

Contents

Introduction	xxvi
Part I Fast Track to JavaScript Programming 1	
1 Creating Simple JavaScript Programs	3
What Is JavaScript?	3
History of JavaScript	4
JavaScript Versus Java	5
Task: Combining JavaScript with HTML	6
Simplified Language Structure	7
Web Browser Integration	7
Supported on More Platforms	8
Uses for JavaScript	8
Including Dynamic Information	8
Validating Forms	9
Making Pages Interactive	9
Getting Started with JavaScript	9
Required Software and Hardware	9
Development Tools	10
Task: Testing a Simple JavaScript Program	10
Receiving the Web Page	10
Processing the Script	11
Potential Problems with JavaScript	11
Security Considerations	11
Your Source Code Is Accessible	12
Overcoming JavaScript's Limitations	13
Missing Features	13
Combining JavaScript with Other Languages	15
Writing a Simple JavaScript Application	16
Creating the Script	16
Embedding the Script in an HTML Page	16
Task: Creating an Event Handler	17
Viewing Your Script's Output	18
Task: Hiding JavaScript from Older Browsers	18
Workshop Wrap-Up	19
Next Steps	19
Q&A	20

2	Working with Larger Programs and Variables	21
	JavaScript Language Structure	21
	Statements	22
	Functions	23
	Variables	23
	Expressions	23
	Objects, Properties, and Methods	24
	Task: Using Comments	24
	Programs and Applications	25
	Data Types and Variables	25
	Integers	26
	Floating-Point Numbers	27
	Boolean Values	28
	Strings	28
	Special Characters	29
	Task: Creating an Array	30
	Task: Working with Numbers and Text	30
	Naming and Declaring Variables	31
	Rules for JavaScript Variable Names	31
	Task: Assigning Values to Variables	32
	Variable Declarations and Scope	33
	Task: Declaring Variables	33
	Using Expressions and Operators	34
	Assignment Operators	35
	Arithmetic Operators	36
	Task: Incrementing and Decrementing Variables	37
	String Operators	38
	Logical Operators	38
	Bitwise Operators	39
	Comparison Operators	39
	Understanding Operator Precedence	40
	Task: Using Variables in Expressions	41
	Converting and Evaluating Variables and Expressions	41
	The <code>parseInt</code> Function	42
	The <code>parseFloat</code> Function	42
	The <code>eval</code> Function	42
	Workshop Wrap-Up	43
	Next Steps	43
	Q&A	44

Part II Using JavaScript Objects and Forms 45

3	Working with Objects and Events	47
	Using JavaScript Objects	47
	Task: Using Object Properties	48
	Assigning Values to Properties	49
	Functions and Methods	49
	Task: Declaring a Function	49
	Calling a Function	51
	Returning a Value	51
	Integrating Functions with HTML	52
	Dividing a Task into Functions	54
	Communication Between Functions	55
	Understanding Methods	55
	Task: Defining Objects and Methods	56
	Task: Creating Instances of Objects	57
	Putting It All Together	58
	Conditionals and Loops	59
	The <code>if...else</code> Construct	59
	Conditional Expressions	60
	Task: Using the <code>for</code> Keyword	61
	Task: Using <code>while</code> Loops	62
	The <code>for...in</code> Construct	63
	Infinite Loops	63
	The <code>break</code> Statement	64
	The <code>continue</code> Statement	64
	Task: Using Multiple Parameters in Functions	65
	Events and Event Handlers	65
	Types of Events	66
	Task: Creating an Event Handler	67
	How Event Handlers Interact	67
	Workshop Wrap-Up	68
	Next Steps	68
	Q&A	69
4	Using Built-In Objects and Custom Objects	71
	Techniques for Object-Oriented Programming	71
	Task: Using Objects, Properties, and Methods	72
	The <code>new</code> Keyword	73
	The <code>this</code> Keyword	74
	The <code>with</code> Keyword	74
	Creating a Generic Object	74

Task: Looping Through an Object's Properties	75
Task: Using Built-In Objects	75
Using Array Objects	76
Task: Creating an Array	76
Using String Objects	77
Using Date Objects	81
The Math Object	83
The navigator Object	84
Customizing Objects	85
Task: Customizing the String Object	86
Workshop Wrap-Up	87
Next Steps	87
Q&A	87
5 Accessing Window Elements as Objects	89
The window Object	90
window Object Properties	91
Task: Changing the Status Line	91
window Object Methods	93
Task: Opening and Closing Windows	94
Task: Using Prompts, Alerts, and Confirmation Dialogs	96
Task: Updating a Page with Timeouts	98
Task: Using window Object Event Handlers	100
The location Object	101
The document Object	102
document Object Properties	102
document Object Methods	104
The history Object	106
Task: Implementing BACK and FORWARD Buttons	106
The link Object	107
The anchor Object	108
form Objects	109
Workshop Wrap-Up	109
Next Steps	109
Q&A	110
6 Using Interactive Forms	111
Building a JavaScript-Compatible HTML Form	111
Understanding Form Actions and Methods	112
Overview of Form Elements	113

Task: Creating an HTML Form	117
Using form Objects in JavaScript	118
form Object Properties	119
form Object Methods and Events	120
The JavaScript form Object Hierarchy	120
Text Fields and Password Fields	121
Text Areas	122
Checkboxes	123
Radio Buttons	123
Selection Lists	124
Hidden Fields	125
Buttons	125
File Upload Fields	126
Automating the Form with JavaScript	126
Task: Adding Automatic Totals	126
Task: Automating the Shipping Address	129
Validating the Form Data with Event Handlers	132
Where to Validate?	132
Which Fields to Validate?	132
Task: Creating Functions for Validation	133
Task: Adding an Event Handler for Validation	135
Workshop Wrap-Up	138
Next Steps	138
Q&A	138
7 Real-Life Examples I	141
Example 1: Displaying a Pop-Up Message	141
What will this say?	141
Example 2: Displaying Random Quotations	144
Example 3: A Validated Registration Form	146
Part III Creating Smart Web Pages 151	
8 Improving a Web Page with JavaScript	153
The Beginning: A Simple Web Page	154
The Main Page	154
Creating a Navigation Bar	155
Naming the Pages	156
Task: Creating the Data Structures and HTML for the Navigation Bar	157
Task: Creating the Function for the Navigation Bar	158
Task: Integrating the Navigation Bar with the HTML Page	159

Using the Status Line	161
Task: Creating Friendly Links	161
Task: Adding a Scrolling Message	163
Task: Using a Text Field to Scroll a Message	167
Workshop Wrap-Up	169
Next Steps	170
Q&A	170
9 Using Frames, Cookies, and Other Advanced Features	171
Advanced Browser Features	172
Frames	172
Targeted Links	178
Cookies	179
Plug-Ins	180
Using Frames with JavaScript	180
Objects for Frames	180
Using JavaScript in Multiframe Windows	182
Task: Creating a Framed Document	182
Task: Modifying the Navigation Bar	183
Task: Testing the Multiframe Document	184
Task: Updating a Frame with JavaScript	185
Task: Remembering User Preferences with Cookies	187
Workshop Wrap-Up	189
Next Steps	189
Q&A	190
10 Working with Multiple Pages and Data	191
Working with a Complex Web Site	191
Task: Creating an Application in Nested Framesets	192
Working with Databases and Data	194
Using String Arrays	195
Using Associative Arrays	195
Creating Custom Data Structures	195
Understanding Data Tainting	196
Enabling Data Tainting	197
Data Tainting Commands	197
Task: Working with Documents on Multiple Servers	198
Maintaining State in JavaScript	200
Task: Creating a Questionnaire	200
Workshop Wrap-Up	202
Next Steps	203
Q&A	203

11	Real-Life Examples II	205
	Example 1: Nonscrolling Status Line Messages	206
	Example 2: An Improved Navigation Bar	208
	Example 3: Storing User Preference	212
Part IV Advanced JavaScript Concepts		217
12	Working with Graphics in JavaScript	219
	Task: Creating Graphical Back and Forward Buttons	220
	Using Dynamic Images in JavaScript	221
	The <code>images</code> Array	221
	Preloading Images	222
	Task: Replacing Images Dynamically	223
	Task: Creating a Graphical Clock	225
	Task: Rotating Between Advertisement Banners	227
	JavaScript and Client-Side Image Maps	229
	Task: Using an Image Map with JavaScript	229
	Workshop Wrap-Up	231
	Next Steps	232
	Q&A	232
13	Working with Multimedia and Plug-Ins	233
	Using Sound in JavaScript	234
	Configuring a Sound Player	234
	Task: Playing Sounds on Events	234
	Overview: Netscape Plug-Ins	236
	Plug-Ins and JavaScript	237
	Objects Related to Plug-Ins	237
	Task: Listing Plug-Ins	239
	Task: Listing MIME Types	241
	Task: Testing for a Plug-In	242
	Workshop Wrap-Up	242
	Next Steps	243
	Q&A	243
14	Debugging JavaScript Programs	245
	Common Errors in JavaScript Programming	246
	Syntax Errors	246
	Timing Problems	250
	Variable Problems	250
	Reserved Words	251
	Platform-Specific Issues	251

	Techniques for Debugging	252
	Task: Using Alerts to Display Values	253
	Task: Debugging with a Temporary Window	253
	Tools for JavaScript Debugging	255
	Using the JavaScript Command Line	255
	Task: Testing JavaScript Commands Interactively	256
	The JavaScript Trace Facility	258
	Task: Installing the JavaScript Trace Facility	258
	Dealing with Bugs and Crashes	260
	Netscape Navigator 2.0	261
	Netscape Navigator 2.01	262
	Netscape Navigator 2.02	263
	Netscape Navigator 3.0 (Atlas)	263
	Microsoft Internet Explorer	264
	Workshop Wrap-Up	264
	Next Steps	265
	Q&A	265
15	Real-Life Examples III	267
	Planning the Program	267
	The Complete Application	269
	How the Program Works	274
	Initializing the Game	274
	Placing Cards	275
	Scoring the Game	276
	Ending a Game	278
Part V	JavaScript Alternatives and the Future	279
16	Integrating JavaScript with Java	281
	An Overview of Java	281
	How Java Works	282
	The Java Language	282
	Java Objects and Classes	283
	Integrating Java with HTML	283
	Creating Your Own Java Applets	284
	Task: Installing the Java Development Kit	284
	Task: Creating a Simple Java Applet	285
	Task: Compiling and Viewing a Java Applet	286
	Using Java Classes with JavaScript	288
	Calling Java Methods	288
	The <code>applet</code> Object	289
	Making the Java Applet Accessible	289

	Task: Controlling a Java Applet	289
	Calling JavaScript Functions from Java	291
	Steps for the JavaScript Programmer	291
	Steps for the Java Programmer	291
	Workshop Wrap-Up	292
	Next Steps	292
	Q&A	293
17	Combining JavaScript, CGI, and SSI	295
	Choosing the Right Tool for the Job	296
	Comparing JavaScript with CGI	296
	The Basics of CGI	298
	GET and POST Requests	299
	Defining Requests in Forms	299
	Name and Value Pairs	299
	Environmental Variables	300
	How CGI Programs Generate Output	301
	SSI: CGI Within a Web Page	301
	Server-Side Include Directives	302
	Enabling Server-Side Includes	302
	Languages for CGI and SSI	303
	Perl	303
	C and C++	303
	Other Languages	303
	Task: Creating a Simple CGI Program	304
	Task: Installing a CGI Script	305
	Task: Creating JavaScript Functions with SSI	306
	Workshop Wrap-Up	306
	Next Steps	307
	Q&A	307
18	Using ActiveX and Microsoft Internet Explorer 3.0	309
	Task: Downloading and Installing Internet Explorer 3.0	310
	Internet Explorer and JavaScript	311
	Using ActiveX Controls	312
	How ActiveX Controls Work	313
	Task: Using an Existing ActiveX Control	313
	A Sampling of ActiveX Controls and Features	315
	Task: Using the ActiveX Control Pad	316
	Developing ActiveX Controls	318
	An Introduction to VBScript	318

Task: Creating a Simple VBScript Application	319
VBScript Versus JavaScript	320
Punctuation and Syntax	320
Variables	320
VBScript and Forms	321
Object-Oriented Features	321
ActiveX and VBScript	321
Workshop Wrap-Up	321
Next Steps	322
Q&A	322
19 Real-Life Examples IV	323
Example 1: Manipulating a Java Applet	324
Example 2: Creating JavaScript Dynamically	327
Example 3: Using an ActiveX Control	330
20 The Future of JavaScript	333
Planned New Features	333
LiveConnect	334
A JavaScript Wish List	334
Language Features	335
Interactive Forms	335
Graphics and Multimedia	335
User Interfaces and Frames	335
Java and Plug-Ins	336
New Applications for JavaScript	336
JavaScript Development Environments	336
Alternatives to JavaScript	337
Java	337
CGI	337
SSI	338
LiveWire: Server-Side JavaScript	338
Shockwave	338
ActiveX	339
VBScript	339
HTML Enhancements	339
Workshop Wrap-Up	340
Next Steps	340
Q&A	341
Conclusion	341

Part VI Appendixes 343

A	JavaScript Structure and Objects Reference	345
	Built-In Objects	345
	Array	345
	string	346
	Math	347
	Date	349
	navigator	350
	The JavaScript Object Hierarchy	350
	window	350
	location	352
	history	352
	document	352
	Creating and Customizing Objects	354
	Creating Objects	354
	Customizing Objects	354
B	JavaScript Statements, Functions, Operators, and Keywords Reference	357
	JavaScript Statements	358
	Comments	358
	break	358
	continue	358
	for	358
	for...in	358
	function	359
	if...else	359
	return	359
	var	359
	while	360
	JavaScript Built-In Functions	360
	eval	360
	parseInt	360
	parseFloat	361
	isNaN()	361
	escape()	361
	unescape()	361
	taint()	361
	untaint()	361
	JavaScript Operators	361
	JavaScript Keywords	363

C	Online JavaScript Resources	365
	JavaScript	366
	Newsgroups and Mailing lists	366
	Web Sites	366
	HTML and the Web in General	368
	HTML Information	368
	Browser Manufacturers	369
	Other Sites	369
	Java	369
	Sun's Java Site	369
	Gamelan	370
	The Java Man	370
	JavaWorld	370
	Plug-Ins	370
	Netscape's Plug-In Guide	370
	Plug-In Plaza	370
	Shockwave	371
	Adobe's Acrobat	371
	QuickTime	371
	Live3d	371
	NCompass	371
	CGI and SSI	372
	NCSA's CGI Documentation	372
	CGI FAQ	372
	Tools for Aspiring Web Weavers	372
	Perl Information	372
	Newsgroups	373
	MSIE, ActiveX, and VBScript	373
	Microsoft's Pages	373
	JScript	373
	The ActiveX Arena	373
	Miscellaneous Resources	374
	VRML	374
	GIF Animations	374
	Web Security	374
D	What's on the CD-ROM	377
	Windows Software	377
	HTML Tools	377
	Web Browser	378
	Graphics, Video, and Sound Applications	378

ActiveX	378
Java	378
CGI	378
Perl	378
Utilities	379
Electronic Books	379
Macintosh Software	379
HTML and Graphics Applications	379
Java	379
Utilities	379
Electronic Books	379
About Shareware	380
Index	381

