

# *contents*

---

<i>brief contents</i>	<i>vii</i>
<i>contents</i>	<i>ix</i>
<i>preface</i>	<i>xix</i>
<i>about this book</i>	<i>xxi</i>
<i>acknowledgments</i>	<i>xxviii</i>
<i>about .NET</i>	<i>xxx</i>
<i>about the cover illustration</i>	<i>xxxiv</i>

## *Part 1 Hello Windows Forms 1*

<i>1 Getting started with Windows Forms</i>	<i>3</i>
1.1 Programming in C#	4
Namespaces and classes	6 ♦ Constructors and methods 8 ♦ C# types 9 ♦ The entry point 11
The Application class	11 ♦ Program execution 13
1.2 Adding controls	13
Shortcuts and fully qualified names	15
Fields and properties	16 ♦ The Controls property 18
1.3 Loading files	18
Events	20 ♦ The OpenFileDialog class 22
Bitmap images	24
1.4 Resizing forms	26
Desktop layout properties	28 ♦ The Anchor property 29 ♦ The Dock property 31
1.5 Recap	33

- 2 *Getting started with Visual Studio .NET* 34
  - 2.1 Programming with Visual Studio .NET 35
    - Creating a project 36 ♦ Executing a program 39
    - Viewing the source code 39
  - 2.2 Adding controls 43
    - The AssemblyInfo file 43 ♦ Renaming a form 46
    - The Toolbox window 48
  - 2.3 Loading files 54
    - Event handlers in Visual Studio .NET 54
    - Exception handling 58
  - 2.4 Resizing forms 61
    - Assign the Anchor property 63
    - Assign the MinimumSize property 64
  - 2.5 Recap 65

## *Part 2 Basic Windows Forms 67*

- 3 *Menus 69*
  - 3.1 The nature of menus 70
    - The Menu class 71 ♦ The Menu class hierarchy 71
    - Derived classes 73
  - 3.2 Menu bars 74
    - Adding the Main menu 74 ♦ Adding the File menu 77
    - Adding the dropdown menu 79 ♦ Adding a View menu 83
  - 3.3 Click events 85
    - Adding handlers via the designer window 85
    - Adding handlers via the properties window 86
  - 3.4 Popup events and shared handlers 88
    - Defining a shared handler 89 ♦ Handling Popup events 93
  - 3.5 Context menus 97
    - Creating a context menu 98 ♦ Adding menu items 100
  - 3.6 Recap 101
- 4 *Status bars 102*
  - 4.1 The Control class 103
  - 4.2 The StatusBar class 105
    - Adding a status bar 106 ♦ Assigning status bar text 109
  - 4.3 Status bar panels 110
    - Adding panels to a status bar 111 ♦ Assigning panel text 116

4.4	Owner-drawn panels	118
	The DrawItem event	118 ♦ Drawing a panel 121
4.5	Recap	125
5	<i>Reusable libraries</i>	126
5.1	C# classes and interfaces	127
	Interfaces	128 ♦ Data collection classes 129
5.2	Class libraries	133
	Creating the class library	134 ♦ Using the command-line tools 138 ♦ Creating the PhotoAlbum class 139
	Creating the Photograph class	141
5.3	Interfaces revisited	145
	Supporting the ICollection interface	146
	Supporting the IList interface	146
	Implementing album position operations	148
5.4	Robustness issues	151
	Handling an invalid bitmap	151 ♦ Overriding methods in the Object class 154 ♦ Disposing of resources 157
	Associating a file name with an album	159
5.5	Recap	160
6	<i>Common file dialogs</i>	161
6.1	Design issues	162
	Changing the menu bar	162 ♦ Adding class variables 165
6.2	Multiple file selection	166
	Adding images to an album	166
	Removing images from an album	169
6.3	Paint events	169
	Drawing the current photograph	170
	Displaying the current position	171
6.4	Context menus revisited	173
	Displaying the next photograph	174
	Displaying the previous photograph	174
6.5	Files and paths	175
	Creating a default album directory	175
	Setting the title bar	179 ♦ Handling the New menu 180
6.6	Save file dialogs	181
	Writing album data	182 ♦ Saving an album as a new file 186
	Saving an existing album	188
6.7	Open file dialogs	189
	Reading album data	190 ♦ Opening an album file 191
6.8	Recap	193

7	<i>Drawing and scrolling</i>	194
7.1	Form class hierarchy	195
	The ScrollableControl class	196 ♦ The Form class 196
7.2	Image drawing	198
	Deleting the PictureBox control	198 ♦ Handling the Image menu 199 ♦ Implementing the Stretch to Fit option 202 ♦ Implementing a Scale to Fit option 205
	Repainting when the form is resized	210
7.3	Automated scrolling	212
	Properties for scrolling	213
	Implementing automated scrolling	213
7.4	Panels	215
	Adding a panel	217 ♦ Updating the menu handlers 218
	Drawing the status bar panel	219 ♦ Drawing the image 220
7.5	Recap	222
8	<i>Dialog boxes</i>	224
8.1	Message boxes	225
	The MessageBox.Show method	227 ♦ Creating an OK dialog 227 ♦ Creating a YesNo dialog 229
	Creating A YesNoCancel dialog	230
8.2	The Form.Close method	233
	The relationship between Close and Dispose	233
	Intercepting the Form.Close method	235
8.3	Modal dialog boxes	237
	Adding captions to photos	238 ♦ Preserving caption values 239
	Creating the CaptionDlg form	240 ♦ Adding properties to the CaptionDlg form 247 ♦ Displaying the dialog in the MainForm class 249
8.4	Modeless dialogs	252
	Creating the PixelDlg form	253 ♦ Adding class members to PixelDlg 255 ♦ Displaying the modeless PixelDlg form 256
	Updating the PixelDlg form	259
	Updating PixelDlg as the mouse moves	260
8.5	Recap	262
9	<i>Basic controls</i>	263
9.1	Form inheritance	264
	Creating a base form	265 ♦ Creating a derived form 269
9.2	Labels and text boxes	271
	Expanding the Photograph class	272

	Creating the PhotoEditDlg panel area	277
	Creating the multiline text box	281 ♦ Adding PhotoEditDlg to our main form 285 ♦ Using TextBox controls 287
9.3	Button classes	290
	Expanding the PhotoAlbum class	293 ♦ Using the new album settings 296 ♦ Creating the AlbumEditDlg panel area 298
	Using radio buttons	300 ♦ Using check box buttons 304
	Adding AlbumEditDlg to our main form	310
9.4	Recap	313
10	<i>List controls</i>	314
10.1	List boxes	315
	Creating a list box	315 ♦ Handling selected items 322
10.2	Multiselection list boxes	325
	Enabling multiple selection	325 ♦ Handling the Move Up and Move Down buttons 328 ♦ Handling the Remove button 331
10.3	Combo boxes	333
	Creating a combo box	333 ♦ Handling the selected item 336
10.4	Combo box edits	339
	Replacing the photographer control	340
	Updating the combo box dynamically	341
10.5	Owner-drawn lists	343
	Adding a context menu	344 ♦ Setting the item height 346
	Drawing the list items	348
10.6	Recap	352
11	<i>More controls</i>	353
11.1	Tab controls	354
	The TabControl class	355 ♦ Creating a tab control 356
11.2	Tab pages	359
	Creating tab pages dynamically	360
	Creating tab pages in Visual Studio	363
11.3	Dates and Times	366
	Dates and times	367
	Customizing a DateTimePicker control	369
11.4	Calendars	372
	Adding a MonthCalendar control	372
	Initializing a calendar	374
	Handling mouse clicks in a calendar control	376
11.5	Recap	381

## 12 *A .NET assortment* 383

- 12.1 Keyboard events 384
  - Handling the KeyPress event 384
  - Handling other keyboard events 386
- 12.2 Mouse events 387
  - The MouseEventArgs class 388 ♦ Handling mouse events 388
- 12.3 Image buttons 393
  - Implementing Next and Prev buttons 393 ♦ Drawing bitmaps for our buttons 399 ♦ Placing images on our buttons 402
- 12.4 Icons 405
  - Replacing the icon on a form 406
  - Replacing the application icon 408
- 12.5 Recap 409

## 13 *Toolbars and tips* 410

- 13.1 Toolbars 411
  - The ToolBar class 411 ♦ Adding a toolbar 412
  - The ToolBarButton class 413
- 13.2 Image lists 416
  - The ImageList class 416 ♦ Creating an image list 417
- 13.3 Toolbar buttons 420
  - Adding a push button 420 ♦ Adding a dropdown button 424
  - Adding a toggle button 426
- 13.4 Tool tips 430
  - The ToolTip class 431 ♦ Creating tool tips 431
- 13.5 Recap 434

## *Part 3 Advanced Windows Forms* 437

### 14 *List views* 439

- 14.1 The nature of list views 440
- 14.2 The ListView class 443
  - Creating the MyAlbumExplorer project 443
  - Creating a list view 445 ♦ Populating a ListView 448
- 14.3 ListView columns 453
  - Creating the columns 454 ♦ Populating the columns 456
  - Sorting a column 458
- 14.4 Selection and editing 464
  - Supporting item selection 464 ♦ Supporting label edits 468

14.5	Item activation	472
	Handling item activation	473 ♦ Defining new columns 474
	Populating the ListView	476 ♦ Sorting a column (again) 477
	Updating the properties menu	480 ♦ Updating label editing 481 ♦ Redisplaying the albums 483
14.6	Recap	483
15	<i>Tree views</i>	<i>485</i>
15.1	Tree view basics	486
15.2	The TreeView class	486
	Creating a tree view	488 ♦ Using the Splitter class 489
	Using the TreeNode class	492
15.3	Dynamic tree nodes	497
	Assigning index constants	497 ♦ Creating the album nodes 498
	Creating the photograph nodes	501
15.4	Node selection	505
	Supporting node selection	506 ♦ Revisiting the list view 509
15.5	Fun with tree views	513
	Displaying the photograph	514 ♦ Supporting label edits 516
	Updating the properties menu	520
15.6	Recap	524
16	<i>Multiple document interfaces</i>	<i>525</i>
16.1	Interface styles	526
	Single document interfaces	526 ♦ Explorer interfaces 526
	Multiple document interfaces	527
	Support in Windows Forms	529
16.2	MDI forms	530
	Creating an MDI container form	531 ♦ Creating an MDI child form 532 ♦ Adding a new entry point 533
16.3	Merged menus	535
	Assigning merge types	535 ♦ Assigning merge order 537
	Opening a child form	541
16.4	MDI children	543
	Replacing the toolbar	543 ♦ Displaying pixel data 548
	Opening an album twice	551 ♦ Updating the title bar 553
	Revisiting the activation events	556
16.5	MDI child window management	557
	Arranging MDI forms	558 ♦ Creating an MDI child list 561
16.6	Recap	563

<b>17</b>	<b><i>Data binding</i></b>	<b>564</b>
17.1	Data grids	565
	Creating the MyAlbumData project	568
	Displaying data in a data grid	569
17.2	Data grid customization	573
	Customizing table styles	574 ♦ Customizing column styles 576
17.3	Editable objects	580
	The IEditableObject interface	580 ♦ Supporting the IEditableObject interface 582 ♦ Using editable objects 584
17.4	Simple data binding	586
	Altering the MyAlbumData application	587
	Performing simple binding	590 ♦ Updating data bound controls 594 ♦ Displaying the image 599
	Saving changes to bound controls	601
17.5	Recap	602
<b>18</b>	<b><i>Odds and ends .NET</i></b>	<b>603</b>
18.1	Printing	604
	Using the print classes	605 ♦ Drawing a print page 607
18.2	Timers	611
	Creating a slide show form	612
	Implementing the slide show behavior	615
18.3	Drag and drop	618
	Initiating drag and drop	620 ♦ Receiving drag and drop 622
18.4	ActiveX controls	625
	Creating the About box	626 ♦ Wrapping the web browser control 629 ♦ Using the web browser control 631
18.5	Recap	635
<b>A</b>	<b><i>C# primer</i></b>	<b>637</b>
<b>B</b>	<b><i>.NET namespaces</i></b>	<b>674</b>
<b>C</b>	<b><i>Visual index</i></b>	<b>680</b>
<b>D</b>	<b><i>For more information</i></b>	<b>690</b>
	<i>bibliography</i>	692
	<i>index</i>	695