

CONTENTS

<i>INTRODUCTION</i>	<i>xxix</i>
CHAPTER 1: WELCOME TO VISUAL BASIC 2010	1
Event-Driven Programming	2
Installing Visual Basic 2010	3
The Visual Studio 2010 IDE	6
The Profile Setup Page	7
The Menu	7
The Toolbars	9
Creating a Simple Application	10
Windows in the Visual Studio 2010 IDE	11
The Toolbox	13
Modified Hungarian Notation	15
The Code Editor	16
Using the Help System	20
Summary	20
CHAPTER 2: THE MICROSOFT .NET FRAMEWORK	23
Microsoft's Reliance on Windows	23
MSN 1.0	24
The .NET Vision	25
This Sounds Like Java	26
Where Now?	27
Writing Software for Windows	27
The .NET Framework Classes	28
Executing Code	29
Common Language Runtime	30
Code Loading and Execution	31
Application Isolation	31
Security	31
Interoperability	32
Exception Handling	32
The Common Type System and Common Language Specification	33
Summary	33

CHAPTER 3: WRITING SOFTWARE	37
Information and Data	37
Algorithms	38
What Is a Programming Language?	39
Working with Variables	39
Comments and Whitespace	42
Comments	42
Whitespace	43
Data Types	44
Working with Numbers	44
Common Integer Math Operations	45
Integer Math Shorthand	47
The Problem with Integer Math	48
Floating-Point Math	49
Other States	51
Single-Precision Floating-Point Numbers	51
Working with Strings	51
Concatenation	53
Using the Concatenation Operator Inline	54
More String Operations	54
Substrings	55
Formatting Strings	56
Localized Formatting	58
Replacing Substrings	58
Using Dates	59
Formatting Date Strings	60
Extracting Date Properties	61
Date Constants	62
Defining Date Literals	63
Manipulating Dates	64
Boolean	65
Storing Variables	65
Binary	66
Bits and Bytes	66
Representing Values	67
Converting Values	68
Methods	70
Why Use Methods?	70
Methods You've Already Seen	71

Building a Method	75
Choosing Method Names	77
Scope	78
Summary	80

CHAPTER 4: CONTROLLING THE FLOW **83**

Making Decisions	83
The If Statement	84
The Else Statement	86
Allowing Multiple Alternatives with Elself	86
Nested If Statements	88
Single-Line If Statement	88
Comparison Operators	88
Using Not Equal To	88
Using the Numeric Operators	90
The And and Or Operators	93
Using the And Operator	95
More on And and Or	96
String Comparison	97
Select Case	98
Case-Insensitive Select Case	101
Multiple Selections	104
The Case Else Statement	105
Different Data Types with Select Case	105
Loops	106
The For ... Next Loop	106
Using the Step Keyword	108
Looping Backwards	109
The For Each ... Next Loop	110
The Do ... Loop Loops	111
Do While ... Loop	113
Acceptable Expressions for a Do ... Loop	114
Other Versions of the Do ... Loop	114
Nested Loops	115
Quitting Early	117
Quitting Do ... Loops	118
Infinite Loops	119
Summary	120

CHAPTER 5: WORKING WITH DATA STRUCTURES	123
Understanding Arrays	123
Defining and Using Arrays	123
Using For Each ... Next	126
Passing Arrays As Parameters	128
Sorting Arrays	130
Going Backwards	131
Initializing Arrays with Values	132
Understanding Enumerations	133
Using Enumerations	134
Determining the State	137
Setting Invalid Values	139
Understanding Constants	139
Using Constants	140
Different Constant Types	142
Structures	142
Building Structures	142
Adding Properties to Structures	145
Working with ArrayLists	146
Using an ArrayList	146
Deleting from an ArrayList	149
Showing Items in the ArrayList	152
Working with Collections	153
Creating CustomerCollection	154
Adding an Item Property	155
Building Lookup Tables with Hashtable	157
Using Hashtables	157
Cleaning Up: Remove, RemoveAt, and Clear	160
Case Sensitivity	162
Advanced Array Manipulation	164
Dynamic Arrays	164
Using Preserve	165
Summary	166
CHAPTER 6: EXTENSIBLE APPLICATION MARKUP LANGUAGE (XAML)	169
What Is XAML?	170
XAML Syntax	171

Windows Presentation Foundation	174
Creating a Rich WPF User Interface	175
Using WPF Common Controls	180
Wiring Up Events	186
Summary	189
CHAPTER 7: BUILDING WINDOWS APPLICATIONS	193
Responding to Events	193
Setting Up a Button Event	194
Building a Simple Application	201
Building the Form	201
Counting Characters	205
Counting Words	207
Creating More Complex Applications	213
The Text Editor Project	213
Creating the Toolbar	214
Creating the Status Bar	218
Creating an Edit Box	220
Clearing the Edit Box	222
Responding to Toolbar Buttons	224
Using Multiple Forms	230
The About Dialog Box	230
Summary	233
CHAPTER 8: DISPLAYING DIALOG BOXES	237
The MessageBox	237
Available Icons for MessageBox	238
Available Buttons for MessageBox	239
Setting the Default Button	239
Miscellaneous Options	239
The Show Method Syntax	240
Example Message Boxes	241
The OpenFileDialog Control	244
The OpenFileDialog Control	245
The Properties of OpenFileDialog	246
OpenFileDialog Methods	247
Using the OpenFileDialog Control	247

The SaveDialog Control	252
The Properties of SaveFileDialog	252
SaveFileDialog Methods	253
Using the SaveFileDialog Control	253
The FontDialog Control	257
The Properties of FontDialog	257
The Methods of FontDialog	257
Using the FontDialog Control	258
The ColorDialog Control	260
The Properties of ColorDialog	261
Using the ColorDialog Control	261
The PrintDialog Control	263
The Properties of PrintDialog	264
Using the PrintDialog Control	264
The PrintDocument Class	264
The Properties of the PrintDocument Class	265
Printing a Document	265
The FolderBrowserDialog Control	271
The Properties of FolderBrowserDialog	272
Using the FolderBrowserDialog Control	272
Summary	275
CHAPTER 9: CREATING MENUS	277
Understanding Menu Features	277
Images	278
Access Keys	278
Shortcut Keys	278
Check Marks	278
The Properties Window	279
Creating Menus	280
Designing the Menus	280
Adding Toolbars and Controls	282
Coding Menus	283
Coding the View Menu and Toolbars	287
Testing Your Code	288
Context Menus	290
Creating Context Menus	291
Enabling and Disabling Menu Items and Toolbar Buttons	294
Summary	297

CHAPTER 10: DEBUGGING AND ERROR HANDLING	299
Major Error Types	300
Syntax Errors	300
Execution Errors	303
Logic Errors	304
Debugging	305
Creating a Sample Project	305
Setting Breakpoints	321
Debugging Using the Watch Window and QuickWatch Dialog Box	327
Debugging with the Autos Window	330
Debugging with the Locals Window	330
Error Handling	331
Using Structured Error Handling	333
Summary	335
CHAPTER 11: BUILDING OBJECTS	339
Understanding Objects	339
Encapsulation	341
Methods and Properties	341
Events	341
Visibility	342
What Is a Class?	342
Building Classes	343
Reusability	344
Designing an Object	345
State	346
Behavior	346
Storing State	347
Real Properties	349
Read/Write Properties	352
The IsMoving Method	355
Constructors	357
Inheritance	359
Adding New Methods and Properties	360
Adding a GetPowerToWeightRatio Method	363
Changing Defaults	365
Polymorphism: Scary Word, Simple Concept	366
Overriding More Methods	367

Inheriting from the Object Class	369
Objects and Structures	369
The Framework Classes	370
Namespaces	370
The Imports Statement	373
Creating Your Own Namespace	373
Inheritance in the .NET Framework	377
Summary	377
CHAPTER 12: ADVANCED OBJECT-ORIENTED TECHNIQUES	381
Building a Favorites Viewer	381
Internet Shortcuts and Favorites	381
Using Classes	384
Scanning Favorites	390
Viewing Favorites	397
An Alternative Favorite Viewer	399
Building a Favorites Tray	399
Displaying Favorites	401
Using Shared Properties and Methods	404
Using Shared Properties	405
Using Shared Methods	408
Understanding Object-Oriented Programming and Memory Management	410
Garbage Collection	411
Releasing Resources	412
Defragmentation and Compaction	413
Summary	414
CHAPTER 13: BUILDING CLASS LIBRARIES	417
Understanding Class Libraries	418
Creating a Class Library	418
Building a Class Library for Favorites Viewer	420
A Multitiered Application	423
Using Strong Names	424
Signing Assemblies	425
Assembly Versions	428
Registering Assemblies	428
Gacutil Utility	428
Why Is My Assembly Not Visible in the References Dialog Box?	429

Designing Class Libraries	429
Using Third-Party Class Libraries	430
Viewing Classes with the Object Browser	431
Summary	432
CHAPTER 14: CREATING WINDOWS FORMS USER CONTROLS	435
Windows Forms Controls	436
Creating and Testing a User Control	436
Exposing Properties from User Controls	440
Adding Properties	440
Exposing Methods from User Controls	442
Exposing Events from User Controls	443
Design Time or Runtime	447
Creating a Command Link Control	449
Building the Command Link Control	450
Using the Command Link Control	458
Summary	460
CHAPTER 15: ACCESSING DATABASES	463
What Is a Database?	464
Microsoft Access Objects	464
Tables	464
Queries	464
The SQL SELECT Statement	465
Queries in Access	467
Data Access Components and Controls	471
DataSet	471
DataGridView	472
BindingSource	472
BindingNavigator	472
TableAdapter	472
Data Binding	473
Summary	479
CHAPTER 16: DATABASE PROGRAMMING WITH SQL SERVER AND ADO.NET	483
ADO.NET	485
ADO.NET Data Namespaces	485
The SqlConnection Class	486

CONTENTS

Working with the Connection String Parameters	486
Opening and Closing the Connection	487
The SqlCommand Class	488
The Connection Property	488
The CommandText Property	489
The Parameters Collection	489
The ExecuteNonQuery Method	490
The SqlDataAdapter Class	490
The SelectCommand Property	491
Using Command Builders to Create the Other Commands	493
The Fill Method	493
The DataSet Class	494
DataView	495
The Sort Property	496
The RowFilter Property	496
The Find Method	497
The ADO.NET Classes in Action	497
Examining a DataSet Example	498
Data Binding	506
BindingContext and CurrencyManager	506
Binding Controls	507
Binding Example	508
Summary	533
CHAPTER 17: DYNAMIC DATA WEB SITE	537
<hr/>	
Creating a Dynamic Data Linq to SQL Web Site	537
Customizing the Design of a Dynamic Data Web Site	541
Page Templates	542
Entity Templates	542
Field Templates	542
Filter Templates	542
Summary	547
CHAPTER 18: ASP.NET	549
<hr/>	
Thin-Client Architecture	550
Web Forms versus Windows Forms	551
Windows Forms Advantages	551
Web Forms Advantages	551
Web Applications: The Basic Pieces	552
Web Servers	552
Browsers	552

HyperText Markup Language	552
JavaScript	553
Cascading Style Sheets	553
Active Server Pages	553
Benefits of ASP.NET Web Pages	553
Special Website Files	554
Global.asax	554
Web.config	554
Development	554
Controls: The Toolbox	555
Building Web Sites	555
Creating a Web Form for Client- and Server-Side Processing	555
Website Locations with VS 2010	560
Performing Data Entry and Validation	562
Site Layout, Themes, and Navigation	568
Using the GridView to Build a Data-Driven Web Form	574
Summary	579
CHAPTER 19: VISUAL BASIC 2010 AND XML	583
Understanding XML	583
What Does XML Look Like?	585
XML for Visual Basic Newcomers	586
The Rules	587
The Address Book Project	587
Creating the Project	587
The SerializableData Class	589
Loading the XML File	594
Changing the Data	597
Sending E-mail	598
Creating a List of Addresses	599
Ignoring Members	603
Loading Addresses	605
Adding New Addresses	606
Navigating Addresses	607
Deleting Addresses	609
Testing at the Edges	611
Integrating with the Address Book Application	611
Demonstrating the Principle of Integration	612
Reading the Address Book from Another Application	613
Summary	618

CHAPTER 20: DEPLOYING YOUR APPLICATION	621
What Is Deployment?	621
ClickOnce Deployment	622
XCOPY Deployment	627
Creating a Visual Studio 2010 Setup Application	627
User Interface Editor	630
Deploying Different Solutions	633
Private Assemblies	634
Shared Assemblies	634
Deploying Desktop Applications	635
Deploying Web Applications	635
Deploying XML Web Services	636
Useful Tools	636
Summary	637
Appendix A: Exercise Solutions	639
Appendix B: Where to Now?	655
INDEX	661