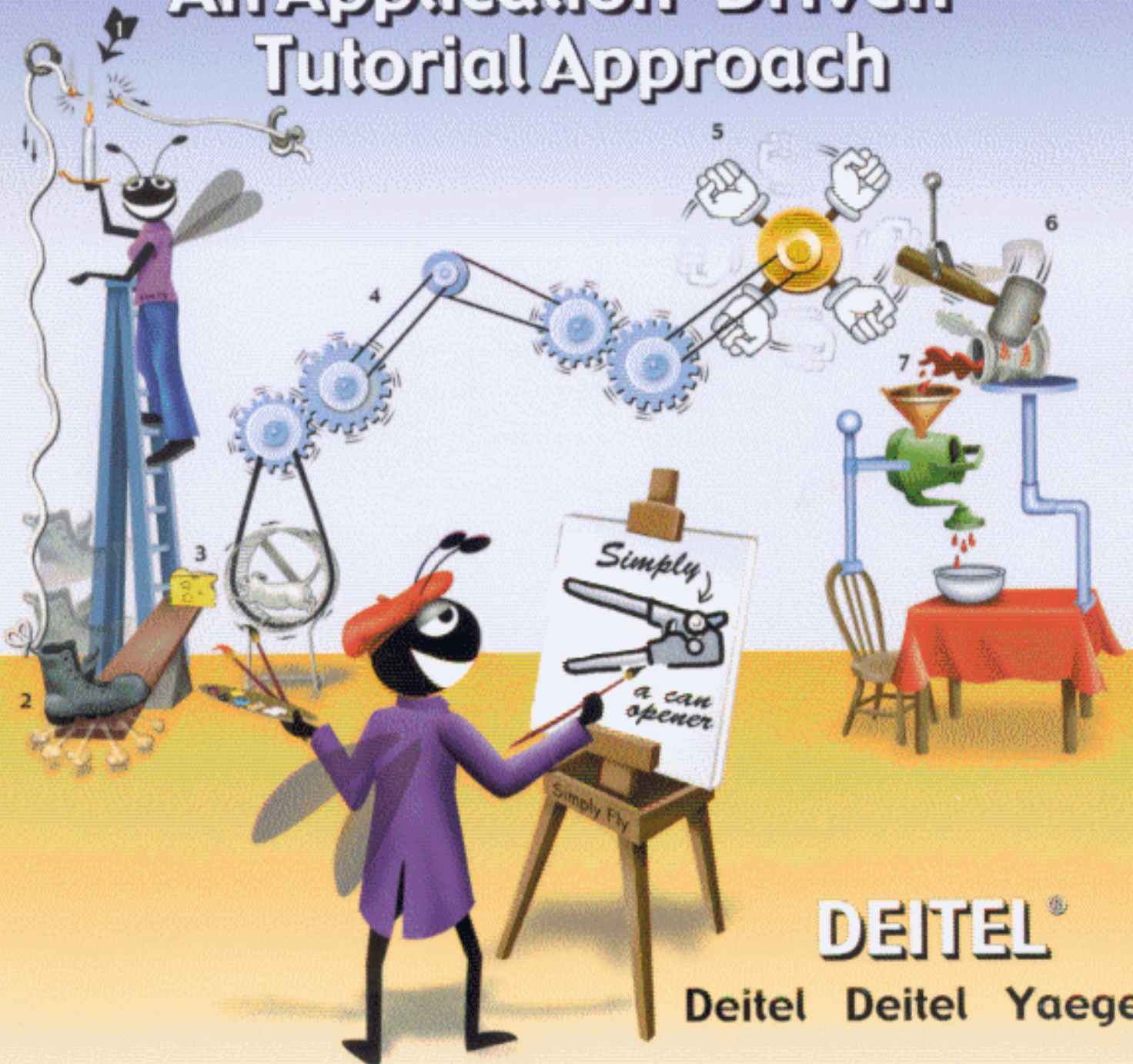




Simply Visual Basic® .NET 2003

An Application-Driven Tutorial Approach



DEITEL®

Deitel Deitel Yaeger



O N T E N T S

Preface	xviii
Before You Begin	xxviii
1 Graphing Application	1
<i>Introducing Computers, the Internet and Visual Basic .NET</i>	
1.1 What Is a Computer?	1
1.2 Computer Organization	2
1.3 Machine Languages, Assembly Languages and High-Level Languages	3
1.4 Visual Basic .NET	4
1.5 Other High-Level Languages	5
1.6 Structured Programming	6
1.7 Key Software Trend: Object Technology	7
1.8 The Internet and the World Wide Web	8
1.9 Introduction to Microsoft .NET	9
1.10 Test-Driving the Visual Basic .NET Graphing Application	10
1.11 Internet and Web Resources	13
1.12 Wrap-Up	14
2 Welcome Application	18
<i>Introducing the Visual Studio® .NET 2003 IDE</i>	
2.1 Test-Driving the Welcome Application	18
2.2 Overview of the Visual Studio .NET 2003 IDE	19
2.3 Creating a Project for the Welcome Application	22
2.4 Menu Bar and Toolbar	26
2.5 Visual Studio .NET IDE Windows	28
2.6 Auto Hide	32
2.7 Using Help	33
2.8 Saving and Closing Solutions in Visual Studio .NET	34
2.9 Internet and Web Resources	34
2.10 Wrap-Up	35
3 Welcome Application	41
<i>Introduction to Visual Programming</i>	
3.1 Test-Driving the Welcome Application	41
3.2 Constructing the Welcome Application	44
3.3 Objects Used in the Welcome Application	54
3.4 Wrap-Up	55
4 Designing the Inventory Application	64
<i>Introducing TextBoxes and Buttons</i>	
4.1 Test-Driving the Inventory Application	64
4.2 Constructing the Inventory Application	66

4.3	Adding Labels to the Inventory Application	71
4.4	Adding TextBoxes and a Button to the Form	75
4.5	Wrap-Up	77
5	Completing the Inventory Application	84
	<i>Introducing Programming</i>	
5.1	Test-Driving the Inventory Application	84
5.2	Introduction to Visual Basic .NET Code	85
5.3	Inserting an Event Handler	92
5.4	Performing a Calculation and Displaying the Result	95
5.5	Using the Debugger: Syntax Errors	98
5.6	Wrap-Up	102
6	Enhancing the Inventory Application	110
	<i>Introducing Variables, Memory Concepts and Arithmetic</i>	
6.1	Test-Driving the Enhanced Inventory Application	110
6.2	Variables	112
6.3	Handling the TextChanged Event	115
6.4	Memory Concepts	117
6.5	Arithmetic	118
6.6	Using the Debugger: Breakpoints	121
6.7	Internet and Web Resources	125
6.8	Wrap-Up	125
7	Wage Calculator Application	133
	<i>Introducing Algorithms, Pseudocode and Program Control</i>	
7.1	Test-Driving the Wage Calculator Application	133
7.2	Algorithms	134
7.3	Pseudocode	135
7.4	Control Structures	136
7.5	If...Then Selection Statement	138
7.6	If...Then...Else Selection Statement	141
7.7	Constructing the Wage Calculator Application	144
7.8	Assignment Operators	149
7.9	Formatting Text	150
7.10	Using the Debugger: The Watch Window	153
7.11	Wrap-Up	156
8	Dental Payment Application	165
	<i>Introducing CheckBoxes and Message Dialogs</i>	
8.1	Test-Driving the Dental Payment Application	165
8.2	Designing the Dental Payment Application	167
8.3	Using CheckBoxes	168
8.4	Using a Dialog to Display a Message	171
8.5	Logical Operators	175
8.6	Wrap-Up	180
9	Car Payment Calculator Application	187
	<i>Introducing the Do While...Loop and Do Until...Loop Repetition Statements</i>	
9.1	Test-Driving the Car Payment Calculator Application	187
9.2	Do While...Loop Repetition Statement	189
9.3	Do Until...Loop Repetition Statement	191
9.4	Constructing the Car Payment Calculator Application	193
9.5	Wrap-Up	202

10	Class Average Application	210
	<i>Introducing the Do...Loop While and Do...Loop Until Repetition Statements</i>	
10.1	Test-Driving the Class Average Application	210
10.2	Do...Loop While Repetition Statement	212
10.3	Do...Loop Until Repetition Statement	214
10.4	Creating the Class Average Application	216
10.5	Wrap-Up	223
11	Interest Calculator Application	231
	<i>Introducing the For...Next Repetition Statement</i>	
11.1	Test-Driving the Interest Calculator Application	231
11.2	Essentials of Counter-Controlled Repetition	233
11.3	Introducing the For...Next Repetition Statement	234
11.4	Examples Using the For...Next Statement	237
11.5	Constructing the Interest Calculator Application	238
11.6	Wrap-Up	245
12	Security Panel Application	253
	<i>Introducing the Select Case Multiple-Selection Statement</i>	
12.1	Test-Driving the Security Panel Application	253
12.2	Introducing the Select Case Multiple-Selection Statement	256
12.3	Constructing the Security Panel Application	258
12.4	Wrap-Up	267
13	Enhancing the Wage Calculator Application	274
	<i>Introducing Function Procedures and Sub Procedures</i>	
13.1	Test-Driving the Enhanced Wage Calculator Application	274
13.2	Classes and Procedures	275
13.3	Function Procedures	276
13.4	Using Sub Procedures in the Wage Calculator Application	285
13.5	Using the Debugger: Debug Toolbar	290
13.6	Wrap-Up	294
14	Shipping Time Application	302
	<i>Using Dates and Timers</i>	
14.1	Test-Driving the Shipping Time Application	302
14.2	Date Variables	303
14.3	Building the Shipping Time Application: Design Elements	305
14.4	Creating the Shipping Time Application: Inserting Code	311
14.5	Wrap-Up	319
15	Fund Raiser Application	327
	<i>Introducing Scope, Pass-by-Reference and Option Strict</i>	
15.1	Test-Driving the Fund Raiser Application	327
15.2	Constructing the Fund Raiser Application	329
15.3	Passing Arguments: Pass-by-Value vs. Pass-by-Reference	335
15.4	Option Strict	338
15.5	Wrap-Up	344
16	Craps Game Application	351
	<i>Introducing Random-Number Generation</i>	
16.1	Test-Driving the Craps Game Application	351

16.2	Random-Number Generation	353
16.3	Using Enumerations in the Craps Game Application	355
16.4	Using Random Numbers in the Craps Game Application	359
16.5	Wrap-Up	367
17	Flag Quiz Application	374
	<i>Introducing One-Dimensional Arrays and ComboBoxes</i>	
17.1	Test-Driving the Flag Quiz Application	374
17.2	Introducing Arrays	376
17.3	Declaring and Allocating Arrays	378
17.4	Constructing the Flag Quiz Application	380
17.5	Sorting Arrays	392
17.6	Wrap-Up	395
18	Sales Data Application	403
	<i>Introducing Two-Dimensional Arrays, RadioButtons and the MSChart Control</i>	
18.1	Test-Driving the Sales Data Application	403
18.2	Two-Dimensional Rectangular Arrays	405
18.3	Creating and Customizing a Chart Graphic by Using the MSChart Control	407
18.4	Using RadioButtons	413
18.5	Inserting Code into the Sales Data Application	414
18.6	Wrap-Up	419
19	Microwave Oven Application	428
	<i>Building Your Own Classes and Objects</i>	
19.1	Test-Driving the Microwave Oven Application	429
19.2	Designing the Microwave Oven Application	431
19.3	Adding a New Class to the Project	436
19.4	Initializing Class Objects: Constructors	438
19.5	Properties	440
19.6	Completing the Microwave Oven Application	444
19.7	Controlling Access to Members	450
19.8	Using the Debugger: The Autos and Locals Windows	457
19.9	Wrap-Up	460
20	Shipping Hub Application	471
	<i>Introducing Collections, the For Each...Next Statement and Access Keys</i>	
20.1	Test-Driving the Shipping Hub Application	471
20.2	Package Class	474
20.3	Using Properties TabIndex and TabStop	475
20.4	Using Access Keys	476
20.5	Collections	477
20.6	Shipping Hub Application: Using Class ArrayList	478
20.7	For Each...Next Repetition Statement	486
20.8	Wrap-Up	493
21	"Cat and Mouse" Painter Application	502
	<i>Introducing the Graphics Object and Mouse Events</i>	
21.1	Test-Driving the Painter Application	502
21.2	Constructing the Painter Application	504
21.3	Using a Graphics Object	505
21.4	Handling the MouseDown Event	506

21.5	Handling the MouseUp Event	509
21.6	Handling the MouseMove Event	511
21.7	Distinguishing Between Mouse Buttons	514
21.8	Wrap-Up	518
22	Typing Application	526
	<i>Introducing Keyboard Events, Menus and Dialogs</i>	
22.1	Test-Driving the Typing Application	526
22.2	Analyzing the Typing Application	529
22.3	Keyboard Events	531
22.4	Menus	536
22.5	Wrap-Up	551
23	Screen Scraping Application	560
	<i>Introducing String Processing</i>	
23.1	Test-Driving the Screen Scraping Application	560
23.2	Fundamentals of Strings	562
23.3	Analyzing the Screen Scraping Application	563
23.4	Locating Substrings in Strings	564
23.5	Extracting Substrings from Strings	568
23.6	Replacing Substrings in Strings	569
23.7	Other String Methods	571
23.8	Wrap-Up	573
24	Ticket Information Application	580
	<i>Introducing Sequential-Access Files</i>	
24.1	Test-Driving the Ticket Information Application	580
24.2	Data Hierarchy	582
24.3	Files and Streams	584
24.4	Writing to a File: Creating the Write Event Application	584
24.5	Building the Ticket Information Application	595
24.6	Wrap-Up	607
25	ATM Application	616
	<i>Introducing Database Programming</i>	
25.1	Test-Driving the ATM Application	616
25.2	Planning the ATM Application	619
25.3	Creating Database Connections	621
25.4	Programming the ATM Application	634
25.5	Wrap-Up	645
26	CheckWriter Application	655
	<i>Introducing Graphics and Printing</i>	
26.1	Test-Driving the CheckWriter Application	655
26.2	GDI+ Introduction	658
26.3	Constructing the CheckWriter Application	659
26.4	PrintPreviewDialogs and PrintDocuments	662
26.5	Creating an Event Handler for the CheckWriter Application	662
26.6	Graphics Objects: Colors, Lines and Shapes	666
26.7	Printing Each Control of the CheckWriter Application	668
26.8	Font Class	671
26.9	Previewing and Printing the Check	672
26.10	Wrap-Up	680

27	Phone Book Application	688
	<i>Introducing Multimedia Using Microsoft Agent</i>	
27.1	Microsoft Agent	688
27.2	Downloading Microsoft Agent Components	689
27.3	Test-Driving the Phone Book Application	691
27.4	Constructing the Phone Book Application	693
27.5	Wrap-Up	708
28	Bookstore Application: Web Applications	715
	<i>Introducing Internet Information Services</i>	
28.1	Multi-Tier Architecture	715
28.2	Web Servers	716
28.3	Internet Information Services (IIS)	718
28.4	Test-Driving the Bookstore Application	727
28.5	Wrap-Up	731
29	Bookstore Application: Client Tier	736
	<i>Introducing Web Controls</i>	
29.1	Analyzing the Bookstore Application	736
29.2	Creating ASPX Pages	737
29.3	Designing the Books.aspx Page	742
29.4	Designing the BookInformation Page	747
29.5	Wrap-Up	752
30	Bookstore Application: Information Tier	762
	<i>Examining the Database and Creating Database Components</i>	
30.1	Reviewing the Bookstore Application	762
30.2	Information Tier: Database	763
30.3	Using the Server Explorer and Query Builder in ASPX Pages	764
30.4	Wrap-Up	772
31	Bookstore Application: Middle Tier	776
	<i>Introducing Code-Behind Files</i>	
31.1	Reviewing the Bookstore Application	776
31.2	Programming the Books Page's Code-Behind File	777
31.3	Coding the BookInformation Page's Code-Behind File	783
31.4	Internet and Web Resources	790
31.5	Wrap-Up	790
32	Enhanced Car Payment Calculator Application	796
	<i>Introducing Exception Handling</i>	
32.1	Test-Driving the Enhanced Car Payment Calculator Application	796
32.2	Introduction to Exception Handling	799
32.3	Exception Handling in Visual Basic .NET	800
32.4	Constructing the Enhanced Car Payment Calculator Application	801
32.5	Wrap-Up	807
A	Operator Precedence Chart	814
B	ASCII Character Set	815
C	GUI Design Guidelines	816
D	Visual Studio .NET Windows Form Designer Tools	821
D.1	Internet and Web Resources	824

E	Controls, Events, Properties & Methods	825
F	Keyword Chart	848
G	Internet Information Services (IIS) Setup Instructions	850
G.1	Installing IIS	850
	Glossary	854
	Index	870