**Contents**

<table>
<thead>
<tr>
<th>Acknowledgments</th>
<th>ix</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction</td>
<td>xix</td>
</tr>
</tbody>
</table>

**Chapter 1: Introduction to JavaScript and the Web**

<table>
<thead>
<tr>
<th>Introduction to JavaScript</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>What Is JavaScript?</td>
<td>1</td>
</tr>
<tr>
<td>JavaScript and the Web</td>
<td>2</td>
</tr>
<tr>
<td>Why Choose JavaScript?</td>
<td>3</td>
</tr>
<tr>
<td>What Can JavaScript Do for Me?</td>
<td>4</td>
</tr>
</tbody>
</table>

**Tools Needed to Create JavaScript Web Applications**

<table>
<thead>
<tr>
<th>The &lt;script&gt; Tag and Your First Simple JavaScript Program</th>
<th>6</th>
</tr>
</thead>
</table>

**A Brief Look at Browsers and Compatibility Problems**

<table>
<thead>
<tr>
<th>Introducing the “Who Wants To Be A Billionaire” Trivia Quiz</th>
<th>13</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ideas Behind the Coding of the Trivia Quiz</td>
<td>16</td>
</tr>
<tr>
<td>What Functionality to Add and Where?</td>
<td>18</td>
</tr>
</tbody>
</table>

**Summary**

| 18 |

**Chapter 2: Data Types and Variables**

<table>
<thead>
<tr>
<th>Types of Data in JavaScript</th>
<th>21</th>
</tr>
</thead>
<tbody>
<tr>
<td>Numerical Data</td>
<td>22</td>
</tr>
<tr>
<td>Text Data</td>
<td>22</td>
</tr>
<tr>
<td>Boolean Data</td>
<td>24</td>
</tr>
</tbody>
</table>

**Variables — Storing Data in Memory**

| Declaring Variables and Giving Them Values | 25 |
| Assigning Variables with the Value of Other Variables | 28 |

**Setting Up Your Browser for Errors**

| Displaying Errors in Firefox | 30 |
| Displaying Errors in Internet Explorer | 31 |
| What Happens When You Get an Error   | 32 |

**Using Data — Calculations and Basic String Manipulation**

| Numerical Calculations                  | 35 |
| Operator Precedence                     | 39 |
| Basic String Operations                 | 42 |
| Mixing Numbers and Strings              | 44 |

**Data Type Conversion**

| Dealing with Strings That Won’t Convert | 48 |
# Contents

## Arrays
- A Multi-Dimensional Array 49
- The “Who Wants To Be A Billionaire” Trivia Quiz — Storing the Questions Using Arrays 54
- Summary 61

## Exercise Questions
- Question 1 62
- Question 2 62

## Chapter 3: Decisions, Loops, and Functions 63

### Decision Making — The if and switch Statements
- Comparison Operators 64
- The if Statement 66
- Logical Operators 70
- Multiple Conditions Inside an if Statement 73
- else and else if 77
- Comparing Strings 78
- The switch Statement 79

### Looping — The for and while Statements
- The for Loop 84
- The for...in Loop 87
- The while Loop 88
- The do...while loop 90
- The break and continue Statements 91

### Functions
- Creating Your Own Functions 92
- Variable Scope and Lifetime 96

### The Trivia Quiz — Building One of the Basic Functions 97

## Summary 100

## Exercise Questions
- Question 1 102
- Question 2 102
- Question 3 103
- Question 4 103

## Chapter 4: JavaScript — An Object-Based Language 105

### Object-Based Programming
- A Brief Introduction to Objects 105
- Objects in JavaScript 106
- Using JavaScript Objects 107
- Primitives and Objects 110
The JavaScript Native Objects 111
  String Objects 111
  The Math Object 122
  Number Object 129
  Array Objects 130
  Date Objects 137
  JavaScript Classes 146
Summary 156
Exercise Questions 157
  Question 1 157
  Question 2 157
  Question 3 157

Chapter 5: Programming the Browser 159
Introduction to the Browser Objects 160
  The window Object — Our Window onto the Page 161
  The history Object 163
  The location Object 163
  The navigator Object 164
  The screen Object 164
  The document Object — The Page Itself 165
  Connecting Code to Web Page Events 169
  Browser Version Checking Examples 175
Summary 185
Exercise Questions 186
  Question 1 186
  Question 2 186
  Question 3 186

Chapter 6: HTML Forms — Interacting with the User 187
HTML Forms 188
  Other Form Object Properties and Methods 190
HTML Elements in Forms 191
  Common Properties and Methods 193
  Button Form Elements 194
  Text Elements 197
  textarea Element 204
  Check Boxes and Radio Buttons 207
  The select Elements 215
## Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Trivia Quiz</td>
<td>227</td>
</tr>
<tr>
<td>Creating the Form</td>
<td>228</td>
</tr>
<tr>
<td>Creating the Answer Radio Buttons</td>
<td>229</td>
</tr>
<tr>
<td>Summary</td>
<td>233</td>
</tr>
<tr>
<td>Exercises</td>
<td>235</td>
</tr>
<tr>
<td>Question 1</td>
<td>235</td>
</tr>
<tr>
<td>Question 2</td>
<td>235</td>
</tr>
<tr>
<td>Chapter 7: Windows and Frames</td>
<td>237</td>
</tr>
<tr>
<td>Frames and the window Object</td>
<td>238</td>
</tr>
<tr>
<td>Coding Between Frames</td>
<td>241</td>
</tr>
<tr>
<td>Code Access Between Frames</td>
<td>247</td>
</tr>
<tr>
<td>Opening New Windows</td>
<td>257</td>
</tr>
<tr>
<td>Opening a New Browser Window</td>
<td>257</td>
</tr>
<tr>
<td>Scripting Between Windows</td>
<td>264</td>
</tr>
<tr>
<td>Moving and Resizing Windows</td>
<td>269</td>
</tr>
<tr>
<td>Security</td>
<td>270</td>
</tr>
<tr>
<td>Trivia Quiz</td>
<td>271</td>
</tr>
<tr>
<td>Creating the New Trivia Quiz</td>
<td>272</td>
</tr>
<tr>
<td>Summary</td>
<td>287</td>
</tr>
<tr>
<td>Exercise Questions</td>
<td>289</td>
</tr>
<tr>
<td>Question 1</td>
<td>289</td>
</tr>
<tr>
<td>Question 2</td>
<td>289</td>
</tr>
<tr>
<td>Chapter 8: String Manipulation</td>
<td>291</td>
</tr>
<tr>
<td>Additional String Methods</td>
<td>292</td>
</tr>
<tr>
<td>The split() Method</td>
<td>292</td>
</tr>
<tr>
<td>The replace() Method</td>
<td>295</td>
</tr>
<tr>
<td>The search() Method</td>
<td>296</td>
</tr>
<tr>
<td>The match() Method</td>
<td>296</td>
</tr>
<tr>
<td>Regular Expressions</td>
<td>297</td>
</tr>
<tr>
<td>Simple Regular Expressions</td>
<td>297</td>
</tr>
<tr>
<td>Regular Expressions: Special Characters</td>
<td>300</td>
</tr>
<tr>
<td>Covering All Eventualities</td>
<td>308</td>
</tr>
<tr>
<td>Grouping Regular Expressions</td>
<td>308</td>
</tr>
<tr>
<td>The String Object — split(), replace(), search(), and match() Methods</td>
<td>312</td>
</tr>
<tr>
<td>The split() Method</td>
<td>312</td>
</tr>
<tr>
<td>The replace() Method</td>
<td>314</td>
</tr>
<tr>
<td>The search() Method</td>
<td>318</td>
</tr>
<tr>
<td>The match() Method</td>
<td>318</td>
</tr>
<tr>
<td>Using the RegExp Object’s Constructor</td>
<td>321</td>
</tr>
</tbody>
</table>
## Chapter 9: Date, Time, and Timers

### World Time
- Setting and Getting a Date Object’s UTC Date and Time

### Timers in a Web Page
- One-Shot Timer
- Setting a Timer that Fires at Regular Intervals

## Chapter 10: Common Mistakes, Debugging, and Error Handling

### I Can’t Believe I Just Did That: Some Common Mistakes
1. Undefined Variables
2. Case Sensitivity
3. Incorrect Number of Closing Braces
4. Missing Plus Signs During Concatenation
5. Equals Rather than Is Equal To
6. Incorrect Number of Closing Parentheses
7. Using a Method as a Property and Vice Versa

### Microsoft Script Debugger
- Obtaining the Script Debugger
- Installing the Script Debugger
- Using the Script Debugger

### Firefox Debugging with Venkman

### Error Handling
- Preventing Errors
- The try...catch Statements

## Summary

## Exercise Questions
- Question 1
- Question 2
## Chapter 11: Storing Information: Cookies 407

**Baking Your First Cookie** 407
- A Fresh-Baked Cookie 408
- The Cookie String 415

**Creating a Cookie** 418
*Getting a Cookie’s Value* 422

**Cookie Limitations** 428
**Cookie Security and IE6 and IE7** 429

**Summary** 434

**Exercise Questions** 435
- Question 1 435
- Question 2 435

## Chapter 12: Introduction to Dynamic HTML 437

**Cross-Browser Issues** 437
- Events 438

**CSS: A Primer** 458
- Adding Some Style to HTML 459

**Dynamic HTML** 470
- Accessing Elements 470
- Changing Appearances 470
- Positioning and Moving Content 478
- Example: Animated Advertisement 483

**Summary** 488

**Exercise Questions** 488
- Question 1 488
- Question 2 488

## Chapter 13: Dynamic HTML in Modern Browsers 489

**Why Do We Need Web Standards?** 490

**The Web Standards** 492
- HTML 492
- ECMAScript 492
- XML 493
- XHTML 494

**The Document Object Model** 495
- The DOM Standard 496
- Differences Between the DOM and the BOM 497
- Representing the HTML Document as a Tree Structure 497
- The DOM Objects 501
## Contents

DOM Properties and Methods 502  
The DOM Event Model 521  
**DHTML Example: Internet Explorer 5+** 526  
The IE Event Model 526  
Building a DHTML Toolbar 528  
**DHTML Example: The Toolbar in Firefox and Opera** 540  
Creating Cross-Browser DHTML 544  
Summary 548  
Exercise Questions 548  
  Question 1 548  
  Question 2 549

### Chapter 14: JavaScript and XML 551

**What Can XML Do for Me?** 551  
The Basics of XML 552  
  Understanding XML Syntax 552  
**Creating an XML Document** 557  
  Document Type Definition 559  
  Creating the First DTD File 559  
  Bring on the Data 561  
**Altering the Look of XML** 566  
  Style Sheets and XML 566  
  Extensible Stylesheet Language 568  
**Manipulating XML with JavaScript** 576  
  Retrieving an XML File in IE 577  
  Determining When the XML File Has Loaded 579  
  Retrieving an XML File in Firefox and Opera 580  
  Determining When the File is Loaded 580  
  Cross-Browser XML File Retrieval 581  
  Displaying a Daily Message 582  
Summary 592  
Exercise Questions 593  
  Question 1 593  
  Question 2 593

### Chapter 15: Using ActiveX and Plug-Ins with JavaScript 595

**Checking for and Embedding Plug-ins in Firefox** 596  
  Adding a Plug-in to the Page 596  
  Checking for and Installing Plug-ins in Firefox 598
## Contents

### Checking for and Embedding ActiveX Controls on Internet Explorer 601
- Adding an ActiveX Control to the Page 602
- Installing an ActiveX Control 606

### Using Plug-ins and ActiveX Controls 607
- Testing Your “No Plug-in or ActiveX Control” Redirection Script 614
- Potential Problems 614

### Summary 617

### Exercise Question 618
- Question 1 618

### Chapter 16: Ajax and Remote Scripting 619

#### What Is Remote Scripting? 619
- What Can It Do? 619
- Ajax 621
- Browser Support 621

#### Ajax with JavaScript: The XMLHttpRequest Object 622
- Cross-Browser Issues 622
- Using the XMLHttpRequest Object 626
- Asynchronous Requests 627

#### Creating a Remote Scripting Class 629
- The HttpRequest Constructor 629
- Creating the Methods 631
- The Full Code 632

#### Creating a Smarter Form with XMLHttpRequest 634
- Requesting Information 634
- The Received Data 635
- Before You Begin 635

#### Creating a Smarter Form with an IFrame 644
- The Server Response 645

#### Things to Watch Out For 652
- The Same-Origin Policy 652
- ActiveX 652
- Usability Concerns 653

### Summary 654

### Exercise Questions 655
- Question 1 655
- Question 2 655

### Appendix A: Exercise Solutions 657