

Contents at a Glance

<i>Introduction</i>	1
<i>Part I: Getting Started</i>	9
Chapter 1: All about Java	11
Chapter 2: All about Software	23
Chapter 3: Using the Basic Building Blocks.....	39
<i>Part II: Writing Your Own Java Programs</i>	61
Chapter 4: Making the Most of Variables and Their Values	63
Chapter 5: Controlling Program Flow with Decision-Making Statements.....	93
Chapter 6: Controlling Program Flow with Loops	123
<i>Part III: Working with the Big Picture: Object-Oriented Programming</i>	137
Chapter 7: Thinking in Terms of Classes and Objects	139
Chapter 8: Saving Time and Money: Reusing Existing Code	167
Chapter 9: Constructing New Objects.....	195
<i>Part IV: Savvy Java Techniques</i>	217
Chapter 10: Putting Variables and Methods Where They Belong	219
Chapter 11: Using Arrays and Collections to Juggle Values.....	249
Chapter 12: Looking Good When Things Take Unexpected Turns.....	281
Chapter 13: Sharing Names among the Parts of a Java Program.....	311
Chapter 14: Responding to Keystrokes and Mouse Clicks	333
Chapter 15: Writing Java Applets	351
Chapter 16: Using Java Database Connectivity.....	363
<i>Part V: The Part of Tens</i>	373
Chapter 17: Ten Ways to Avoid Mistakes	375
Chapter 18: Ten Websites for Java	381
<i>Index</i>	383

Table of Contents

<i>Introduction</i>	1
How to Use This Book.....	1
Conventions Used in This Book.....	2
What You Don't Have to Read.....	2
Foolish Assumptions.....	3
How This Book Is Organized.....	4
Part I: Getting Started.....	4
Part II: Writing Your Own Java Programs.....	4
Part III: Working with the Big Picture: Object-Oriented Programming.....	5
Part IV: Savvy Java Techniques.....	5
Part V: The Part of Tens.....	5
Icons Used in This Book.....	6
Where to Go from Here.....	7
<i>Part 1: Getting Started</i>	9
Chapter 1: All about Java	11
What You Can Do with Java.....	12
Why You Should Use Java.....	13
Getting Perspective: Where Java Fits In.....	14
Object-Oriented Programming (OOP).....	16
Object-oriented languages.....	16
Objects and their classes.....	18
What's so good about an object-oriented language?.....	18
Refining your understanding of classes and objects.....	21
What's Next?.....	22
Chapter 2: All about Software	23
Quick-Start Instructions.....	23
What You Install on Your Computer.....	25
What is a compiler?.....	26
What is a Java virtual machine?.....	28
Developing Software.....	33
What is an Integrated Development Environment?.....	35

Chapter 3: Using the Basic Building Blocks 39

Speaking the Java Language.....	39
The grammar and the common names	40
The words in a Java program	41
Checking Out Java Code for the First Time.....	43
Understanding a Simple Java Program	44
The Java class	44
The Java method.....	45
The main method in a program	47
How you finally tell the computer to do something.....	49
Curly braces	51
And Now, a Few Comments.....	53
Adding comments to your code.....	54
What's Barry's excuse?	58
Using comments to experiment with your code.....	58

Part II: Writing Your Own Java Programs 61**Chapter 4: Making the Most of Variables and Their Values 63**

Varying a Variable	63
Assignment Statements	65
Understanding the Types of Values That Variables May Have	67
Displaying Text	70
Numbers without Decimal Points.....	70
Combining Declarations and Initializing Variables.....	72
The Atoms: Java's Primitive Types	73
The char type	74
The boolean type	76
The Molecules and Compounds: Reference Types	77
An Import Declaration	81
Creating New Values by Applying Operators	83
Initialize once, assign often	85
The increment and decrement operators	86
Assignment operators	91

Chapter 5: Controlling Program Flow with Decision-Making Statements 93

Making Decisions (Java if Statements)	94
Guess the number	94
She controlled keystrokes from the keyboard.....	95
Creating randomness	97
The if statement	98
The double equal sign	99
Brace yourself	99
Indenting if statements in your code.....	100
Elseless in Ifrica.....	101

- Forming Conditions with Comparisons and Logical Operators 102
 - Comparing numbers; comparing characters 102
 - Comparing objects..... 103
 - Importing everything in one fell swoop 106
 - Java’s logical operators 106
 - Vive les nuls!..... 109
 - (Conditions in parentheses)..... 111
- Building a Nest 112
- Choosing among Many Alternatives (Java switch Statements)..... 114
 - Your basic switch statement..... 115
 - To break or not to break..... 118
 - Along comes Java 7..... 120

Chapter 6: Controlling Program Flow with Loops 123

- Repeating Instructions Over and Over Again
(Java while Statements) 124
- Repeating a Certain Number of Times (Java for Statements)..... 127
 - The anatomy of a for statement..... 128
 - The world premiere of “Al’s All Wet” 129
- Repeating Until You Get What You Want (Java do Statements) 131
 - Reading a single character 134
 - File handling in Java 135
 - Variable declarations and blocks 136

***Part III: Working with the Big Picture:
Object-Oriented Programming 137***

Chapter 7: Thinking in Terms of Classes and Objects 139

- Defining a Class (What It Means to Be an Account)..... 140
 - A public class 142
 - Declaring variables and creating objects 142
 - Initializing a variable 145
 - Using an object’s fields 145
 - One program; several classes 146
- Defining a Method within a Class (Displaying an Account) 146
 - An account that displays itself..... 147
 - The display method’s header..... 148
- Sending Values to and from Methods (Calculating Interest)..... 149
 - Passing a value to a method..... 152
 - Returning a value from the getInterest method..... 155
- Making Numbers Look Good..... 156
- Hiding Details with Accessor Methods (Why You Shouldn’t
Micromanage a Bank Teller)..... 160
 - Good programming..... 160
 - Public lives and private dreams: Making a field inaccessible..... 163
 - Enforcing rules with accessor methods..... 165

Chapter 8: Saving Time and Money: Reusing Existing Code 167

Defining a Class (What It Means to Be an Employee)	168
The last word on employees	168
Putting your class to good use.....	170
Cutting a check.....	171
Working with Disk Files (A Brief Detour)	172
Storing data in a file	173
Copying and pasting code	173
Reading from a file	174
Who moved my file?	177
Adding directory names to your filenames	177
Reading a line at a time.....	178
Defining Subclasses (What It Means to Be a Full-Time or Part-Time Employee).....	180
Creating a subclass.....	182
Creating subclasses is habit-forming	184
Using Subclasses	185
Making types match	187
The second half of the story.....	188
Overriding Existing Methods (Changing the Payments for Some of Your Employees).....	189
A Java annotation	191
Using methods from classes and subclasses	192

Chapter 9: Constructing New Objects 195

Defining Constructors (What It Means to Be a Temperature).....	196
What is a temperature?.....	196
What is a temperature scale? (Java's enum type).....	197
Okay, so then what is a temperature?.....	197
What you can do with a temperature.....	199
Calling new Temperature(32.0): A case study	201
Some things never change.....	205
More Subclasses (Doing Something about the Weather).....	206
Building better temperatures.....	206
Constructors for subclasses.....	208
Using all this stuff	209
The default constructor	210
A Constructor That Does More.....	211
Classes and methods from the Java API	214
The SuppressWarnings annotation	215

Part IV: Savvy Java Techniques 217
Chapter 10: Putting Variables and Methods Where They Belong 219

Defining a Class (What It Means to Be a Baseball Player).....	219
Another way to beautify your numbers.....	220
Using the Player class	221
Nine, count 'em, nine.....	223
Don't get all GUI on me.....	224
Tossing an exception from method to method.....	225
Making Static (Finding the Team Average)	226
Why is there so much static?	228
Meet the static initializer	229
Displaying the overall team average	230
Static is old hat.....	232
Could cause static; handle with care	233
Experiments with Variables	234
Putting a variable in its place	235
Telling a variable where to go	237
Passing Parameters	240
Pass by value.....	240
Returning a result	242
Pass by reference.....	243
Returning an object from a method	245
Epilogue.....	247

Chapter 11: Using Arrays and Collections to Juggle Values 249

Getting Your Ducks All in a Row.....	249
Creating an array in two easy steps	251
Storing values	252
Tab stops and other special things.....	255
Using an array initializer.....	255
Stepping through an array with the enhanced for loop	256
Searching	258
Arrays of Objects	261
Using the Room class	263
Yet another way to beautify your numbers	266
The conditional operator.....	267
Command Line Arguments	267
Using command line arguments in a Java program	269
Checking for the right number of command line arguments	271

Using Java Collections	272
Collection classes to the rescue	273
Using an ArrayList	274
Using generics (hot stuff!).....	277
Testing for the presence of more data.....	278

Chapter 12: Looking Good When Things Take Unexpected Turns . . . 281

Handling Exceptions	282
The parameter in a catch clause.....	286
Exception types.....	287
Who's going to catch the exception?	289
Java 7 and the multi-catch clause.....	295
Throwing caution to the wind.....	296
Doing useful things	297
Our friends, the good exceptions	298
Handle an Exception or Pass the Buck	299
Finishing the Job with a finally Clause.....	304
Close Those Files!.....	306
How to close a file.....	307
A try statement with resources	307

Chapter 13: Sharing Names among the Parts of a Java Program . . . 311

Access Modifiers.....	312
Classes, Access, and Multipart Programs	313
Members versus classes.....	313
Access modifiers for members.....	314
Putting a drawing on a frame	316
Directory structure.....	319
Making a frame	320
Sneaking Away from the Original Code	321
Default access.....	323
Crawling back into the package	326
Protected Access	326
Putting non-subclasses in the same package.....	328
Access Modifiers for Java Classes.....	330
Public classes	330
Nonpublic classes.....	331

Chapter 14: Responding to Keystrokes and Mouse Clicks 333

Go On . . . Click That Button.....	333
Events and event handling	336
The Java interface.....	336
Threads of execution.....	338
The keyword this	339
Inside the actionPerformed method	340
The serialVersionUID	341
Responding to Things Other Than Button Clicks.....	341
Creating Inner Classes	347

Chapter 15: Writing Java Applets	351
Applets 101	351
Waiting to be called	353
A public class	353
The Java API (again)	354
Making Things Move	354
The methods in an applet	357
What to put into all these methods	358
Responding to Events in an Applet	359
 Chapter 16: Using Java Database Connectivity	 363
JDBC and Java DB	363
Creating Data	364
Using SQL commands	366
Connecting and disconnecting	367
Retrieving Data	369
 <i>Part V: The Part of Tens</i>	 <i>373</i>
 Chapter 17: Ten Ways to Avoid Mistakes	 375
Putting Capital Letters Where They Belong	375
Breaking Out of a switch Statement	376
Comparing Values with a Double Equal Sign	376
Adding Components to a GUI	377
Adding Listeners to Handle Events	377
Defining the Required Constructors	377
Fixing Non-Static References	378
Staying within Bounds in an Array	378
Anticipating Null Pointers	378
Helping Java Find Its Files	379
 Chapter 18: Ten Websites for Java	 381
This Book's Website	381
The Horse's Mouth	381
Finding News, Reviews, and Sample Code	382
Looking for Java Jobs	382
Everyone's Favorite Sites	382
 <i>Index</i>	 <i>383</i>

