Contents

Introduction ..... **xvii**
What Is a Macro? xviii
What Does VBA Have to Do with Macros? xix
What You Should Know Before Reading This Book xix
What's in the Book xx
This Book's Special Features xx

I GETTING STARTED WITH VBA

1 Creating and Running Recorded Macros **3**
Recording a VBA Macro 5
Recording a Word Macro 5
Recording an Excel Macro 7
Running a Recorded Macro 8
Using the Macro Name List 8
Assigning Shortcut Keys to Recorded Word Macros 9
Assigning Shortcut Keys to Recorded Excel Macros 10
Creating a Quick Access Toolbar Button for a Recorded Macro 11
From Here 13

2 Writing Your Own Macros **15**
Activating the Ribbon's Developer Tab 16
Displaying the Visual Basic Editor 16
Touring the Visual Basic Editor 17
Creating a New Module 17
Opening an Existing Module 18
Understanding VBA Procedures 19
Creating a Command Macro 19
Writing a Command Macro 20
Running a Command Macro 21
Entering VBA Statements 22
Creating a User-Defined Function 23
Understanding User-Defined Functions 24
Writing a User-Defined Function 25
Using a Function 26
Taking Advantage of IntelliSense 27
List Properties/Methods 27
List Constants 28

Parameter Info 29
Complete Word 30
Shutting Down the Visual Basic Editor 30
From Here 30

3 Understanding Program Variables 33

Declaring Variables 33
Avoiding Variable Errors 35
Variable Data Types 36
Changing the Default Data Type 39
Creating User-Defined Data Types 39
Using Array Variables 40
Dynamic Arrays 41
Multidimensional Arrays 44
Working with Constants 44
Using Built-In Constants 44
Creating User-Defined Constants 45
Storing User Input in a Variable 45
Getting Input Using `MsgBox` 45
Getting Input Using `InputBox` 50
From Here 51

4 Building VBA Expressions 53

Understanding Expressions 53
Working with VBA Operators 54
Arithmetic Operators 55
The Concatenation Operator 56
Comparison Operators 56
Logical Operators 57
Understanding Operator Precedence 57
The Order of Precedence 58
Controlling the Order of Precedence 58
Working with Numeric Expressions 60
VBA's Math Functions 60
VBA's Financial Functions 62
Working with String Expressions 63
Working with Logical Expressions 66
The `And` Operator 67
The `Or` Operator 67
The `Xor` Operator 67
The `Not` Operator 67
Working with Date Expressions 68
From Here 70

5 Working with Objects 71
What Is an Object? 71
The Object Hierarchy 73
Working with Object Properties 73
Setting the Value of a Property 75
Returning the Value of a Property 75
Working with Object Methods 75
Handling Object Events 77
Working with Object Collections 78
Assigning an Object to a Variable 79
The `Is` Operator 80
Working with Multiple Properties or Methods 80
Example: The `Application` Object 81
Displaying a Message in the Status Bar 82
Changing the Title Bar Caption 82
Working with the Application Window 82
Accessing an Application's Built-In Dialog Boxes 83
Checking Spelling 87
Example: The `Window` Object 88
Specifying a `Window` Object 88
Opening a New Window 88
Activating a Window 88
From Here 89

6 Controlling Your VBA Code 91
Code That Makes Decisions 91
Using `If...Then` to Make True/False Decisions 92
Using `If...Then...Else` to Handle a False Result 93
Making Multiple Decisions 94
Using the `And` and `Or` Operators 95
Using Multiple `If...Then...Else` Statements 95
Using the `Select Case` Statement 97
Functions That Make Decisions 101
The `IIf` Function 101
The `Choose` Function 102
The `Switch` Function 103
Code That Loops 104
Using `Do...Loop` Structures 105
Using `For...Next` Loops 106
Using `For Each...Next` Loops 109

Using `Exit` For or `Exit Do` to Exit a Loop 110
Indenting for Readability 111
From Here 111

II PUTTING VBA TO WORK

7 **Programming Word** **115**
Working with Documents 115
Specifying a `Document` Object 115
Opening a Document 116
The `RecentFiles` Object 116
Creating a New Document 118
Saving a Document 118
Closing a Document 121
Closing All Open Documents 121
Example: Making Document Backups 122
Working with Text 124
Working with the `Range` Object 125
The `Range` Method 125
The `Range` Property 125
Reading and Changing Range Text 126
Formatting Text 126
Inserting Text 127
Deleting Text 128
Using the `Selection` Object 129
Checking the `Selection` Type 129
Moving the Insertion Point 130
Extending the Selection 131
Collapsing the Selection 132
Using the `Words` Object 132
Working with the `Sentences` Object 133
Displaying Sentence Word Counts 134
Programming the `Paragraph` Object 136
From Here 138

8 **Programming Excel** **139**
Excel's Application Object 139
Accessing Worksheet Functions 139
Recalculating Workbooks 140
Converting a String into an Object 140
Pausing a Running Macro 141
Some Event-Like Methods 141

Manipulating Workbook Objects 146
Specifying a Workbook Object 146
Opening a Workbook 146
Creating a New Workbook 147
Specifying the Number of Sheets in a New Workbook 147
Saving Every Open Workbook 148
Closing a Workbook 150
Dealing with Worksheet Objects 150
Specifying a Worksheet Object 150
Creating a New Worksheet 151
Properties of the Worksheet Object 151
Methods of the Worksheet Object 152
Working with Range Objects 153
Returning a Range Object 153
Selecting a Cell or Range 158
Defining a Range Name 162
Inserting Data into a Range 162
Returning Data About a Range 163
Resizing a Range 163
From Here 164

9 Programming PowerPoint 165

PowerPoint's Presentation Object 165
Specifying a Presentation Object 165
Opening a Presentation 166
Creating a New Presentation 166
Presentation Object Properties 166
Presentation Object Methods 167
The Juggling Application 168
Working with PowerPoint Slide Objects 170
Specifying a Slide 170
Creating a New Slide 171
Inserting Slides from a File 172
Slide Object Properties 172
The Juggling Application: Creating the Slides 173
Slide Object Methods 174
Dealing with Shape Objects 174
Specifying a Shape 174
Adding Shapes to a Slide 175
Some Shape Object Properties 178
The Juggling Application: Creating the Title Slide 180
Some Shape Object Methods 181
The Juggling Application: Creating the Instructions 183

Operating a Slide Show 186
Slide Show Transitions 186
Slide Show Settings 187
Running the Slide Show 187
From Here 188

10 Programming Access Databases 189

Getting Ready: Two Steps Before You Begin 190
Step One: Create a Reference 190
Step Two: Create a Data Source 191
Working with Database Records: Opening a Recordset 192
Opening a Recordset Using a Table 193
Opening a Recordset: the Full `Open` Method Syntax 194
Opening a Recordset Using a `SELECT` String 196
Working with a Recordset 198
Getting at the Recordset Data 198
Navigating Records 199
Finding a Record 202
Editing a Record 203
Adding a New Record 205
Deleting a Record 207
Retrieving Data into Excel 208
Retrieving an Individual Field Value 208
Retrieving One or More Entire Rows 208
Retrieving an Entire Recordset 210
From Here 212

11 Programming Outlook Email 213

Getting Started 213
Working with Outlook Folders 214
Referencing Default Folders 214
Using the `Folders` Property 214
Prompting the User for a Folder 216
Some `MAPIFolder` Methods 217
Handling Incoming and Outgoing Messages 217
Incoming: Handling the `ItemAdd` Event 218
Outgoing: Handling the `ItemSend` Event 219
Working with Email Messages 220
`MailItem` Object Properties 220
`MailItem` Object Methods 221
Example: Creating Advanced Rules for Incoming Messages 223
Example: Canning Spam 224
Sending a Message 225
Creating a New Message 225
Creating a Reply or Forward 225

Specifying the Message Recipients 226
Sending the Message 226
Example: Supplementing a Reminder with an Email Message 227
Working with Attachments 229
Example: Removing Attachments from a Forwarded Message 229
Attaching a File to a Message 230
Programming Outlook from Other Applications 231
Setting Up a Reference to Outlook 231
Getting the `NameSpace` Object 232
Logging On to an Outlook Session 232
Logging Off an Outlook Session 233
From Here 234

III GETTING THE MOST OUT OF VBA

12 Creating Custom VBA Dialog Boxes 237
Adding a Form to Your Project 238
Changing the Form's Design-Time Properties 239
The Appearance Category 239
The Behavior Category 239
The Font Category 240
The Misc Category 240
The Picture Category 241
The Position Category 241
The Scrolling Category 241
Working with Controls 242
Inserting Controls on a Form 242
Selecting Controls 243
Sizing Controls 244
Moving Controls 244
Copying Controls 244
Deleting Controls 245
Grouping Controls 245
Setting Control Properties 246
Common Control Properties 246
Setting the Tab Order 247
Handling Form Events 248
Types of Form Controls 248
Command Buttons 249
Labels 249
Text Boxes 249
Frames 250
Option Buttons 250

Check Boxes 251
Toggle Buttons 251
List Boxes 251
Scrollbars 253
Spin Buttons 253
Tab Strips and MultiPage Controls 254
Using a Form in a Procedure 258
Displaying the Form 258
Unloading the Form 258
Processing the Form Results 259
From Here 262
13 Customizing the Office 2007 Ribbon 263
Understanding Ribbon Extensibility 263
Extending the Ribbon: An Example 265
Step 1: Create a Macro-Enabled Office Document or Template 265
Step 2: Create a Text File and Add the Custom XML Markup 267
Step 3: Copy the Custom XML Markup File to the Document Package 268
Step 4: Rename and Open the Document 269
More Complexity Means More Power 270
Hiding the Built-In Ribbon 270
Creating Custom Tabs 271
Creating a New Tab 271
Customizing an Existing Tab 272
Creating Custom Groups 273
Creating a New Group 274
Customizing an Existing Group 274
Creating Custom Controls 275
Common Control Attributes 276
Creating a Button 277
Creating a Menu 278
Creating a Split Button 280
Creating a Check Box 281
Creating a Toggle Button 282
Creating a Drop-Down List 284
Creating a Gallery 285
Creating a Combo Box 288
Creating a Dialog Launcher 289
Working with Ribbon Commands at Runtime 289
From Here 297
14 VBA Tips and Techniques 299
Working with Modules 299
Renaming a Module 299
Exporting a Module 300

Importing a Module 300
Removing a Module 301
Configuring Macro Security Settings 301
Setting Up a Trusted Location 301
Setting the Macro Security Level 302
Digitally Signing a VBA Project 304
Saving Application Settings in the Registry 305
Storing Settings in the Registry 306
Reading Settings from the Registry 306
Deleting Settings from the Registry 307
Tracking File Usage 307
Reading All the Section Settings 309
Accessing the File System Through VBA 309
Returning File and Folder Information 310
Manipulating Files and Folders 314
Tips for Faster Procedures 319
Turn Off Screen Updating 319
Hide Your Documents 319
Don't Select Data Unless You Have To 319
In Excel, Don't Recalculate Until You Have To 319
Optimize Your Loops 320
From Here 321

15 Trapping Program Errors 323

A Basic Error-Trapping Strategy 324
Setting the Trap 324
Coding the Error Handler 325
Resuming Program Execution 327
Disabling the Trap 330
Working with the `Err` Object 330
`Err` Object Properties 330
`Err` Object Methods 332
Trappable VBA Errors 333
From Here 336

16 Debugging VBA Procedures 337

A Basic Strategy for Debugging 338
Syntax Errors 338
Compile Errors 338
Runtime Errors 338
Logic Errors 339
Pausing a Procedure 339
Entering Break Mode 340
Exiting Break Mode 342

Stepping Through a Procedure 342
Stepping into a Procedure 343
Stepping Over a Procedure 343
Stepping Out of a Procedure 343
Stepping to the Cursor 343
Monitoring Procedure Values 344
Using the Locals Window 344
Adding a Watch Expression 344
Editing a Watch Expression 346
Deleting a Watch Expression 346
Displaying Data Values Quickly 347
Using the Immediate Window 348
Printing Data in the Immediate Window 348
Executing Statements in the Immediate Window 350
Debugging Tips 350
Indent Your Code for Readability 350
Turn on Syntax Checking 351
Require Variable Declarations 351
Break Down Complex Procedures 351
Enter VBA Keywords in Lowercase 351
Comment Out Problem Statements 351
Break Up Long Statements 351
Use Excel's Range Names Whenever Possible 352
Take Advantage of User-Defined Constants 352
From Here 352

IV APPENDIXES

A VBA Statements 355

B VBA Functions 361

Index 371