

Contents

About the Author	xii
About the Technical Reviewer	xiii
Acknowledgments	xiv
Introduction	xv

Part One: Object-Oriented Programming and Design Fundamentals.....1

Chapter 1: Overview of Object-Oriented Programming3

The History of OOP	3
Why Use OOP?	4
The Characteristics of OOP	6
The History of Visual Basic	9
Summary	11

Chapter 2: Designing OOP Solutions: Identifying the Class Structure13

Goals of Software Design	14
Understanding the Unified Modeling Language	15
Understanding Class Diagrams	28
Summary	38

Chapter 3: Designing OOP Solutions: Modeling the Object Interaction41

Understanding Scenarios	41
Introducing Sequence Diagrams	43
Using Collaboration Diagrams	59

Understanding Activity Diagrams	61
Exploring GUI Design	71
Summary	75

Chapter 4: Designing OOP Solutions:

A Case Study	77
---------------------------	-----------

Developing an Office-Supply Ordering System	77
Avoiding Some Common OOP Design Pitfalls	99
Summary	100

Part Two: Object-Oriented Programming

<i>with Visual Basic .NET</i>	<i>101</i>
--	-------------------

Chapter 5: Introducing VB .NET

Goals of the .NET Framework	103
Components of the .NET Framework	106
Understanding Assemblies and Manifests	109
Referencing Assemblies and Namespaces	110
Compiling and Executing Managed Code	110
Using the Visual Studio Integrated Development Environment	111
Summary	132

Chapter 6: Creating Classes

Introducing Objects and Classes	135
Defining Classes	136
Using Constructors	143
Using Destructors	144
Overloading Methods	145
Summary	153

Chapter 7: Creating Class Hierarchies	155
Understanding Inheritance	156
Overriding Methods of the Base Class	164
Overloading Methods of the Base Class	176
Using Shadowing	176
Implementing Interfaces	177
Understanding Polymorphism	178
Summary	185
 Chapter 8: Implementing Object Collaboration	 187
Object Communication through Messaging	187
Event-Driven Programming	190
Understanding Delegation	197
Handling Exceptions in the .NET Framework	203
Accessing Shared Properties and Methods	207
Asynchronous Messaging	213
Summary	220
 <i>Part Three: Developing Applications with Visual Basic .NET</i>	 <i>221</i>
 Chapter 9: OSO Application Revisited: Implementing the Business Logic	 223
Revisiting Application Design	224
Introducing ADO.NET	225
Working with Data Providers	226
Working with DataSet Objects	240
Building the OSO Application's Business Logic Tier	253
Summary	266

Chapter 10: Developing Windows Applications	.....269
Windows Forms Fundamentals	.....269
Working with Form-Based Inheritance	.....287
Creating and Using Dialog Boxes	.....290
Data Binding in Windows Form-Based GUIs	.....300
Creating the OSO Application's Windows	
Form-Based GUI	.....306
Summary	.....315
 Chapter 11: Developing Web Applications	317
Web Form Fundamentals	.....317
Web Server Control Fundamentals	.....319
Understanding Web Form and Web Server Control Inheritance	
Hierarchy	.....320
Using the Visual Studio Web Form Designer	.....322
Handling Web Form and Control Events	.....325
Understanding Application and Session Events	.....329
Storing and Sharing State in a Web Application	.....338
Data Binding in Web Form-Based GUIs	.....341
Creating the OSO Application's Web Form-Based GUI	.....354
Summary	.....366
 Chapter 12: Wrapping Up and Reviewing	367
Improving Your Object-Oriented Design Skills	.....368
Investigating the .NET Framework Namespaces	.....368
Becoming Familiar with ADO.NET	.....369
Moving Toward Component-Based Development	.....369
Finding Help	.....370
Joining a User Group	.....370
Getting Certified	.....370
Please Provide Feedback	.....371
Thank You and Good Luck	.....371

Appendix A: Fundamental Programming Concepts	.....373
Working with Variables and Data Types	.....373
Understanding Elementary Data Types	.....374
Introducing Composite Data Types	.....376
Looking at Literals, Constants, and Enumerations	.....378
Exploring Variable Scope	.....379
Understanding Data Type Conversion	.....381
Working with Operators	.....383
Introducing Decision Structures	.....385
Using Loop Structures	.....388
Introducing Procedures	.....390
 Appendix B: Exception Handling in VB .NET	393
Managing Exceptions	.....393
Looking at the .NET Framework Exception Classes	.....395
 Index	399