

ASP.NET 4.0 Programming

Joy dip Kanjilal



New York Chicago San Francisco
Lisbon London Madrid Mexico City
Milan New Delhi San Juan
Seoul Singapore Sydney Toronto

Contents

Foreword	xiii
Acknowledgments	xiv
Introduction	xv
1 Introduction to ASP.NET 4.0	1
Prerequisites	2
The Microsoft .NET Framework	2
Cross-Language Integration	2
The Common Type System	3
The Base Class Library	3
The Common Language Runtime	3
The Dynamic Language Runtime	3
Portability	3
The Just-in-Time (JIT) Compiler	4
Garbage Collection	4
Code Verification	4
Assemblies	4
From ASP to ASP.NET—A Paradigm Shift	5
ASP.NET Versions	5
From ASP.NET 1.0 to ASP.NET 4.0	5
New Features in ASP.NET 4.0	5
New and Improved Features in Visual Studio 2010	10
Improved Support for CSS Compatibility	10
Improved Packaging and Deployment Support	10
Debugging Enhancements	10
Multitargeting Support	11
JavaScript Debugging and IntelliSense Support	11
Better Design-Time Support	12
Getting Started with ASP.NET 4.0	12
The ASP.NET Folder Structure	12
The ASP.NET Application Life Cycle	14

The ASP.NET Page Life Cycle	15
Page_Init	15
LoadViewState	16
LoadPostBackData	16
Page_Load	16
Pre_Render	16
SaveViewState	16
Page_Render	17
PageJjnLoad	17
Application Domains and Runtime Hosts	17
ASP.NET Configuration Files	17
The Web.Config File	17
The Machine.Config File	20
Implementing Your First ASP.NET 4.0 Application	20
2 ASP.NET State Management	23
Server-Side State Management	24
Application Object	24
Session Object	25
Cache Object	31
Client-Side State Management	35
ViewState	35
Hidden Fields	39
Query Strings	39
Cookies	40
New State-Management Techniques in ASP.NET 4.0	43
Cache Storage	43
Extensible Output Caching	43
Cache Invalidation and Output Cache Substitution	45
3 Working with ADO.NET	47
ADO.NET Architecture Components	48
DataSet	48
Data Provider	49
Connected and Disconnected Modes in ADO.NET	50
Working in the Connected Mode	50
Working in the Disconnected Mode	53
Using Stored Procedures in ADO.NET	53
Transaction Handling in ADO.NET	55
Concurrency Handling in ADO.NET	57
Advanced Features in ADO.NET	58
TransactionScope	58
Optimized DataSet Serialization	59
Conversion of a DataReader to a DataSet or DataTable, and vice versa	60
Data Paging	60
Batch Updates	61
Asynchronous Data Access	63

The-Common Provider Model	64
Bulk Copying	64
DataTable Enhancements	64
The ADO.NET Entity Framework	67
TheEntity Data Model	68
Getting Started with the ADO.NET Entity Framework	68
4 Binding Data in ASP.NET	93
The ASP.NET Data Controls	94
The List Controls	94
The Repeater Control	96
The DataList Control	98
the DataGrid Control	98
TheGridView Control	99
The DetailsView Control	100
The Form View Control	102
The TreeView Control	103
The ListView Control	104
The DataPager Control	106
DataSourceControlsinASP.NET	107
The ObjectDataSource Control	108
The XmlDataSource Control	109
The LinqDataSource Control	110
The SqlDataSource Control	111
The AccessDataSource Control	112
The EntityDataSource Control	112
The SiteMapDataSource Control	113
Navigating Sites with the SiteMapPath Control	113
The GeneratedImage Control	115
The Chart Control	116
5 Building and Deploying ASP.NET Web Sites	119
Creating Web Sites in ASP.NET	120
Using ASP.NET Master Pages	121
User Controls versus Master Pages	122
Creating a Master Page in Visual Studio	122
Configuring a Master Page	124
Using Themes in ASP.NET	126
Best,Strategies for Deploying ASP.NET Applications	126
Assembly Versioning	127
Strong Naming of Assemblies	127
Obfuscation	127
GAC Deployment	128
Other Deployment Options	128
Precompiling	131
Why Precompile?	131
ClickOnce Deployment Strategy	133
New Deployment Options in Visual Studio 2010	134

6	Internationalization in ASP.NET	135
	What Are Localization and Globalization?	136
	Setting Culture and UI Culture	136
	Using Resource Files	140
	Creating Resource Files	140
	Reading Resource Files	141
	Compiling Resource Files	141
	Working with Embedded Resource Files	141
	Using Satellite Assemblies	143
	What Are Multilingual Applications?	143
	Creating Satellite Assemblies	144
	Using the CultureInfo Class	144
	Setting Culture Information for a Web Page Dynamically	144
	Configuring Localization in an Application	146
	Using Script Globalization and Localization	147
7	The ASP.NET Security Model	149
	Authentication	150
	Forms Authentication	151
	Windows Authentication	153
	Passport Authentication	154
	Authorization	156
	File Authorization	156
	URL Authorization	157
	How Do Authentication and Authorization Work?	159
	Impersonation	159
	What Happens if Impersonation Is Enabled?	159
	What Happens if Impersonation Is Disabled?	159
	Setting Up Impersonation	160
	The ASP.NET Provider Model	160
	The ProviderBase Abstract Class	161
	Role-Based Security	161
	Membership-Based Security	162
8	Tracing and Debugging in ASP.NET	165
	The System.Diagnostics Namespace	166
	Tracing	166
	Enabling Trace Information at the Page Level	167
	Enabling Trace Information at the Application Level	167
	The Trace Class	168
	The TraceContext Class	168
	Writing Custom Trace Messages	169
	Trace Listeners	170
	Implementing a Custom Trace Listener	170
	The TraceSwitch Class	173
	The BooleanSwitch Class	174
	The StackTrace Class	174

Debugging	175
Conditional Compilation	175
Debugging Support in Visual Studio	175
Tracing and Debugging ASP.NET Ajax Applications.	176
9 Dynamic Data	179
The ASP.NET Dynamic Data Framework	180
Features at a Glance.	180
The DynamicControl in ASRNET.	181
Dynamic Data Templates.	181
Creating a Dynamic Data Web Site.	181
Creating the Dynamic Data Web Site in Visual Studio.	181
Registering the Data Model.	181
Creating the DataContext and the Data Classes.	184
Executing the Application.	184
Customizing the Display.	185
Using Routes.	186
Performing Validations.	187
Handling Exceptions.	189
Working with Dynamic Data Entity Applications	190
Converting an Existing Web Site to a Dynamic Data Web Site.	191
The DynamicDataManager Control.	193
The DynamicHyperLink Control	194
Entity Templates.	195
10 Silverlight	197
What Is Silverlight and Why Is It Useful?	198
XAML Browser Applications (XBAP) and Silverlight	198
The Prerequisites.	199
Getting Started with Silverlight.	199
Understanding the Silverlight Controls	201
Data Binding in Silverlight	202
Working with Data.	202
Sorting Data	208
Deploying Silverlight Applications.	209
11 Web Parts.	211
What Are Web Parts Controls?	212
Understanding the Web Parts Controls.	213
Web Part Manager.	214
Web Part Zone.	214
Catalog Zone.	214
Editor Zone.	214
Connection Zone.	215
Web Parts Modes.	216
Developing Custom Web Parts Controls.	216
Display Modes.	217
Implementing Web Parts Controls Using User Controls.	218

	Ajax and Web Parts	222
	Using the UpdatePanel Control	222
12	Language Integrated Query (LINQ)	225
	Why LINQ?	226
	Operators in LINQ	226
	LINQ Implementations	229
	LINQ to Objects	229
	LINQ to XML	230
	LINQ to ADO.NET	233
	LINQ to DataSet	233
	LINQtoSQL	233
	LINQ to Entities	240
13	ASP.NET Ajax	243
	Introducing Ajax	244
	Advantages of Ajax	244
	Drawbacks of Using Ajax	245
	How Does Ajax Work?	245
	Asynchronous Modes of Execution	245
	Some Popular ASP.NET Ajax Frameworks	245
	The Atlas Framework	246
	The AJAX.NET Professional Framework	247
	The MagicAjax.NET Framework	247
	The Anthem.NET Framework	247
	ASP.NET Ajax	248
	The ASP.NET Ajax Client Library	248
	The ASP.NET Ajax Server Extensions Framework	249
	The ASP.NET Ajax Architectural Components	249
	The XMLHttpRequest Object	250
	Implementing a Generic XMLHttpRequest Object	251
	Partial Page Rendering	251
	The ScriptManager Control	252
	The UpdatePanel Control	252
	The ASP.NET Ajax Client-Side Event Model	254
	Improved Ajax Features in ASP.NET 4.0	255
14	Programming ASP.NET Ajax	257
	Consuming Web Services	258
	The Parser Error	262
	Avoiding the Parser Error	262
	Working with Authentication and Profile Services	264
	Working with the Authentication Service	264
	Working with the Profile Service	265
	Debugging and Tracing	266
15	Web Services	271
	What Are Web Services?	272
	Web Services vs. Microsoft .NET Remoting	272
	How Do Web Services Work?	273

Web Services Description Language	273
Universal Discovery, Description/ and Integration	273
Simple Object Oriented Protocol	274
Anatomy of a SOAP Message	274
Why Use SOAP?	276
SOAP Transport Protocols	276
Creating and Consuming Web Services in .NET	277
Creating the Web Service	278
Consuming the Web Service	282
Web Services Security	286
16 Windows Communication Foundation	289
Service-Oriented Architecture	290
Building Blocks of SOA	290
Benefits of Service Orientation	292
The Windows Communication Foundation	292
WCF Fundamentals	292
Configuring a WCF Service	294
Creating a Simple WCF Service	294
Implementing a Simple Ajax-Enabled WCF Service	298
17 ASP.NET MVC Framework	303
The MVC Design Pattern	304
Why Use MVC?	304
The Drawbacks of Using MVC	305
What Is the ASP.NET MVC Framework?	305
Benefits of the ASP.NET MVC Framework	305
How Does the ASP.NET MVC Framework Work?	306
Classic ASP.NET vs. the ASP.NET MVC Framework	306
Getting Started with the ASP.NET MVC Framework	306
The ASP.NET MVC Folder Structure	307
The Controllers	308
The Views	310
Creating Routes	311
18 Program ASP.NET MVC Framework	313
Implementing CRUD Operations Using ASP.NET MVC	314
Implementing the Department Controller	316
Implementing the Views	319
Executing the Application	325
Unit Testing with the ASP.NET MVC Framework	326
State Management Using the ASP.NET MVC Framework	330
ASP.NET MVC 2.0	331
Migrating from ASP.NET MVC version 1.0 to 2.0	331
19 Working with jQuery in ASP.NET	333
What Is jQuery?	334
Key Features of jQuery	334
Why Use jQuery?	334

Setting up jQuery in ASP.NET.....	335
jQuery IntelliSense in Visual Studio.....	335
• Getting Started with jQuery.....	335
Client-Side Data Binding Using jQuery.....	339
Implementing the Sample Application.....	339
The Complete Source.....	345
Event Handling in jQuery.....	348
Plug-Ins in jQuery.....	351
Selectors in jQuery.....	352
Animations in jQuery.....	353
Consuming a Web Service Using jQuery.....	354
20 Improving ASP.NET 4.0 Application	
Performance and Scalability.....	357
Improving Response Times.....	358
Using the Page.IsPostBack Property.....	358
Removing Unused HttpModules.....	359
Enabling Page Buffering.....	359
Trimming Page Sizes.....	360
Using IIS Compression.....	361
Using Server.Transfer and Response.Redirect.....	361
Precompiling.....	361
Using AutoEventWireUp.....	361
Efficient State-Management Strategies.....	362
Setting Session State.....	362
Reducing Size of ViewState.....	363
Setting Up Caching.....	363
Best Practices in Exception Management.....	363
Efficient Data-Access Strategies.....	364
Using Connection Pooling Efficiently.....	365
Using Stored Procedures to Reduce Network Traffic.....	365
Using Batched Queries.....	365
Efficient Memory and Resource Management Strategies.....	366
Helping Compiler Optimizations.....	366
Using Objects Efficiently.....	366
Using Loops.....	367
Avoiding Finalize and Using Dispose.....	368
Using the Using Block.....	369
Using Locking and Synchronization.....	369
Managing Strings.....	370
Avoid Using Late Binding.....	371
Selecting the Right Collections.....	371
Efficient Application-Deployment Strategies.....	372
Tuning the Web.Config and Machine.Config files.....	372
Assembly Versioning and Using Strong Names.....	372
Using Separate Application Pools.....	373
Index.....	375