] [P] [Q] [**R**] [S] [T] [U] [V] [W] [X] [Y] [Z]

radio buttons
re variable
reading server data, with Ajax
`readonly` HTML attribute
references [See also JavaScript, genealogy and reference ; resources.]
- *Ajax in Action*
- CSS references
- *Head Rush Ajax*
- *HTML, XHTML, and CSS, Sixth Edition*
- *Java 2 for the World Wide Web: Visual QuickStart Guide*
- *JavaScript and DHTML Cookbook*
- *JavaScript, The Definitive Guide*
- *Perl and CGI for the World Wide Web, Second Edition: Visual QuickStart Guide*
- *ppk on JavaScript*
- *The JavaScript Anthology: 101 Essential Tips, Tricks and Hacks*
- YUI Library

referrer pages
refreshing server data, with Ajax
RegExp [See regular expressions (RegExp).]
`RegExp` object
regular expressions (RegExp) [See also browser windows.]
- as main modifiers
- defined
- elements, replacing with
- email addresses, validating
- file names, validating
- RegExp object
- special characters in
- strings
  - extracting
  - formatting
  - formatting and sorting

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

URLs, validating
relative sizes in CSS
`replace()` method 2nd
request headers, setting
reserved words
in JavaScript
variables and
Reset button
`resizeTo()` command
resources
books [See references.]
JavaScript Usenet Newsgroup
Web sites
Ajax
Atlas framework toolkit
Bare Bones Software
bookmarklets
Core JavaScript Guide 1.5
Core JavaScript Reference 1.5
Counter's Global Statistics
CSS
DHTML
Dojo toolkit
DOM-2
DOM-3
ECMAScript bindings
FABridge (Flex-Ajax Bridge)
Google Maps Mania
Google Suggest
JavaScript World Scripting Forums
JavaScript, getting started in
Microsoft's scripting language page
MochiKit
Mozilla sites 2nd
QuirksMode
script.aculo.us
Venkman Mozilla JavaScript debugger
W3C 2nd

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

- Web Standards Project's DOM Scripting Task Force
- Willison, Simon
- Yahoo! Design Pattern Library
- Yahoo! User Interface Library 2nd
- Weblogs
  - Ajaxian
  - DOM Scripting: The Blog
  - Musings from Mars weblog
  - Yahoo! User Interface Blog 2nd

`responseXML` property

RGB values, converting to hex

rollovers
- building three-state
- creating
- creating effective
- creating simple
- defined
- multiple
- new vs. old-style JavaScript and
- single, triggering with multiple links
- triggering from text links

rules and CSS
- defined
- embedding in other style rules

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Index

[SYMBOL] [A] [B] [C] [D] [E] [F] [G] [H] [I] [J] [K] [L] [M] [N] [O] [P] [Q] [R] [**S**] [T] [U] [V] [W] [X] [Y] [Z]

Safari
- creating bookmarklets in
- CSS support in
- defaults in
- dictionary lookup in
- JavaScript alert boxes and
- JavaScript Console
- `oncontextmenu` and
- `onload` events and
- support of external JavaScript files
- thesaurus lookup in

sample scripts
- Ajax
  - auto-completing form fields
  - Flickr.com example
  - parsing server data
  - previewing links
  - refreshing server data automatically
  - requesting server data
- bookmarklets
  - background color, changing to white
  - converting kilometers to miles
  - creating in Firefox
  - creating in Internet Explorer
  - creating in Safari
  - CSS styles, changing with
  - ensuring Web-standard valid markup
  - generating list of accented characters
  - performing complex calculations
  - performing dictionary lookups in IE
  - performing dictionary lookups in Safari and Firefox
  - turning RGB color values into hex

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

- browser windows
  - adding window-moving capability
  - creating new HTML pages under scripted control
  - loading different contents into windows
  - moving windows to specified spots
  - opening child window at specified screen location
  - opening multiple windows
  - opening multiple windows with single click
  - opening new windows
  - opening/closing child windows
  - parent window with open and close links for child window
  - updating from parent and child windows
- cookies and JavaScript
  - alerting user to new content
  - arrays to deal with multiple cookies
  - counting cookies
  - deleting cookies
  - displaying cookies
  - id in HTML page to insert cookie result
  - "New to You" messages, displaying
  - reading previously set cookie and sending to document window
  - setting browser cookie
- CSS
  - adding style to body and img tags
  - applying `id` selector to style
  - changing body and img rules for absolute positioning
  - changing color and behavior of links within text
  - changing fonts
  - embedding style rules within another style
  - formatting text with CSS
  - formatting text with standard HTML and no CSS styles
  - inserting background image, specifying source and attributes
- dynamic pages
  - checking time of day and responding
  - converting between 24- and 12-hour time
  - converting military time to 12-hour time
  - countdowns, creating
  - counting down days

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

- determining weekday or weekend
- displaying any time zone
- object moving
- writing current date to document windows

event handling

- capturing and handling double-clicks
- controlling window stacking with `onfocus` handler
- displaying eyeballs that follow user
- fixing Netscape 4.X's dynamic content redraw bug
- `onblur` handler in forms to trigger actions when user leaves field
- setting multiple `onload` attributes
- using `onblur` to keep window in front
- using `onkeydown` handler to trigger slide changes

form handling

- adding blocks to `switch`/`case` conditional
- "Car Picker" example (form validation)
- comparing value of fields
- controlling/setting field entries from user choices
- CSS sets style for invalid form elements
- eliminating incorrect letters from Zip codes
- for password check example
- forms for active site navigation
- framework to add validation checks
- highlighting incorrect field's label when finding errors
- pop-up menus listing months not days
- scanning text in email fields for proper addresses
- select-and-go menu
- selecting values from one pop-up menu to create contents of another

forms and regular expressions

- capitalizing list of names
- email validation example
- rearranging entered list of names
- replacing elements with RegExp
- sorting group of names
- validating email with RegExp
- validating file names
- validating/formatting user-entered phone numbers

frames

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

- counting page visits
- creating an iframe
- forcing page into frameset
- forcing page onto separate page
- forcing site into frame
- frameset containing forced page
- frameset page calling JavaScript file for site enforcement
- loading dynamic frames from other frames
- loading HTML pages into content iframe
- loading multiple frames
- setting frame targets
- sharing functions between multiple frames
- storing information in frames

images
- banner images, cycling between
- cycling banners, adding links to
- cycling banners, creating
- multiple rollovers, reference to external script
- random image, starting cycling show with
- random images, displaying
- rollover from text link
- rollover within image link tags
- rollovers, creating more flexible
- rollovers, creating simple
- rollovers, creating smoother animation
- single rollover, triggering with multiple links 2nd
- slideshow with links for movement
- three-state rollovers, building

JavaScript applied
- bar graph generation
- pull-down menus
- silly name generator
- slideshow with captions
- sliding menus
- switching style sheets

JavaScript basics
- alert windows, creating
- commenting scripts

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

- enhancing links with JavaScript
- querying users
- redirecting users with links
- referencing external JavaScript files
- referrer pages, working with

JavaScript language essentials
- arrays, changing contents of
- calling scripts multiple ways
- do/while loops example
- handling errors with try/throw/catch command
- loop example (Bingo card)
- multi-level conditionals and switch/case statements
- object detection
- passing values to functions
- returning values from functions
- using arrays

objects and DOM
- adding text nodes
- adding, deleting, replacing text
- adding/deleting specific text
- deleting text node with link
- inserting text
- replacing nodes

YUI Library
- adding animation to objects
- adding logger control for debugging
- adding one-up calendar with YUI Library
- adding two-up calendars with YUI Library
- dragging and dropping page elements
- Slideshow Builder scripts
- using container utility

sans-serif fonts 2nd

scope, of variables

<script> tags
- <style> tags and
- defined
- enclosing scripts in 2nd
- in CSS 2nd

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

- script text and

script.aculo.us

Scripting, Unobtrusive

scripts [See also sample scripts.]

- body scripts, defined
- calling multiple ways
- comments, placing in
- defined
- embedding HTML within
- external
- header, defined
- internal
- location of
- online sources of

security problems in IE 2nd

select tag

select-and-go navigation

selected attribute

selectors, CSS

semicolon (;)

- for ending statements
- in JavaScript 2nd 3rd

serif fonts for style sheets

server calls, asynchronous

server data, and Ajax

- parsing
- reading
- refreshing

server-side programs, defined

`setTime()` method

setTimeout command 2nd

silly name generator

Simple Dialog containers

single quotes (`'`), in bookmarklets

single-line comments

size

- absolute sizes in CSS
- relative sizes in CSS

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

slash (/) operator, RegExp
Slideshow Builder scripts
slideshows
  allowing users to control
  building wraparound
  with captions
sliding menus
Smith, Dori
sorting strings
spaces, in width/length parameters
`<span>` tags
  defined
special characters
  generating list of accented
  in RegExp
`split("")` command 2nd 3rd
`src` attribute 2nd 3rd 4th 5th
statements
  braces `{}`, in conditional
  `if...else` conditional
  semicolon (;), for ending
  switch/case
storage, in frames
string methods, of RegExp object
strings
  JavaScript
  RegExp and
    extracting
    formatting and sorting
    formatting and validating
    formatting basics
  string values, defined
`<style>` tag, CSS 2nd
style sheets [See Cascading Style Sheets (CSS).]
styles
  adding to pages
  changing with bookmarklets
submit button

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Sun Microsystems, Java for Windows
`switch`/`case` statements
switcher, style sheets
syntax
  `@import` syntax, CSS
  dot syntax, defined 2nd

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Index

[SYMBOL] [A] [B] [C] [D] [E] [F] [G] [H] [I] [J] [K] [L] [M] [N] [O] [P] [Q] [R] [S] [**T**] [U] [V] [W] [X] [Y] [Z]

`<table>` tag
tagName
tags
- anchor, testing for
- basic tags
- form
- HTML basic
- `img`
- XHTML

`target` attribute
targets, setting for frames
`<td>` tag
terminology, JavaScript
`test()` method
text
- adding, deleting, replacing
- formatting with CSS
- inserting
- text properties (CSS)

text editors
text files
text links, triggering rollovers from
text nodes
- adding
- defined
- deleting

TextEdit
TextWrangler
`<th>` tag
The JavaScript Anthology: 101 Essential Tips, Tricks and Hacks
`then` section of conditionals
thesaurus lookups

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

time
customizing messages for
Daylight Savings Time
JavaScript's inconsistent handling of
military, converting to 12-hour format
time zone, displaying dates by
year/month numbering irregularities
`<title>` tag
`toGMTString()` method
tools
CSS
text editors [See text editors.]
toolkits [See also Ajax toolkits ; Yahoo! User Interface (YUI) Library.]
Tooltip containers
Top Level Domains, and email addresses
top pages, defined
`toUTCString()` method
`<tr>` tags
`try`/`throw`/`catch` command
two-up calendars, adding
`type` attribute 2nd 3rd

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Index

[SYMBOL] [A] [B] [C] [D] [E] [F] [G] [H] [I] [J] [K] [L] [M] [N] [O] [P] [Q] [R] [S] [T] [**U**] [V] [W] [X] [Y] [Z]

`<ul>` tag
Unix, text editors for
Unobtrusive Scripting 2nd
updating arrays
URLs, validating with RegExp
Usenet Newsgroup
user interface properties (CSS)
users
- alert windows
- prompting for response
- redirecting with links
- users groups, Yahoo!

UTC (Coordinated Universal Time) 2nd

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Index

[SYMBOL] [A] [B] [C] [D] [E] [F] [G] [H] [I] [J] [K] [L] [M] [N] [O] [P] [Q] [R] [S] [T] [U] [**V**] [W] [X] [Y] [Z]

validation
- form validation 2nd
- of bookmarklets
- of email addresses 2nd
- of file names, with RegExp
- of URLs with RegExp
- of Web pages
- of zip codes
- page validator
- validation checks, adding

`value` attribute

values
- converting
- defined
- RGB values, converting to hex

`var` keyword 2nd

variables
- arrays as
- assigning
- comparison
- defined
- naming
- passing to
- `re` variable
- scope of
- `xhr` variable, defined

Venkman JavaScript debugger

versions of JavaScript

viewing images

`void()` method

`vspace` attribute

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Index

[SYMBOL] [A] [B] [C] [D] [E] [F] [G] [H] [I] [J] [K] [L] [M] [N] [O] [P] [Q] [R] [S] [T] [U] [V] [**W**] [X] [Y] [Z]

W3C [See World Wide Web Consortium (W3C).]

Web applications, interactive

Web browsers [See browsers.]

Web pages [See also dynamic pages.]

- adding styles/style sheets to
- changing background color
- changing style
- child pages, defined
- current date, placing in
- design of [See also Cascading Style Sheets (CSS).]
- forcing into frames
- keeping out of frames
- multiple window
- page visits, counting
- parent pages, defined
- referrer pages
- top pages, defined
- viewing images on

Web sites

- for downloading
  - Sun's Java for Windows
  - YUI Cheat Sheets
  - YUI Library
- for reference [See resources.]

Web Standards Project's DOM Scripting Task Force

`width` attribute 2nd 3rd

Willison, Simon

window events

- `onabort`
- `onblur`
- `onerror`
- `onfocus`

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

onmove
onresize
onunload
window.ActiveXObject
window.location
Windows [See Microsoft.]
windows, alert
word lookups
words [See reserved words.]
World Wide Web Consortium (W3C)
CSS and
DOM-2 and
node manipulation and
page validator
wraparound slideshows, building
WYSIWYG editors

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Index

[SYMBOL] [A] [B] [C] [D] [E] [F] [G] [H] [I] [J] [K] [L] [M] [N] [O] [P] [Q] [R] [S] [T] [U] [V] [W] [**X**] [Y] [Z]

`xhr` variable 2nd

XHTML

- defined
- *HTML, XHTML, and CSS, Sixth Edition: Visual QuickStart Guide*
- `language` attribute and
- tags

XHTML Strict

XML, and asynchronous JavaScript

`XMLHttpRequest` object 2nd 3rd 4th 5th

PREV NEXT

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Index

[SYMBOL] [A] [B] [C] [D] [E] [F] [G] [H] [I] [J] [K] [L] [M] [N] [O] [P] [Q] [R] [S] [T] [U] [V] [W] [X] [**Y**] [Z]

Yahoo!
- Ajax and
- Design Pattern Library
- Global Object
- User Interface Blog

Yahoo! User Interface (YUI) Library 2nd
- animation, adding with
- calendars, adding
  - 1-up calendars
  - 2-up calendars
- container utility
- grading of browsers by
- logger control for debugging
- online references
- page elements, dragging and dropping

`yahoo.js` file 2nd

years, numbering in JavaScript

YUI library [See Yahoo! User Interface (YUI) Library.]

yuiblog.com

downloaded from: lib.ommolketab.ir

downloaded from: lib.ommolketab.ir

Index

[SYMBOL] [A] [B] [C] [D] [E] [F] [G] [H] [I] [J] [K] [L] [M] [N] [O] [P] [Q] [R] [S] [T] [U] [V] [W] [X] [Y] [**Z**]

`z-index`, for superimposed objects 2nd

zip codes, validating

PREV

downloaded from: lib.ommolketab.ir