

Contents at a Glance

<i>Introduction</i>	1
<i>Study and Exam Preparation Tips</i>	9

PART I: Developing Web Applications

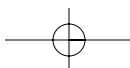
1 Introducing Web Forms	21
2 Controls	97
3 Implementing Navigation for the User Interface	207
4 Error Handling for the User Interface	281
5 Data Binding	331
6 Consuming and Manipulating Data	415
7 Creating and Managing .NET Components and Assemblies	551
8 Web Services	621
9 Globalization	655
10 Working with Legacy Code	695
11 User Assistance and Accessibility	737

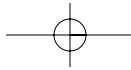
PART II: Testing, Debugging, and Deploying a Web Application

12 Testing and Debugging a Web Application	769
13 Deploying a Web Application	841

PART III: Maintaining and Configuring a Web Application

14 Maintaining and Supporting a Web Application	935
15 Configuring a Web Application	983



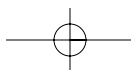


PART IV: Final Review

Fast Facts	1049
Practice Exams	1075

PART V: Appendixes

A Glossary	1101
B Overview of the Certification Process	1109
C What's On the CD-ROM	1119
D Using the <i>PrepLogic, Preview Edition</i> Software	1121
E Suggested Reading and Resource	1127
<i>Index</i>	1129



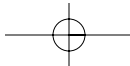
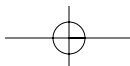
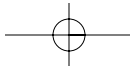


Table of Contents

Introduction	1
How This Book Helps You	1
Organization	1
Instructional Features	2
Extensive Practice Test Options	2
Final Review	3
What the Developing and Implementing Web Applications with Microsoft Visual C# .NET and Microsoft Visual Studio .NET Exam (70-315) Covers	3
Creating User Services	4
Creating and Managing Components and .NET Assemblies	5
Consuming and Manipulating Data	5
Testing and Debugging	5
Deploying a Web Application	5
Maintaining and Supporting a Web Application	5
Configuring and Securing a Web Application	5
What You Should Know Before Reading This Book	6
Hardware and Software You'll Need	6
Advice on Taking the Exam	7
Study and Exam Prep Tips	9
Study Tips	10
Study Strategies	10
Pretesting Yourself	11
Exam Prep Tips	11
The MCP Exam	11
Exam Forms	11
New Question Types	14
Putting It All Together	15
Final Considerations	17

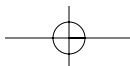


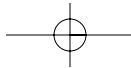


VIII MCAD/MCSD TRAINING GUIDE (70-315)

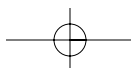
PART I: Developing Web Applications

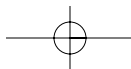
1	Introducing Web Forms	21
	Introduction	24
	Key Concepts	24
	An Overview of the .NET Framework	25
	An Overview of the Development Tools	27
	Understanding Classes, Inheritance, and Namespaces	30
	Introduction to ASP.NET	34
	Advantages of ASP.NET	36
	Creating an ASP.NET Page	38
	Understanding the ASP.NET Page Execution	42
	The Page Class	46
	Stages in Page Processing	49
	ASP.NET Directives	50
	The Page Directive	52
	Event Handling	55
	Elements of Event Handling	55
	Publishing and Subscribing to an Event	59
	Event Handling in ASP.NET	60
	Handling Events by Overriding the Virtual, Protected Method of the Base Class	60
	Handling Events by Attaching a Delegate	62
	Handling Events of the Page Class Through AutoEventWireup	66
	Separating User Interface from Business Logic	70
	Using Code-Behind Without Precompilation	71
	Using Code-Behind with Precompilation	73
	Creating a Web Form Using Visual Studio .NET	75
	Exercises	85
	Review Questions	89
	Exam Questions	89
	Answers to Review Questions	93
	Answers to Exam Questions	94
2	Controls	97
	Introduction	100
	HTML Controls	101





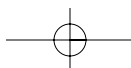
HTML Server Controls	105
The Classes in the System.Web.UI.HtmlControls Namespace	108
Event Handling for HTML Server Controls	112
Web Server Controls	118
Common Web Server Controls	122
Event Handling for Web Server Controls	131
The List Controls	137
The Placeholder and Panel Controls	142
The Table, TableRow, and TableCell Controls	147
The AdRotator Control	151
The Calendar Control	156
User Input Validation	164
Controls That Can Be Validated	165
The BaseValidator Class	166
Using the Page.Validate() Method and Page.IsValid Property	167
Client-Side Validation for ASP.NET Server Controls	168
Validation Web Server Controls	168
The ValidationSummary Control	178
Cascading Style Sheets	183
Using Style Sheets with Web Forms	183
Creating Styles to Format Web Controls	188
Chapter Summary	191
Exercises	192
Review Questions	196
Exam Questions	197
Answers to Review Questions	201
Answers to Exam Questions	203
3 Implementing Navigation for the User Interface	207
Introduction	210
Roundtrip and Postback	210
The IsPostBack Property	212
The SmartNavigation Property	215
ASP.NET Intrinsic Objects	217
The HttpRequest Object	218
The HttpResponse Object	222
The HttpServerUtility Object	225
ASP.NET Application	230
The global.asax File	230
Global Event Handlers	231

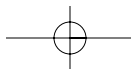




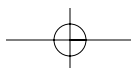
X MCAD/MCSD TRAINING GUIDE (70-315)

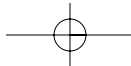
State Management	235
Client-Side Techniques for State Management	235
Server-Side Techniques for State Management	249
Navigation Between Pages	259
The Response.Redirect() Method	259
The Server.Transfer() Method	260
The Server.Execute() Method	261
Exercises	270
Review Questions	273
Exam Questions	273
Answers to Review Questions	277
Answers to Exam Questions	278
4 Error Handling for the User Interface	281
Introduction	283
Understanding Exceptions	283
Handling Exceptions	287
The try Block	288
The catch Block	288
The throw Statement	292
The finally Block	294
Creating and Using Custom Exceptions	298
Managing Unhandled Exceptions	304
Using Custom Error Pages	305
Using Error Events	311
Exercises	320
Review Questions	321
Exam Questions	321
Answers to Review Questions	326
Answers to Exam Questions	327
5 Data Binding	331
Introduction	333
Bind Data to the User Interface	334
Simple Data Binding	334
Complex Data Binding	340
The DataBind() Method	355
Using the Data Form Wizard	356





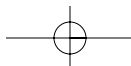
Transform and Filter Data	364
Using Server Explorer	364
Filtering Data	371
Transforming Data	376
Using Controls to Display Data	382
The Repeater Control	383
The DataList Control	386
Editing Data with a DataList Control	390
Exercises	396
Review Questions	405
Exam Questions	405
Answers to Review Questions	411
Answers to Exam Questions	412
6 Consuming and Manipulating Data	415
Introduction	418
Access and Manipulate SQL Server Data	419
Using Ad Hoc Queries	420
Using Stored Procedures	438
Access and Manipulate Data	453
Working with Disk Files	454
The ADO.NET Object Model	467
Using DataSet Objects	482
Editing Data with ADO.NET	500
Using XML Data	513
Handle Data Errors	531
Handling Database Errors	531
Handling Multiuser Errors	533
Exercises	538
Review Questions	542
Exam Questions	543
Answers to Review Questions	548
Answers to Exam Questions	548
7 Creating and Managing .NET Components and Assemblies	551
Introduction	554
Creating and Using .NET Components	555
Creating a Component	555

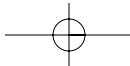




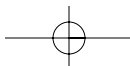
XII MCAD/MCSD TRAINING GUIDE (70-315)

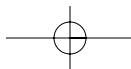
Creating and Using Web User Controls	567
Creating a Web User Control	567
Loading Web User Controls Programmatically	572
Creating and Using Web Custom Controls	575
Creating a Composite Control	575
Creating a Derived Control	579
Creating a Control from Scratch	582
Custom Control Choices	587
Creating and Managing .NET Assemblies	589
Single-file and Multifile Assemblies	590
Static and Dynamic Assemblies	597
Private and Shared Assemblies	598
Satellite and Resource-Only Assemblies	601
Exercises	610
Review Questions	613
Exam Questions	613
Answers to Review Questions	617
Answers to Exam Questions	618
8 Web Services	621
Introduction	623
Understanding Web Services	624
SOAP	624
Disco and UDDI	626
WSDL	626
Invoking Your First Web Service	628
Creating Web Services	631
Creating a Web Service Project	631
Testing the Web Service Project	633
Discovering Web Services	639
Disco and UDDI	639
Using the Web Services Discovery Tool (disco.exe)	640
Instantiating and Invoking Web Services	641
Creating Proxy Classes with the Web Services Description Language Tool (wsdl.exe)	642
Using Web References	644
Testing a Web Service	645
Exercises	648
Review Questions	649





Exam Questions	649
Answers to Review Questions	652
Answers to Exam Questions	653
9 Globalization	655
Introduction	658
Understanding Localization and Globalization	659
The Localization Process	659
What Should Be Localized?	660
Implementing Localization for the User Interface	661
Understanding Cultures	661
Displaying Localized Information	665
Setting Culture Properties	667
Working with Resource Files	668
Converting Existing Encodings	675
Understanding Unicode and Encodings	675
Converting Encodings	676
Implementing Mirroring	678
Understanding Mirroring	678
Mirroring in .NET	678
Validating Non-Latin User Input	680
String Indexing	680
Comparing and Sorting Data	682
Exercises	685
Review Questions	688
Exam Questions	688
Answers to Review Questions	692
Answers to Exam Questions	692
10 Working with Legacy Code	695
Introduction	698
Incorporating Existing Code	699
Running ASP and ASP.NET Together	699
Converting ASP Pages to ASP.NET	701
Using Late-Bound COM Components	702
Using ActiveX Controls	707
Using COM Components	711
Understanding Runtime Callable Wrappers	712
Using the Type Library Importer Tool (tlbimp.exe)	714
Using COM Components Directly	717



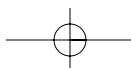


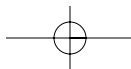
XIV MCAD/MCSD TRAINING GUIDE (70-315)

Using COM+ Components	719
Using Platform Invoke	723
Exercises	728
Review Questions	729
Exam Questions	729
Answers to Review Questions	733
Answers to Exam Questions	734
11 User Assistance and Accessibility	737
Introduction	739
Implementing User Assistance	739
Using a Second Browser Window	743
Using the Search Pane	745
Embedding Help	747
Other User Assistance Alternatives	748
Implementing Accessibility Features	749
Understanding Accessible Design Guidelines	751
The W3C Guidelines	752
The Section 508 Guidelines	754
Making a Web Application Accessible	755
Testing Application Accessibility	756
Chapter Summary	757
Exercises	758
Review Questions	759
Exam Questions	759
Answers to Review Questions	763
Answers to Exam Questions	763

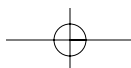
PART II: Testing, Debugging, and Deploying a Web Application

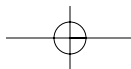
12 Testing and Debugging a Web Application	769
Introduction	772
Testing	773
Creating a Test Plan	773
Executing Tests	774
Testing International Applications	776





Tracing	778
Using the TraceContext Class	779
Using the Trace and Debug Classes	786
Trace Listeners	792
Trace Switches	795
Conditional Compilation	799
Debugging	806
Setting Breakpoints and Stepping Through Program Execution	807
Analyzing Program State to Resolve Errors	813
Debugging on Exceptions	817
Debugging a Running Process	820
Debugging a Remote Process	823
Debugging the Code in DLL Files	824
Debugging Client-Side Scripts	824
Chapter Summary	825
Exercises	827
Review Questions	831
Exam Questions	832
Answers to Review Questions	837
Answers to Exam Questions	838
13 Deploying a Web Application	841
Introduction	844
Deployment Tools	845
XCOPY Deployment	845
FTP Deployment	846
Microsoft Windows Installer	846
Deploying a Web Application	848
Creating a Web Setup Project	852
Customizing Web Setup Projects	860
Using the File System Editor	861
Using the Registry Editor	864
Using the File Types Editor	866
Using the User Interface Editor	866
Using the Custom Actions Editor	868
Using the Launch Conditions Editor	871
Shared Assemblies	876
Assigning a Strong Name to an Assembly	877
Adding an Assembly to the GAC	881
Referencing an Assembly from the GAC	886

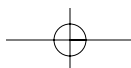


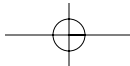

XVI MCAD/MCSD TRAINING GUIDE (70-315)

How the CLR Locates Assemblies	890
Delay Signing an Assembly	891
Creating a Merge Module Project	894
Creating Installation Components	901
Understanding the Installer Class	901
Working with Predefined Installation Components	903
Deploying an Assembly That Contains the Installation Components	905
Working with Installer Classes	908
Cab Project	914
Scalable and Reliable Deployment	914
Web Garden	915
Web Farms	916
Clusters	917
Methods of Deployment	917
Deployment via Removable Media	918
Web-Based Deployment	919
Exercises	921
Review Questions	923
Exam Questions	923
Answers to Review Questions	928
Answers to Exam Questions	929

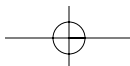
PART III: Maintaining and Configuring a Web Application

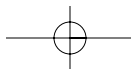
14 Maintaining and Supporting a Web Application	935
Introduction	937
Getting Process Information	938
Getting Information for a Windows Process	938
Getting Information for the ASP.NET Worker Processes	943
Working with Event Logs	947
Writing to Event Logs	948
Reading from Event Logs	953
Working with Performance Counters	957
Reading Performance Data of Running Processes	959
Publishing Performance Data	961





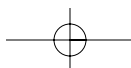
Designing a Web Application for Performance	965
Exercises	972
Review Questions	977
Exam Questions	977
Answers to Review Questions	980
Answers to Exam Questions	981
15 Configuring a Web Application	983
Introduction	986
Configuring a Web Application	987
Anatomy of a Configuration File	988
The Configuration File Hierarchy	991
Reading Configuration Settings from Code	994
Configuring Security	996
Configuring Authentication	998
Configuring Authorization	1005
Using Caching	1013
Output Caching	1014
Fragment Caching	1020
Data Caching	1024
Handling Session State	1029
Using Session State Within a Process	1030
Using Session State Service	1031
Using Microsoft SQL Server to Store Session State	1033
Installing and Configuring Server Services	1034
Installing and Configuring IIS	1035
Installing and Configuring FrontPage Server Extensions	1035
Exercises	1038
Review Questions	1040
Exam Questions	1040
Answers to Review Questions	1043
Answers to Exam Questions	1044

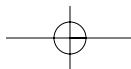




PART IV: Final Review

Fast Facts	1049
Creating User Services	1049
Create ASP.NET pages.	1049
Add Web server controls, HTML server controls, user controls, and HTML code to ASP.NET pages.	1050
Implement navigation for the user interface.	1052
Validate user input.	1053
Implement error handling in the user interface.	1054
Implement online user assistance.	1055
Incorporate existing code into ASP.NET pages.	1055
Display and update data.	1056
Instantiate and invoke Web service services or components.	1057
Implement globalization.	1058
Handle events.	1059
Implement accessibility features.	1059
Use and edit intrinsic objects. Intrinsic objects include response, request, session, server, and application.	1060
Creating and Managing Components and .NET Assemblies	1060
Create and modify a .NET assembly.	1060
Create Web custom controls and Web user controls.	1061
Consuming and Manipulating Data	1061
Access and manipulate data from a Microsoft SQL Server database by creating and using ad hoc queries and stored procedures.	1061
Access and manipulate data from a data store. Data stores include relational databases, XML documents, and flat files; methods include XML techniques and ADO.NET.	1062
Handle data errors.	1064
Testing and Debugging	1064
Create a unit test plan.	1064
Implement tracing.	1064
Debug, rework, and resolve defects in code.	1065



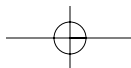


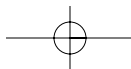
CONTENTS XIX

Deploying a Web Application	1066
Plan the deployment of a Web application.	1066
Create a setup program that installs a Web application and allows for the application to be uninstalled.	1067
Deploy a Web application.	1068
Add assemblies to the Global Assembly Cache.	1068
Maintaining and Supporting a Web Application	1069
Optimize the performance of a Web application.	1069
Diagnose and resolve errors and issues.	1070
Configuring and Securing a Web Application	1071
Configure a Web application.	1071
Configure security for a Web application.	1072
Configure authorization.	1072
Configure and implement caching. Caching types include output, fragment, and data.	1072
Configure and implement session state in various topologies such as a web garden and a web farm.	1073
Install and configure server services.	1073
 Practice Exam	 1075
Exam Questions	1076
Answers to Exam Questions	1092

PART V: Appendixes

A Glossary	1101
 B Overview of the Certification Process	 1109
Types of Certification	1109
Certification Requirements	1110
How to Become an MCP	1110
How to Become an MCSA	1110
How to Become an MCSE	1111
How to Become an MCAD	1113
How to Become an MCSD	1114
How to Become an MCDBA	1116
MCDBA Elective Exams	1116
How to Become an MCT	1117





XX MCAD/MCSD TRAINING GUIDE (70-315)

C What's on the CD-ROM	1119
PrepLogic Practice Tests, Preview Edition	1119
An Exclusive Electronic Version of the Text	1119
Complete Code Examples	1119
D Using the PrepLogic, Preview Edition, Software	1121
The Exam Simulation	1121
Question Quality	1121
The Interface Design	1121
The Effective Learning Environment	1121
Software Requirements	1122
Installing PrepLogic Practice Tests, Preview Edition	1122
Removing PrepLogic Practice Tests, Preview Edition from Your Computer	1122
Using PrepLogic Practice Tests, Preview Edition	1123
Starting a Practice Test Mode Session	1123
Starting a Flash Review Mode Session	1123
Standard PrepLogic Practice Tests, Preview Edition Options	1124
Seeing Time Remaining	1124
Getting Your Examination Score Report	1124
Reviewing Your Exam	1125
Contacting PrepLogic	1125
Customer Service	1125
Product Suggestions and Comments	1125
License Agreement	1125
E Suggested Readings and Resources	1127
.NET User Assistance	1127
Books	1127
Web Sites	1128
Index	1129

