

FIFTH EDITION

Programming C# 3.0

Jesse Liberty and Donald Xie

O'REILLY®

Beijing • Cambridge • Farnham • Köln • Paris • Sebastopol • Taipei • Tokyo

Table of Contents

Preface	ix
----------------------	-----------

Part I. The C# Language

1. C# 3.0 and .NET 3.5	3
The Evolution of C#	3
The C# Language	4
The .NET Platform	6
2. Getting Started: “Hello World”	7
Classes, Objects, and Types	7
Developing “Hello World”	14
Using the Visual Studio 2008 Debugger	18
3. C# Language Fundamentals	21
Types	21
Variables and Constants	25
Whitespace	33
Statements	33
Operators	49
Preprocessor Directives	59
4. Classes and Objects	61
Defining Classes	62
Creating Objects	67
Using Static Members	75
Destroying Objects	79
Passing Parameters	83

Overloading Methods and Constructors	89
Encapsulating Data with Properties	92
readonly Fields	96
5. Inheritance and Polymorphism	98
Specialization and Generalization	98
Inheritance	101
Polymorphism	102
Abstract Classes	109
The Root of All Types: Object	113
Nesting Classes	115
6. Operator Overloading	118
Using the operator Keyword	118
Supporting Other .NET Languages	119
Creating Useful Operators	120
Logical Pairs	120
The Equality Operator	120
Conversion Operators	121
Putting Operators to Work	121
7. Structs	127
Defining Structs	128
Creating Structs	129
8. Interfaces	132
Defining and Implementing an Interface	132
Overriding Interface Implementations	147
Explicit Interface Implementation	151
9. Arrays, Indexers, and Collections	156
Arrays	156
The foreach Statement	162
Indexers	177
Collection Interfaces	186
Constraints	190
List<T>	195
Queues	206
Stacks	208
Dictionaries	211

10. Strings and Regular Expressions	214
Strings	215
Regular Expressions	229
11. Exceptions	241
Throwing and Catching Exceptions	242
Exception Objects	252
12. Delegates and Events	256
Events	256
Events and Delegates	257
Anonymous Methods	271

Part II. C# and Data

13. Introducing LINQ	279
Defining and Executing a Query	280
LINQ and C#	285
Anonymous Types	291
Implicitly Typed Local Variables	291
Extension Methods	292
Lambda Expressions in LINQ	297
14. Working with XML	302
XML Basics (A Quick Review)	302
X Stands for eXtensible	304
Creating XML Documents	304
Searching in XML with XPath	311
Searching Using XPathNavigator	322
XML Serialization	329
15. Putting LINQ to Work	337
Getting Set Up	338
LINQ to SQL Fundamentals	339
Using Visual Studio LINQ to SQL Designer	344
Retrieving Data	349
Updating Data Using LINQ to SQL	353
Deleting Relational Data	358
LINQ to XML	363

16. ADO.NET and Relational Databases	368
Relational Databases and SQL	368
The ADO.NET Object Model	372
Getting Started with ADO.NET	374

Part III. Programming with C#

17. Programming ASP.NET Applications	381
Web Forms Fundamentals	381
Creating a Web Form	385
Data Binding	391
18. Programming WPF Applications	404
WPF in a Very Small Nutshell	404
Building the Application	406
What Have You Learned, Dorothy?	419
19. Programming Windows Forms Applications	420
Creating the Application	420

Part IV. The CLR and the .NET Framework

20. Attributes and Reflection	449
Attributes	449
Reflection	456
21. Threads and Synchronization	465
Threads	466
Synchronization	474
Race Conditions and Deadlocks	485
22. Streams	487
Files and Directories	488
Reading and Writing Data	499
Asynchronous I/O	506
Network I/O	511
Web Streams	527
Serialization	529
Isolated Storage	538

23. Programming .NET and COM	542
Importing ActiveX Controls	542
P/Invoke	551
Pointers	554
C# Keywords	561
Index	569