

Contents

About the Authors	ix
Acknowledgments	xiii
Introduction	xxi
Chapter 1: Introduction to ASP.NET AJAX	1
Development Trends	1
ASP.NET Development	2
So, What's the Problem?	4
Improving the User Experience	5
Current Drivers	5
What Is AJAX?	6
Advantages of AJAX	6
History of AJAX	6
Technologies That Make Up AJAX	7
What Is ASP.NET 2.0 AJAX?	7
Running ASP.NET AJAX Applications	8
Who's Using AJAX?	8
Currently	9
Packaging	9
Futures	10
Summary	10
Chapter 2: Creating an ASP.NET AJAX Application	11
Installing ASP.NET AJAX	11
Creating an ASP.NET AJAX Application	13
Creating a Database to Manage Users and Roles	15
Creating a Data Access Layer	16
Building a Roles Manager Page	18
Adding an UpdateProgress Control	21
Adding ASP.NET AJAX to an Existing ASP.NET Application	22
Adding a ScriptManager Control	28
Adding an UpdatePanel Control	28
Adding an AutoCompleteExtender Control	29
Summary	31

Contents

Chapter 3: ASP.NET AJAX Architecture	33
Analyzing the Foundations of ASP.NET AJAX	33
Understanding the Code Library	35
Attaining Cross-Browser Compatibility	35
Exploring the Microsoft AJAX Library	36
Stepping through the Client-Side Event Life Cycle	38
Investigating Server-Side Controls and Components	39
Examining the JavaScript Files	42
Handling HTTP Handlers	43
Working with the Web.Config File	45
Summary	52
Chapter 4: Calling Web Services	53
Introducing AJAX	53
Advantages of Developing with ASP.NET AJAX	54
Disadvantages of Developing with ASP.NET AJAX	55
AJAX Libraries	55
Client-Side JavaScript Overview	56
What Is JavaScript?	56
Why Do You Need JavaScript?	56
Common Control References	56
Browsers Supported	58
What Is at the Client?	59
The ScriptManager	59
Shortcuts	63
ScriptManagerProxy	63
XML-Script	63
Server-Side Operations	63
Putting the Client and Server Together	65
Using the ASP.NET Calling Convention	65
Performing Asynchronous Operations	68
AJAX-Type Scenarios	70
Returning Data	70
Simple Data Types	71
Working with Custom Business Objects	72
Page-Based Web Services	75
Data Format with JSON	76
What Is JSON?	76
Why Use JSON?	77

 Contents

Problem Areas	78
Invalid Postback or Callback Argument	78
Synchronizing ViewState	80
Handling Errors	81
Futures	83
Summary	83
Chapter 5: The UpdatePanel	85
What Is the UpdatePanel?	86
Understanding Asynchronous Postbacks	86
Browsers Supporting the UpdatePanel	87
Configuring the UpdatePanel	89
ScriptManager	89
Methods and Properties of the ScriptManager	90
Triggering the UpdatePanel	91
<asp:UpdateProgress>	92
Abort Button	92
ChildrenAsTriggers	93
UpdateMode	93
RenderMode	94
Server-Side Debugging	94
Dynamically Adding an UpdatePanel	95
Client Page Life Cycle	97
PageRequestManager	97
initializeRequest	98
beginRequest	98
pageLoading	98
pageLoaded	99
endRequest	99
init	99
pageUnload	99
Adding Controls	102
Error Reporting	104
Writing Controls	107
Complementary Controls	110
The UpdateProgress Control	110
The Timer Control	111
Summary	113

Contents

Chapter 6: Control Toolkit	115
A Community Project	116
Installing the Toolkit	116
Examining the Controls within the Toolkit	120
Extender Controls	121
Basic Control Usage	121
Examining the Controls	123
Control List	123
Putting the Controls to Use	130
Creating Your Own Extender Controls	152
Contributing to the AJAX Control Toolkit Open Source Project	153
Summary	153
Chapter 7: Control Extenders	155
The Core Framework	156
Creating a Control	157
Creating the Project	157
Embedding Script Resources	159
Implementing the Abstract Methods	162
Providing the Implementation for Your Dynamic Behavior	164
The Completed Extender	171
The ASPNET AJAX Control Toolkit	172
Enhancing the Extender Using AJAX Control Toolkit Features	176
A Closer Look at the AJAX Control Toolkit Effects	179
Advantages and Disadvantages of Using the AJAX Control Toolkit	181
Summary	182
Chapter 8: JavaScript Enhancements	185
Data Types	185
The Object() Object	186
The Boolean() Object	187
The Number() Object	188
The String() Object	189
The Array() Object	191
The StringBuilder() Class	193
The Date() Object	194
The Error() Object	197
Code Management	197
Namespaces	198
Classes	199

Contents

Inheritance	201
Interfaces	202
Pulling Together Language Features	203
Enumerations	205
Summary	205
Chapter 9: Microsoft AJAX Library	207
Client Library Namespaces	208
The Sys Namespace	208
Types	209
Sys.Debug	210
Sys.StringBuilder	211
The Sys.Net Namespace	217
Sys.Net.WebRequest	218
The Sys.Serialization Namespace	226
Passing Complex Types Using JSON and Serialization	226
Event Handling in the Microsoft AJAX Library	231
Summary	232
Chapter 10: User Interface Design	233
Asynchronous vs. Synchronous Postbacks	233
User Notification of Processing	234
Animating Asynchronous Postbacks	239
Providing Feedback during Ongoing Operations	243
Aborting Operations	245
Gracefully Handling Exceptions	249
Summary	252
Chapter 11: Security and Integration	255
Understanding How Integration Works	255
Securing Web Applications	256
Forms Authentication	256
ASP.NET Membership Services	257
Using Microsoft ASP.NET 2.0 AJAX	259
Authentication Service	259
Login Function	260
Logout Function	260
Enable Authentication Services	261
What You Have Learned	267

Contents

Profile Services	267
Properties Field	267
Load Function	267
Save Function	268
Enabling Profile Services	268
Summary	277
<hr/> Chapter 12: Debugging	<hr/> 279
Server-Side Debugging	279
Using Breakpoints	281
JavaScript Debugging	282
Other Ways of Invoking the Debugger	290
Using the debugger Keyword	291
Other Ways of Inspecting the Value of Variables	293
ASP.NET AJAX Debugging Support	297
Using Sys.Debug	297
Assertions and Failures	303
Using Sys.Debug.assert	303
Using Sys.Debug.fail	305
ScriptManager Debugging Support	305
The Man in the Middle	306
Fiddler	306
Using the Web Development Helper	312
Debugging in Firefox	314
Firebug	315
Summary	318
<hr/> Chapter 13: ASP.NET AJAX Futures CTP: Online Content	<hr/> 319
XML-Script	320
Data Binding	320
Drag and Drop	321
Bridging	322
Silverlight	323
<hr/> Appendix: Resources	<hr/> 325
Index	329