

Index for *Murach's C# 2005*

[\[Book summary\]](#) [\[Table of contents\]](#) [\[Last chapter in book\]](#) [\[Murach Books home page\]](#)

- operator, 94, 95
- operator, 94, 95
- ! operator, 130, 131
- != operator, 128, 129
- % operator, 94, 95
- %= operator, 96, 97
- & operator, 130, 131
- && operator, 130, 131
- * operator, 94, 95
- *= operator, 96, 97
- / operator, 94, 95
- /* (delimited comment), 68, 69
- // (comment line), 68, 69
- /= operator, 96, 97
- @ (verbatim string literal), 106, 107
- \\ escape sequence, 106, 107
- \" escape sequence, 106, 107
- \n escape sequence, 106, 107
- \r escape sequence, 106, 107
- \t escape sequence, 106, 107
- | operator, 130, 131
- || operator, 130, 131
- + operator, 94, 95
 - overloading, 390-393
 - string concatenation, 104, 105
- ++ operator, 94, 95
- += operator, 96, 97
 - for wiring events, 164, 165
 - string concatenation, 104, 105
- < operator, 128, 129
- <= operator, 128, 129
- = operator, 96, 97
- = operator, 96, 97
- == operator, 128, 129
 - overloading, 390, 391, 394, 395
- > operator, 128, 129
- >= operator, 128, 129

A

- Absolute path, 732, 733
- Abstract class, 436, 437
- Abstract keyword, 436, 437
- Abstract method, 436, 437
- Abstract property, 436, 437
- AcceptButton property (Form class), 43-45
- Access keys, 44, 45

- Access modifier, 344, 345
 - internal, 414, 415
 - private, 350, 351
 - protected, 414, 415
 - public, 350, 351
 - virtual, 414, 415
- Accessor property, 352, 353
- Action query, 640, 641
- Active Files list, 24, 25
- ActiveMdiChild property (Form class), 754, 755
- Add Connection dialog box, 530, 531
- Add method
 - BindingSource object, 673, 674
 - DateTime structure, 250, 251
 - Items collection, 272-275
 - List<> class, 230, 231
 - SortedList<> class, 235
- AddDays method (DateTime structure), 250, 251
- AddHours method (DateTime structure), 250, 251
- AddMinutes method (DateTime structure), 250, 251
- AddMonths method (DateTime structure), 250, 251
- AddNew method (BindingSource class), 596, 597
- AddSeconds method (DateTime structure), 250, 251
- AddYears method (DateTime structure), 250, 251
- ADO.NET (Active Data Objects .NET), 512-523
 - creating objects, 522, 523
 - disconnected architecture, 514-517
 - handling errors, 546, 547
- Advanced Options dialog box (SQL generation), 586, 587
- Aggregate value, 640, 641
- Alignment (code), 66, 67
- Alt-key combinations (creating), 44, 45
- And operator, 130, 131
- Anonymous method, 386-389
- API (Application Programming Interface), 496, 497
- Append method (StringBuilder class), 260, 261
- Appending strings, 104, 105
- Application class
 - Exit method, 746, 747
 - Run method, 288, 289
- Application Install dialog box, 776, 777
- Application Programming Interface (API), 496, 497
- Application software, 496, 497
- Application Updates dialog box (ClickOnce), 778, 779
- Applications
 - Customer Invoice Maintenance, 606-627
 - Future Value (basic version), 146-149
 - Future Value (data validation version), 196-199

Applications (continued)

- Future Value (exception handling version), 188, 189
- Future Value (methods version), 168-171
- Invoice Total (basic version), 120, 121
- Invoice Total (enhanced version), 122, 123
- Invoice Total (if-else version), 136, 137
- Order Entry, 676-693
- Payment, 298-307
- Product Maintenance (class version), 360-367
- Product Maintenance (data command version), 646-657
- Product Maintenance (DataGridView version), 542, 543
- Product Maintenance (enhanced version), 396-401
- Product Maintenance (inheritance version), 420-431
- Product Maintenance (TextBox version), 556-559
- Architecture (three-layer), 340, 341
- Argument, 156, 157, *see also* *Parameter*
 - of a method, 102, 103
 - params keyword, 224, 225
 - passing, 160, 161
 - vs. parameter, 156, 157
- Argument exceptions, 384, 385
- Argument list, 156, 157
- ArgumentException, 384, 385
- ArgumentNullException, 384, 385
- ArgumentOutOfRangeException, 384, 385
- Arithmetic expression, 94, 95
 - casting, 100, 101
- Arithmetic operators, 94, 95
 - overloading, 392, 393
- ArithmeticException class, 176, 177
- Array
 - copying, 222, 223
 - creating, 204, 205
 - default values, 204, 205
 - for loop, 208, 209
 - foreach loop, 210, 211
 - index, 206, 207
 - jagged, 216-219
 - Length property, 208, 209
 - of arrays, 216-219
 - one dimensional, 204-211
 - rectangular, 212-215
 - referencing, 222, 223
 - two-dimensional, 212-215
 - upper bound, 206, 207
 - using with methods, 224, 225
 - vs. collection, 226, 227
- Array class, 220, 221
- Array list, 238, 239
- ArrayList class, 226, 227, 238, 239
 - as operator, 434, 435
- ASCII character, 90, 91
- Assembly, 12, 13
- Assignment operators, 96, 97

- Attribute (XML), 724, 725
- Auto Hide button, 24, 25
- Auto List Members options, 57
- AutoHide feature, 38, 39
- Automatic updates (ClickOnce deployment), 778, 779
- Autos window, 320, 321

B

- Back-end processing, 496, 497
- Base class, 406, 407
 - creating, 414, 415
- Base keyword, 416, 417
- BaseType property (Type class), 432, 433
- BeginEdit method (data row), 598, 599
- BeginTransaction method (SqlConnection class), 664, 665
- Bigint data type (SQL Server), 502, 503
- Binary file, 700, 701, 712-717
 - reading, 714, 715
 - writing, 712, 713
- Binary operator, 94, 95
 - overloading, 390, 391
- Binary stream, 700, 701
- BinaryReader class, 700, 701, 714, 715
- BinarySearch method
 - Array class, 220, 221
 - List<> class, 230, 231
- BinaryWriter class, 700, 701, 712-715
- Binding object, 554, 555
- Binding source, 596, 597
- BindingContext property (DataGridView control), 674, 675
- BindingNavigator control
 - generating from data source, 536, 537
- BindingSource class, 596, 597
- BindingSource object, 673, 674
 - generating from data source, 536, 537
- Bit data type (SQL Server), 502, 503
- Block scope, 132, 133
- Block, 62, 63
- Bookmark, 70, 71
- Bool data type, 90, 91
- Boolean expressions, 128, 129
- Boolean literals, 92, 93
- Boolean structure, 109
- Boolean value, 90, 91
- Bound control, 536, 537
- Boxing, 238
- Break All command (debugging), 318, 319
- Break mode, 82, 83, 314, 315
- Break statement, 134, 135
 - loop, 142, 143
- Breakpoint, 144, 145, 316, 317
- Browser, web, 4, 5
- Bug, 82, 83

Build error, 64, 65
 Build information (Output window), 328, 329
 Build tab (Project Properties window), 770, 771
 Building a project, 26, 27, 78, 79
 Built-in data type, 90, 91
 Business rules layer, 340, 341
 ButtonBase class, 408, 409
 Byte data type, 90, 91
 Byte structure, 109

C

C++, 6, 7
 Calculated column, 506, 507
 Call Stack window, 326, 327
 Calling a method, 156, 157
 Camel notation, 92, 93
 Cancel property (FormClosingEventArgs class), 296, 297
 CancelButton property (Form class), 43-45, 292, 293
 CancelEdit method

- BindingSource class, 596, 597
- data row, 598, 599

 Capacity property

- List<> class, 230, 231
- SortedList<> class, 235
- StringBuilder class, 260, 261

 Case label (switch statement), 134, 135
 Case structure, 134
 Casting, 100, 101

- and inheritance, 434, 435
- as operator, 434, 435

 Catch block, 180, 181
 Cells property (DataGridViewRow class), 602, 603
 Certificate (code signing), 774-777
 Char data type (C#), 90, 91
 Char data type (SQL Server), 502, 503
 Char structure, 109
 Check box, 270, 271, 276, 277
 Check constraint, 502, 503
 Checked property

- check box and radio button, 276, 277
- menu item, 752, 753, 760, 761

 CheckedChanged event, 276, 277
 Child class, 406, 407
 Child element (XML), 722, 723
 Child form, 744, 745

- creating, 754, 755
- writing code for, 756, 757

 Choose Data Source dialog box, 530, 531
 Class, 54, 55, 340-347

- abstract, 436, 437
- adding to a project, 348, 349
- constructor, 356, 357
- delegate, 386, 387

 Class (continued)

- event, 388, 389
- fields, 350, 351
- generic, 456-459
- instance variables, 350, 351
- instantiating, 346, 347
- interface, 444-455
- members, 342, 343
- method, 354, 355
- multiple in one file, 474, 475
- nested, 474, 475
- .NET Framework, 8, 9
- partial, 476, 477
- property, 352, 353
- sealed, 438, 439
- splitting across multiple files, 476, 477
- static, 358, 359
- vs. structure, 372, 373

 Class Details window, 370, 371
 Class diagram, 370, 371
 Class file, 22, 23, 348, 349
 Class library, 341, 342, 484-489

- creating, 486, 487
- .NET Framework, 8, 9
- referencing, 488, 489
- using, 488, 489

 Class library project, 486, 487
 Class scope, 114, 115
 Class variables, 114, 115
 Class View, 368, 369
 Classes (custom)

- Book, 422, 424
- CustomerList<>, 456, 457
- OrderDB class, 690-693
- Product (basic version), 344, 345
- Product (ICloneable version), 452, 453
- Product (inheritance version), 422, 423
- ProductDB (binary file version), 716, 717
- ProductDB (text file version), 710, 711
- ProductDB (XML version), 738, 740, 741
- ProductList (basic version), 378, 379
- ProductList (inheritance version), 426, 427
- ProductList (with + operator), 396-399
- Software, 422, 425
- Validator, 362, 363, 367

 Clear method

- BindingSource object, 673, 674
- Items collection, 272-275
- List<> class, 230, 231
- Queue<> class, 236, 237
- SortedList<> class, 235
- Stack<> class, 236, 237

 Click event, 58, 59

- menu item, 752, 753

- ClickOnce deployment, 768, 769, 772-779
 - automatic updates, 778, 779
- Client, 494, 495
- Client/server systems, 494-497
- Close method
 - BinaryReader class, 714, 715
 - BinaryWriter class, 712, 713
 - FileStream class, 702, 703
 - SqlConnection class, 630, 631
 - SqlDataReader class, 638, 639
 - StreamReader class, 708, 709
 - StreamWriter class, 706, 707
 - XmlReader class, 734, 735, 738, 739
 - XmlWriter class, 730-733
- Closed event, 58, 59
- Closing a project, 16, 17
- Closing event, 58, 59
- CLR (Common Language Runtime), 8, 9, 12, 13
- COBOL (.NET version), 6
- Codd, E. F., 498
- Code Editor, 20, 21
 - adding code to a form, 60, 61
 - collapsing code, 70, 71
 - entering member names, 56, 57
 - inserting snippets, 72, 73
 - refactoring code, 74, 75
- Code refactoring, 74, 75
- Code signing certificate, 774-777
- Code snippets, 72, 73
- Coding with a readable style, 66, 67
- Collapsing source code, 70, 71
- Collection, 226-239
 - ArrayList class, 238, 239
 - element, 226, 227
 - foreach loop, 232, 233
 - List<> class, 230-233
 - Queue<> class, 236, 237
 - SortedList<> class, 234, 235
 - Stack<> class, 236, 237
 - vs. array, 226, 227
- Column
 - database, 498, 499
 - default value, 502, 503
 - identity, 502, 503
- Columns property (DataTable class), 658, 659
- Combo box, 270, 271
 - binding to a data source, 562, 563
 - binding to an object data source, 672, 673
 - loading, 274, 275
 - properties, 562, 563
- ComboBox class, 272-275
- Command object, 512-515, 632, 633
- CommandBehavior enumeration, 638, 639
- Commands (executing), 638-641
- CommandText property (SqlCommand class), 632, 633
- CommandType enumeration, 632, 633
- CommandType property (SqlCommand class), 632, 633
- Comment (C#), 68, 69, 70, 71
- Comment (XML), 722, 723
- Commit method (SqlTransaction class), 664, 665
- Common Language Runtime (CLR), 8, 9
- Common Type System, 8, 9
- CompareTo method (IComparable<> interface), 462, 463
- Comparison operators, 128, 129
 - overloading, 394-396
- Compiler, 12, 13
- Complex data binding, 536, 537
- Component Designer Tray, 522, 523
 - menus, 750, 751
- Composite primary key, 498, 499
- Concatenation, 104, 105
- Concurrency
 - and disconnected architecture, 516, 517
 - SQL for, 546, 547
- Configuration file, 630, 650
- Connection object, 512-515, 630, 631
- Connection property (SqlCommand class), 632, 633
- Connection string, 630, 631
- Connection (creating with wizard), 530, 531
- ConnectionString property (SqlConnection class), 630, 631
- Console class, 330, 331
- Const keyword, 92, 93
- Constant, 92, 93, 342, 343
 - enumeration, 116, 117
- Constraint
 - check, 502, 503
 - database, 498, 499
 - dataset, 518, 519
 - generic class, 464, 465
- ConstraintException, 546, 547
- Constructor, 342, 343, 346, 347
 - coding, 356, 357
 - default, 356, 357
 - for a structure, 372, 373
- ContainerControl class, 408, 409
- Contains method (List<> class), 230, 231
- ContainsKey method (SortedList<> class), 235
- ContainsValue method (SortedList<> class), 235
- Context sensitive help, 761, 762
- Continue command (debugging), 318, 319
- Continue statement (loop), 142, 143
- Control, 4, 5, 270-279
 - adding to form, 38, 39
 - adding tool tips, 761, 762
 - getting information about, 280, 281
 - inheritance hierarchy, 408, 409
 - selecting from data source, 550, 551
 - setting properties, 40, 41
 - setting tab order, 278, 279

- ControlBox property (Form class), 290, 291
- Conversion, 100, 101
 - data type, 108-113
- Convert class, 110, 111
- ConvertEventHandler delegate, 554-556
- Copy method
 - Array class, 220, 221, 222, 223
 - File class, 698, 699
- Count property
 - BindingSource class, 596, 597
 - Items collection, 272, 273
 - List<> class, 230, 231
 - Queue<> class, 236, 237
 - SortedList<> class, 235
 - Stack<> class, 236, 237
- Create method
 - XmlReader class, 734, 735, 738, 739
 - XmlWriter class, 730-733
- CreateDirectory method (Directory class), 698, 699
- Cs file, 22, 23
- Csproj file, 16, 17
- Currency format, 112, 113
- CurrencyManager object, 674, 675
- CurrentCell property (DataGridView class), 602, 603
- Customer Invoice Maintenance application, 606-627
- Customer Maintenance form (two data tables), 560, 561
- CustomerList<> class (generic version), 456, 457
- Customers table (design), 504, 505

D

- Data access API, 496, 497
- Data adapter, 520, 521
 - creating, 660, 661
 - generating commands for, 662, 663
 - object, 512-515
- Data column (dataset), 518, 519
- Data commands (executing), 638, 639
- Data errors (handling), 544-549
- Data hiding, 342, 343
- Data provider errors (handling), 544, 545
- Data reader, 512, 513, 520, 521, 638, 639
- Data relation (dataset), 518, 519
- Data row
 - dataset, 518, 519
 - members, 598, 599
- Data source, 522, 523
 - binding a combo box, 562, 563
 - changing controls associated with, 550, 551
 - creating, 526-535
 - creating a parameterized query, 564-567
 - previewing data, 568, 569
- Data Source Configuration Wizard
 - for a database, 528-533
 - for an object, 670, 671

- Data table, 514, 515
 - dataset, 518, 519
 - members, 598, 599
- Data tip, 82, 83, 314, 315
- Data type
 - converting, 108-113
 - nullable, 118, 119
 - SQL Server, 502, 503
- Data validation, 190-195
 - and string handling, 258, 259
 - generic methods, 192, 193
 - multiple entries, 194, 195
- DataAdapter property (SqlCommandBuilder class), 660, 661
- Database connection, 630, 631
- Database layer, 340, 341
 - with object data sources, 668, 669
- Database management system (DBMS), 496, 497
- Database objects (choosing with wizard), 532, 533
- Database server, 494, 495
- Database
 - design of MMABooks, 504, 505
 - relational, 498-505
- DataBindings - Text property (combo box), 562, 563
- DataBindings property (text box), 554, 555
- DataBoundItem property (DataGridViewRow class), 674, 675
- DataError event (DataGridView control), 548, 549
- DataException, 546, 547
- DataGridView control, 536-543
 - DataError event, 548, 549
 - deleting a row, 602, 603
 - editing columns, 540, 541
 - editing properties, 538, 539
 - generating from data source, 536, 537
 - Master/Detail form, 602, 603
 - with object data source, 674, 675
 - working with values, 602, 603
- DataGridViewCell class, 602, 603
- DataGridViewDataErrorEventArgs class, 548, 549
- DataGridViewRow class, 602, 603
- DataMember property (BindingSource object), 602, 603
- Dataset, 514, 515, 598-601
 - organization, 518, 519
 - properties, 598, 599
 - schema file, 534, 535
 - untyped, 658-661
- DataSet class, 658, 659
 - custom, 534, 535
- DataSet Designer, 578-591
 - basic skills, 578, 579
 - viewing, 570, 571
- DataSet object (generating from data source), 536, 537

- DataSource property
 - BindingSource object, 602, 603
 - ComboBox control, 562, 563, 672, 673
 - DataGridView control, 674, 675
- Date (DateTime structure), 244, 245
- Date property (DateTime structure), 248, 249
- Date, 244-251
 - adding, 250, 251
 - comparing, 250, 251
 - current, 246, 247
 - formatting, 246, 247, 264, 265
 - working with, 250, 251
- Datetime data type (SQL Server), 502, 503
- DateTime structure, 244, 245
 - comparing, 250, 251
- Day property (DateTime structure), 248, 249
- DayOfWeek property (DateTime structure), 248, 249
- DayOfYear property (DateTime structure), 248, 249
- Days property (TimeSpan structure), 250, 251
- DaysInMonth method (DateTime structure), 248, 249
- DbConcurrencyException, 546, 547
- DBMS (Database management system), 496, 497
- DbType property (SqlParameter class), 636, 637
- Debug information (Output window), 328, 329
- Debugging, 82, 83, 312-333
 - Autos window, 320, 321
 - break mode, 314, 315
 - Call Stack window, 326, 327
 - controlling execution, 318, 319
 - Immediate window, 324, 325
 - Locals window, 320, 321
 - loops, 144, 145
 - Output window, 328, 329
 - setting options, 312, 313
 - using breakpoints, 316, 317
 - Watch window, 322, 323
- Decimal data type (C#), 90, 91
- Decimal data type (SQL Server), 502, 503
- Decimal structure, 109
- Decimal (literal), 92, 93
- Declaration (XML), 722, 723
- Declaring
 - constants, 92, 93
 - variables, 92, 93
- Decrement operator, 94, 95
 - precedence, 98, 99
- Default constructor, 356, 357
- Default label (switch statement), 134, 135
- Default value
 - database column, 502, 503
 - dataset column, 540, 541
 - instance variables, 356, 357
- Delegate, 164, 165
 - defining and using, 386, 387
 - EventHandler, 386, 387
- Delegate keyword, 386, 387
- Delete method
 - data row, 598, 599
 - Directory class, 698, 699
 - File class, 698, 699
- Delete statement (SQL), 510, 511
- DeleteCommand property (SqlDataAdapter class), 660, 661
- Delimited comment, 68, 69
- Deployment
 - ClickOnce, 772-779
 - for database applications, 786, 787
 - Setup program, 780-785
 - XCopy, 770, 771
- Dequeue method (Queue<T> class), 236, 237
- Derived class, 406, 407
- Designer.cs file, 22, 23
- Details option (data source table), 552, 553
- Diagram (class), 370, 371
- Diagram pane (Query Builder), 584, 585
- Dialog box
 - displaying with MessageBox class, 178, 179
 - modal form, 290, 291
- DialogResult enumeration, 292, 293, 294, 295
- Dimension (array), 212-215
- Directory, 34, 35
- Directory class, 698, 699
- DirectoryNotFoundException, 704, 705
- Disconnected architecture, 514-517
- DisplayMember property (combo box), 562, 563
- DisplayStyle property (ToolStrip item), 592, 593
- DivideByZeroException class, 176, 177
- DLL file (class library), 485
- Docked window, 24, 25
- Document (XML), 720-723
- Documentation
 - comment, 480, 481
 - XML, 480-483
- Documentation element, 480, 481
- Dot operator, 56, 57
- Double data type, 90, 91
- Double structure, 109
- DoubleClick event, 58, 59
- Do-while statement, 138, 139
- DropDownStyle property (ComboBox class), 272, 273, 562, 563

E

- Edit and Continue, 314, 315
- Editing code, 20, 21
- Element
 - array, 204, 205
 - collection, 226, 227
 - XML, 722, 723
- Else clause (if statement), 132, 133

- Else if clause (if statement), 132, 133
 - Empty string, 104, 105
 - Enabled property, 43
 - menu item, 752, 753
 - Encapsulation, 342, 343
 - End tag (XML), 722, 723
 - EndEdit method
 - BindingSource class, 596, 597
 - data row, 598, 599
 - EndOfStreamException, 704, 705
 - EndsWith method (String class), 252-257
 - Enqueue method (Queue<> class), 236, 237
 - Enter event, 58, 59
 - Enter key (setting for form), 44, 45
 - Enterprise system, 494, 495
 - Enum keyword, 116, 117
 - Enumeration, 116, 117
 - in class, 342, 343
 - EOF property (XmlReader class), 734, 735
 - Equality operator, 128, 129
 - Equals method (Object class), 390, 391, 394, 395, 410, 411
 - Error List window, 64, 65
 - Error
 - build, 64, 65
 - file I/O, 704, 705
 - logical, 316, 317
 - runtime, 80, 81
 - syntax, 64, 65
 - Errors property (data provider exception), 544, 545
 - Esc key (setting for form), 44, 45
 - Escape sequence, 106, 107
 - Event, 54, 55, 342, 343
 - defining and using, 388, 389
 - referring to, 56, 57
 - Event handler, 58, 59, *see also Event wiring*
 - coding, 60, 61
 - deleting, 60
 - generating, 162, 163
 - handling multiple events, 166, 167
 - Event wiring, 58, 59, 164, 165, *see also Event handler*
 - data binding Format event, 554-556
 - generated code, 170, 171
 - Load event, 284, 285
 - EventHandler delegate, 386, 387
 - Events button (Properties window), 162, 163
 - Exception, 80, 81, 176-189
 - casting, 434, 435
 - defined, 176, 177
 - file I/O, 704, 705
 - throwing, 186, 187
 - throwing in classes, 384, 385
 - Exception Assistant window, 82, 83
 - Exception class, 176, 177, 182, 183
 - Exception handling, 180, 181
 - Exceptions dialog box, 312, 313
 - ExecuteNonQuery method (SqlCommand class), 632, 633, 640, 641
 - ExecuteReader method (SqlCommand class), 632, 633, 638, 639
 - ExecuteScalar method (SqlCommand class), 632, 633, 640, 641
 - Exists method
 - Directory class, 698, 699
 - File class, 698, 699
 - Exit method (Application class), 746, 747
 - Expanding source code, 70, 71
 - Explicit casting, 100, 101
 - Express Edition
 - SQL Server 2005, 6, 7
 - Visual C# 2005, 6, 7
 - Expression
 - arithmetic, 94, 95
 - Boolean, 128, 129
 - Extending a class, 406, 407
 - Extensible Markup Language, *see XML*
 - Extract Method command (refactoring), 158, 159
- ## F
-
- F1 (Help), 76, 77
 - F5 (Start Debugging), 78, 79
 - False keyword, 92
 - Field, 342, 343, 350, 351
 - database, 498, 499
 - static, 358, 359
 - FIFO (First In, First Out), 236, 237
 - File, 700, 701
 - File class, 698, 699
 - File I/O, 700, 701
 - FileAccess enumeration, 702, 703
 - File-handling vs. database, 496, 497
 - FileMode enumeration, 702, 703
 - FileNotFoundException, 704, 705
 - FileShare enumeration, 702, 703
 - FileStream class, 700-703
 - Fill method
 - SqlDataAdapter class, 660, 661
 - TableAdapter, 542, 543
 - Filter column (Query Builder), 584, 585
 - Finalize method (Object class), 410, 411
 - Finally block, 184, 185
 - Float data type (C#), 90, 91
 - Float data type (SQL Server), 502, 503
 - Float literal, 92, 93
 - Floating window, 24, 25
 - Folder, 34, 35

- For loop, 140, 141
 - arrays, 208, 209
 - jagged arrays, 218, 219
 - nested, 214, 215
 - rectangular arrays, 214, 215
- Foreach loop, 210, 211, 232, 233
 - with IEnumerable<> interface, 466, 467
- Foreign key, 500, 501
- Form, 4, 5
 - adding a toolbar, 758-761
 - adding to project, 282, 283
 - controls, 4, 5
 - designing, 36
 - displaying first of application, 288, 289
 - displaying modal, 290, 291
 - FormClosing event, 296, 297
 - generated code, 284, 285
 - modal, 290, 291
 - modeless, 290
 - multiple in a project, 282-293
 - passing data to and from, 292, 293
 - renaming, 286, 287
 - setting tab order, 278, 279
 - startup, 746, 747
- Form control classes and inheritance, 408, 409
- Form Designer, 18, 19, 38, 39
 - generated code, 170, 171
 - setting tab order, 278, 279
 - wiring events, 162, 163, 166, 167
- Form file, 22, 23
- Format codes, 262-265
- Format event (data binding), 554-556
- Format method (String class), 262-264
- FormatException class, 176, 177
- Formatting
 - codes, 112, 113
 - dates and times, 264, 265
 - numbers, 112, 113, 262-264
- Formatting and Advanced Binding dialog box, 554, 555
- FormBorderStyle property (Form class), 290, 291
- FormClosing event (Form class), 296, 297
- FormClosingEventArgs class, 296, 297
- From clause
 - Delete statement (SQL), 510, 511
 - Select statement (SQL), 506, 507
- Front-end processing, 496, 497
- FullName property (Type class), 432, 433
- Fully qualified name of a class, 408, 409
- Future Value application, 146-149, 168-171, 188, 189, 196-199

G

- Garbage collector, 410, 411
- Generate Insert, Update, and Delete statements option, 586, 587

- Generated code, 170, 171
 - from an interface, 450, 451
- Generated SQL statements for a data table, 572, 573
- Generic class with constraints, 464, 465
- Generic interface, 460, 461
- Generics, 226, 227, 456-469
- Get accessor, 352, 353, 382, 383
- GetByIndex method (SortedList<> class), 235
- GetHashCode method (Object class), 390, 391, 394, 395, 410, 411
- GetKey method (SortedList<> class), 235
- GetLength method
 - array, 214, 215
 - Array class, 220, 221
- GetType method (exception), 182, 183, 410, 411, 432, 433
- GetUpperBound method (Array class), 220, 221
- Goto statement, 142
- Grid pane (Query Builder), 584, 585
- Group box, 270, 271, 276, 277

H

- Handler (event), 58, 59
- Hash code, 411
- HasValue property (nullable type), 118, 119
- Help
 - adding to application, 761, 762
 - context sensitive, 761, 762
 - for using controls, 280, 281
 - using, 76, 77
- HelpProvider control, 761, 762
- HelpString property (HelpProvider control), 761, 762
- Hiding a class member, 406, 407, 416, 417
- Hour property (DateTime structure), 248, 249
- HTML, 4, 5
- Hypertext Markup Language (HTML), 4

I

- I/O operations, 700, 701
- ICloneable interface, 446, 447, 452, 453
- ICollection interface, 446, 447
- ICollection<> interface, 460, 461
- IComparable interface, 446, 447
- IComparable<> interface, 460, 461
 - implementing, 462, 463
- IConvertible interface, 446, 447
- IDE (Integrated Development Environment), 6, 7, 10, 11
- IDENT_CURRENT function (SQL Server), 590, 591
- Identity column, 502, 503
 - getting value of, 590, 591
- IDictionary interface, 446, 447
- IDictionary<> interface, 460, 461
- IDisposable interface, 446, 447

- IEnumerable interface, 446, 447
- IEnumerable<> interface, 460, 461
 - implementing, 466, 467
- IEnumerator interface, 446, 447
- If statement, 132, 133
- If-else statement, 132, 133
- IgnoreComments property (XmlReaderSettings class), 734, 735, 738, 739
- IgnoreWhiteSpace property (XmlReaderSettings class), 734, 735, 738, 739
- IL (Intermediate Language), 12, 13
- ICollection interface, 446, 447
- ICollection<> interface, 460, 461
- Image property (ToolStrip item), 592, 593, 758, 759
- Immediate window, 324, 325
- Implement an interface, 444, 445
- Implicit casting, 100, 101
- Import and Export Settings, 32, 33
- Increment operator, 94, 95
 - precedence, 98, 99
- Indent property (XmlWriterSettings class), 730-733
- Indentation of code, 66, 67
- IndentChars property (XmlWriterSettings class), 730-733
- Index
 - array, 206, 207
 - database, 498, 499
- Index tab (Help window), 280, 281
- Indexer, 342, 343
 - ArrayList class, 238, 239
 - creating, 382, 383
 - List<> class, 230, 231
 - ListBox and ComboBox class, 272, 273
 - SortedList<> class, 234, 235
 - SqlDataReader class, 638, 639
 - String class, 252-255
 - StringBuilder class, 260, 261
- IndexOf method (String class), 252-257
- IndexOutOfRangeException, 206, 207, 220
- Inequality operator, 128, 129
- Infinite loop, 138, 139
- Inheritance, 406-413
 - abstract class, 436, 437
 - and casting, 434, 435
 - as operator, 434, 435
 - creating a base class, 414, 415
 - creating a subclass, 416, 417
 - getting type information, 432, 433
 - in .NET Framework, 408, 409
 - in applications, 412, 413
 - multiple, 444, 445
- Initializing
 - constants, 92, 93
 - variables, 92, 93
- Inner join, 508, 509
- Input stream, 700, 701
- Insert method
 - Items collection, 272, 273
 - List<> class, 230, 231
 - String class, 252-257
 - StringBuilder class, 260, 261
- Insert statement (SQL), 510, 511
- InsertCommand property (SqlDataAdapter class), 660, 661
- Instance, 54, 55, 342, 343, 346, 347
- Instance variables, 350, 351
 - default values, 356, 357
- Instantiation, 54, 55, 342, 343, 346, 347
- Int data type (C#), 90, 91
- Int data type (SQL Server), 502, 503
- Int16 data type, 91, 109
- Int32 data type, 91, 109
- Int64 data type, 91, 109
- Integer, 90, 91
- Integrated Development Environment (IDE), 6, 7
- IntelliSense, 354, 355
- Interface, 444-455
 - creating, 448, 449
 - generic, 460, 461
 - ICollection<>, 460, 461
 - IComparable<>, 460, 461
 - IDictionary<>, 460, 461
 - IEnumerable<>, 460, 461
 - ICollection<>, 460, 461
 - implementing, 450, 451
 - implementing IComparable<>, 462, 463
 - implementing IEnumerable<>, 466, 467
 - using as parameter, 454, 455
- Interface keyword, 448, 449
- Intermediate Language (IL), 12, 13
- Internal members, 414, 415
- Internet, 494, 495
- Into clause (Insert statement), 510, 511
- InvalidCastException, 434, 435
- Invoice Total application
 - basic version, 120, 121
 - enhanced version, 122, 123
 - if-else version, 136, 137
- InvoiceLineItems table (design), 504, 505
- Invoices table (design), 504, 505
- IOException, 704, 705
- IsClosed property (SqlDataReader class), 638, 639
- IsLeapYear method (DateTime structure), 248, 249
- IsMdiContainer property (Form class), 754, 755
- Items Collection Editor (ToolStrip control), 592, 593, 758, 759
- Items property (ListBox and ComboBox class), 272-275
- Iteration structure, 138

J

J#, 6, 7
 Jagged arrays, 216-219
 for loop, 218, 219
 Java, 12
 Join (SQL Select statement), 508, 509

K

Key
 foreign, 500, 501
 non-primary, 498, 499
 primary, 498-501
 unique, 498, 499
 Key property (KeyValuePair<> structure), 234, 235
 KeyValuePair<> structure, 234, 235

L

LAN (Local Area Network), 494, 495
 Languages (.NET), 6, 7
 LastIndexOf method (String class), 252, 253
 Last-in-wins concurrency, 516, 517
 LayoutMdi method (Form class), 754, 755
 Leave event (control), 58, 59
 Length property
 array, 208, 209
 Array class, 220, 221
 String class, 252, 253
 StringBuilder class, 260, 261
 Library (class), 484-489
 Lifetime (of a variable), 114, 115
 LIFO (Last In, First Out), 236, 237
 List box, 270, 271
 loading, 274, 275
 List<> class, 226, 227, 230-233
 ListBox class, 272-275
 ListControl class, 408, 409
 Literal value, 92, 93
 Literal string, 104, 105
 Load event, 58, 59
 Local Area Network (LAN), 494, 495
 Locals window, 144, 145, 320, 321
 Logical error, 316, 317
 Logical operators, 130, 131
 Long data type, 90, 91
 Loops, 138-145
 debugging, 144, 145
 do-while, 138, 139
 for, 140, 141
 foreach, 210, 211
 while, 138, 139

M

Main method, 288, 289
 Main query for a dataset table, 570, 571
 Mainframe, 494, 495
 Managed application, 8, 9
 Manufacturer property (Setup project), 782, 783
 Many-to-many relationship, 500, 501
 Master/Detail form, 602, 603
 Math class, 102, 103
 Max method (Math class), 102, 103
 MaximizeBox property (Form class), 290, 291
 MDI (Multiple-document interface), 744, 745
 MDI applications (developing), 754-757
 MdiParent property (Form class), 754, 755
 Member, 54, 55
 class, 342, 343
 enumeration, 116, 117
 referring to, 56, 57
 MemberwiseClone method (Object class), 410, 411
 Menu
 adding to form, 750-753
 child form, 756, 757
 code for working with, 752, 753
 setting properties, 752, 753
 smart tag, 74, 75
 MenuStrip control, 750-753
 Message property, 182, 183, 544, 545, 546, 547
 MessageBox class, 178, 179, 294, 295
 MessageBoxButtons enumeration, 294, 295
 MessageBoxDefaultButton enumeration, 294, 295
 MessageBoxIcon enumeration, 294, 295
 Method, 54, 55, 342, 343
 abstract, 436, 437
 anonymous, 386-389
 calling, 156, 157
 coding, 154, 155, 354, 355
 overloading, 354, 355
 refactoring, 158, 159
 referring to, 56, 57
 sealed, 438, 439
 signature, 354, 355
 static, 358, 359
 Method declaration, 60, 61
 Method name, 60, 61
 Method scope, 114, 115
 Microsoft Intermediate Language (MSIL), 12, 13
 Microsoft SQL Server Express Edition, 6, 7
 Middle layer, 340, 341
 with object data sources, 668, 669
 Min method (Math class), 102, 103
 MinimizeBox property (Form class), 290, 291
 Minute property (DateTime structure), 248, 249

MissingSchemaAction enumeration, 660, 661
 MissingSchemaAction property (SqlDataAdapter class), 660, 661
 Modal form, 290, 291
 Modeless form, 290
 Modulus operator, 94, 95
 Money data type (SQL Server), 502, 503
 Month property (DateTime structure), 248, 249
 Move method (File class), 698, 699
 MoveFirst method (BindingSource class), 596, 597
 MoveLast method (BindingSource class), 596, 597
 MoveNext method (BindingSource class), 596, 597
 MovePrevious method (BindingSource class), 596, 597
 MSIL (Microsoft Intermediate Language), 12, 13
 Multi-layered architecture, 340
 Multiple-document interface (MDI), 744, 745
 Multiple inheritance, 444, 445
 Multiple tables in Query Builder, 588, 589
 Mutable collections, 226

N

Name property, 42, 43
 menu item, 752, 753
 Type class, 432, 433
 XmlReader class, 734-737
 Named variable (SQL Server), 634, 635
 Namespace, 8
 creating, 478, 479
 for class library, 486, 487
 Namespace property (Type class), 433
 Naming a project, 48, 49
 Naming conventions, 92, 93
 Narrowing conversion, 100, 101
 Nested classes, 474, 475
 Nested if statements, 132, 133
 Nested namespaces, 478, 479
 .NET data provider, 512, 513
 .NET Framework, 8, 9
 generic interfaces, 460, 461
 inheritance, 408, 409
 interfaces, 446, 447
 Network, 494, 495
 Network operating system, 496, 497
 New keyword, 416, 417
 arrays, 205
 throwing exceptions, 186, 187
 wiring events, 164, 165
 New Project dialog box, 34, 35
 No fall through rule, 134, 135
 Node (XML), 734-737
 NodeType property (XmlReader class), 734-737
 Non-primary key, 498, 499
 NoNullAllowedException, 546, 547
 Not operator, 130, 131
 Now property (DateTime structure), 246, 247
 Null value, 104, 105
 database, 502, 503
 with operator overloading, 394-396
 Nullable type, 118, 119
 Number property (data provider exception), 544, 545
 Numbers (formatting), 112, 113
 Numeric data type (SQL Server), 502, 503

O

Object, 54, 55
 creating, 346, 347
 defined, 342, 343
 type, 432, 433
 Object class, 108, 410, 411
 Object data sources, 668-675
 Object-oriented programming, 54, 55, 340-347
 ODBC provider, 512, 513
 OdbcException, 544, 545
 OLE DB provider, 512, 513
 OleDbException, 544, 545
 One-to-many relationship, 500, 501
 One-to-one relationship, 500, 501
 Open method (SqlConnection class), 630, 631
 Opening
 project, 16, 17
 stream, 702, 703
 Operand, 94, 95
 Operating system, 8, 9
 Operator, 342, 343
 arithmetic, 94, 95
 logical, 130, 131
 overloading, 390, 391
 relational, 128, 129
 Optimistic concurrency, 516, 517
 SQL for, 546, 547
 using, 586, 587
 Options dialog box, 32, 33
 debugging, 312, 313
 Or operator, 130, 131
 Oracle provider, 512, 513
 OracleException, 544, 545
 Order By clause (SQL Select statement), 506, 507
 Order Entry application, 676-693
 Order of precedence, 98, 99
 OrderDB class, 690-693
 OrderOptions table (design), 504, 505
 Output stream, 700, 701
 Output Window
 viewing information in, 328, 329
 writing data to, 330, 331
 OverflowException class, 176, 177

Overloading

- method, 154, 354, 355
- operator, 390, 391

Override keyword, 416-419

Overriding a class member, 406, 407

P

PadLeft method (String class), 252, 253

PadRight method (String class), 252, 253

Parameter, *see also* *Argument*

- method, 154, 155
- params keyword, 224, 225
- using interface as, 454, 455
- vs. argument, 156, 157

Parameter Information options, 57

Parameter list (method), 154, 155

Parameterized query, 634-637

- with data source, 564-567

ParameterName property (SqlParameter class), 636, 637

Parameters property (SqlCommand class), 632, 633, 636, 637

Parameters (SQL), 634-637

Params keyword, 224, 225

Parent class, 406, 407

Parent element (XML), 722, 723

Parent form, 744-747

- creating, 754, 755
- writing code for, 756, 757

Parse method, 110, 111

- DateTime structure, 244, 245

Parsing strings, 256, 257

Partial class, 22, 23, 476, 477

Partial keyword, 476, 477

Path (coding for a file), 732, 733

Path class, 698, 699

Payment application, 298-307

Peek method

- Queue<> class, 236, 237
- Stack<> class, 236, 237
- StreamReader class, 708, 709

PeekChar method (BinaryReader class), 714, 715

PerformClick method (control), 752, 753, 760, 761

PictureBox control, 746, 747

Polymorphism, 418, 419

Pop method (Stack<> class), 236, 237

Position property (BindingSource class), 596, 597

Postfix operator, 94, 95

Pow method (Math class), 102, 103

Precedence

- order of, 98, 99
- with logical expressions, 130, 131

Precision, 102, 103

Prefix operator, 94, 95

Prefixes for control names, 42, 43

Prerequisites for deployment, 786, 787

Presentation layer, 340, 341

- with object data sources, 668, 669

Preview Data dialog box, 568, 569

Primary control, 38, 39

Primary key, 498-501

Private access modifier, 154, 155, 344, 345, 350, 351

Private field, 350, 351

Product class (ICloneable version), 452, 453

Product Maintenance application

- class version, 360-367
- data command version, 642-657
- DataGridView version, 542, 543
- enhanced version, 396-401
- inheritance version, 420-431
- TextBox version, 556-559

ProductDB class

- binary file version, 716, 717
- data command version, 642-651
- text file version, 710, 711
- XML version, 738, 740, 741

ProductName property (Setup project), 782, 783

Products table (design), 504, 505

Professional Edition (Visual Studio 2005), 6, 7

Program class, 288, 289

Program.cs file, 22, 23

Project Properties window

- Build tab, 770, 771
- Publish tab, 778, 779

Project template, 34, 35

Project, 12, 13, 16, 17

- building, 26, 27
- class library, 486, 487
- closing, 16, 17
- creating, 34, 35
- multiple forms, 282-293
- naming files, 48, 49
- opening, 16, 17
- renaming, 48, 49
- saving, 48, 49
- setting options, 32, 33
- starting, 26, 27
- testing, 26, 27

Properties window, 18, 19, 40, 41

Property, 54, 55, 342, 343

- abstract, 436, 437
- accessor, 352, 353
- coding, 352, 353
- referring to, 56, 57
- sealed, 438, 439
- setting, 40, 41
- static, 358, 359

Protected members, 414, 415
 Public access modifier, 154, 155, 344, 345, 350, 351
 Public field, 350, 351
 Publish tab (Project Properties window), 778, 779
 Publish Wizard, 772-775
 Push method (Stack<> class), 236, 237

Q

Query
 adding to a table adapter, 580-583
 database, 506-509
 editing in a table adapter, 582, 583
 previewing data, 568, 569
 Query Builder, 584, 585
 multiple tables, 588, 589
 Queue, 236, 237
 Queue class, 226, 227
 Queue<> class, 226, 227

R

Radio button, 270, 271, 276, 277
 Read method
 BinaryReader class, 714, 715
 SqlDataReader class, 638, 639
 StreamReader class, 708, 709
 XmlReader class, 734, 735
 Read-only fields, 350, 351
 Read-only property, 352, 353
 Read/write property, 352, 353
 ReadBoolean method (BinaryReader class), 714, 715
 ReadByte method (BinaryReader class), 714, 715
 ReadChar method (BinaryReader class), 714, 715
 ReadDecimal method (BinaryReader class), 714, 715
 ReadElementContentAsDecimal method (XmlReader class), 735, 736, 738, 739
 ReadElementContentAsString method (XmlReader class), 735, 736, 738, 739
 ReadEndElement method (XmlReader class), 735, 736
 ReadInt32 method (BinaryReader class), 714, 715
 ReadLine method (StreamReader class), 708, 709
 ReadOnly property, 43
 ReadStartElement method (XmlReader class), 735, 736
 ReadString method (BinaryReader class), 714, 715
 ReadToDescendant method (XmlReader class), 734, 735, 738, 739
 ReadToEnd method (StreamReader class), 708, 709
 ReadToNextSibling method (XmlReader class), 734, 735, 738, 739
 Real data type (SQL Server), 502, 503
 Rebuilding a project, 78, 79
 Records (database), 498, 499
 Ref keyword, 160, 161

Refactoring, 74, 75
 methods, 158, 159
 Reference
 for class library, 488, 489
 passing by, 160, 161
 Reference type, 90, 91, 108, 109, 346, 347
 ReferenceEquals method (Object class), 410, 411
 References folder, 22, 23
 Refresh method
 CurrencyManager object, 674, 675
 DataGridView class, 602, 603
 Refresh the Data Table option, 586, 587
 Relational database, 498-505
 Relational operators, 128, 129
 with dates and times, 250, 251
 Relative path, 732, 733
 Release build (creating), 770, 771
 Remove method
 Items collection, 272, 273
 List<> class, 230, 231
 SortedList<> class, 235
 String class, 252-257
 StringBuilder class, 260, 261
 RemoveAt method
 Items collection, 272, 273
 List<> class, 230, 231
 SortedList<> class, 235
 RemoveCurrent method (BindingSource class), 596, 597
 Rename
 form, 286, 287
 project, 48, 49
 Replace method
 String class, 252-257
 StringBuilder class, 260, 261
 Restart command (debugging), 318, 319
 Result set, 506, 507
 Result table, 506, 507
 Results pane (Query Builder), 584, 585
 Return statement (method), 154, 155
 Return type (method), 154, 155
 Roll back a transaction, 664, 665
 Rollback method (SqlTransaction class), 664, 665
 Root element (XML), 722-724
 Round method (Math class), 102, 103
 Row (database), 498, 499
 RowIndex property (DataGridViewCell class), 602, 603
 Rows property
 DataGridView class, 602, 603
 DataTable class, 658, 659
 Run method (Application class), 288, 289
 Run to Cursor command (debugging), 318, 319
 Running a project, 26, 27, 78, 79
 Runtime error, 80, 81

S

-
- Saving a project, 48, 49
 - SByte data type, 91
 - Scalar value, 640, 641
 - Schema (viewing dataset), 570, 571
 - Schema file (dataset), 534, 535
 - Scientific notation, 92, 93
 - Scope, 114, 115
 - block, 132, 133
 - SCOPE_IDENTITY function (SQL Server), 572, 573, 590, 591
 - Screen tip (XML documentation), 482, 483
 - ScrollableControl class, 408, 409
 - SDI (Single-document interface), 744, 745
 - SDI applications (developing), 746-749
 - Sealed class, 438, 439
 - Sealed keyword, 438, 439
 - Sealed method, 438, 439
 - Sealed property, 438, 439
 - Search Criteria Builder dialog box, 564, 565
 - Second property (DateTime structure), 248, 249
 - Security warning (installing from a web page), 776, 777
 - Select statement (SQL), 506-509
 - From clause, 506, 507
 - Join clause, 508, 509
 - Order By clause, 506, 507
 - Where clause, 506, 507
 - SelectCommand property (SqlDataAdapter class), 660, 661
 - SelectedIndex property
 - ComboBox and ListBox control, 272-275
 - Tab control, 748, 749
 - SelectedIndexChanged event,
 - ComboBox and ListBox control, 272, 273
 - Tab control, 748, 749
 - SelectedItem property (ListBox and ComboBox class), 272-275
 - SelectedValue property (ComboBox class), 562, 563
 - SelectionMode property (ListBox and ComboBox class), 272, 273
 - Separator (menu), 750, 751
 - Server, 494, 495
 - web, 4, 5
 - Server Explorer, 502, 503
 - Set accessor, 352, 353
 - for an indexer, 382, 383
 - Set clause (SQL Update statement), 510, 511
 - Set Next Statement command (debugging), 318, 319
 - SetByIndex method (SortedList<> class), 235
 - Settings (importing and exporting), 32, 33
 - Setup program
 - creating and using, 780-785
 - introduction, 768, 769
 - Setup project
 - creating, 780-783
 - using, 784, 785
 - Setup Wizard, 784, 785
 - Setup.exe file, 782-785
 - Short data type, 90, 91
 - Short-circuit operator, 130, 131
 - Shortcut assignment operators, 96, 97
 - ShortcutKeys property (menu item), 752, 753
 - Show method (MessageBox class), 178, 179, 294, 295
 - Show Next Statement command (debugging), 318, 319
 - ShowDialog method (Form class), 290, 291
 - ShowShortcutKeys property (menu item), 752, 753
 - Signature of a method, 154, 155, 354, 355
 - Simple data binding, 552, 553
 - Single data type, 90, 91
 - Single structure, 109
 - Single-document interface (SDI), 744, 745
 - Single-line comment, 68, 69
 - Size property (SqlParameter class), 636, 637
 - Sln file, 16, 17
 - Smalldatetime data type (SQL Server), 502, 503
 - Smallint data type (SQL Server), 502, 503
 - Smallmoney data type (SQL Server), 502, 503
 - Smart tag menu, 74, 75
 - DataGridView control, 538, 539
 - Snippets, 72, 73
 - Software (application), 496, 497
 - Solution, 12, 13
 - opening, 16, 17
 - Solution Explorer, 18, 19, 22, 23
 - Sort method
 - Array class, 220, 221
 - List<> class, 230, 231
 - Sort Order column (Query Builder), 584, 585
 - Sort Type column (Query Builder), 584, 585
 - Sorted property (ListBox and ComboBox class), 272, 273
 - SortedList class, 226, 227
 - SortedList<> class, 226, 227, 234, 235
 - Source code file, 22, 23
 - Source file, 12, 13, 22, 23
 - Source property (data provider exception), 544, 545
 - Split method (String class), 252, 253, 256, 257
 - SQL (Structured Query Language), 496, 497, 506-511
 - parameters, 634-637
 - statements (generated for a data table), 572, 573
 - SQL Pane (Query Builder), 584, 585
 - SQL Server 2005 Express Edition, 6, 7
 - SQL Server data types, 502, 503
 - SQL Server provider, 512, 513
 - SqlCommand class, 632, 633
 - SqlCommandBuilder class, 662, 663
 - SqlConnection class, 630, 631

SqlDataAdapter class, 660, 661
 SqlDataReader class, 638, 639
 SqlDbTypeType property (SqlParameter class), 636, 637
 SQLException, 544, 545
 SqlParameter class, 636, 637
 SqlTransaction class, 664, 665
 Sqrt method (Math class), 102, 103
 Stack, 236, 237
 Stack class, 226, 227
 Stack trace, 182, 183
 Stack<> class, 226, 227
 StackTrace property (Exception class), 182, 183
 Start command (debugging), 318, 319
 Start Debugging command, 78, 79
 Start page (Visual Studio), 14, 15
 Start tag (XML), 722, 723
 StartPosition property (Form class), 43
 StartsWith method (String class), 252-257
 Startup form, 746, 747
 State of an object, 346, 347
 Statement, 62, 63
 States table (design), 504, 505
 Static class, 358, 359
 Static keyword, 158, 159, 358, 359
 Static member, 56, 358, 359
 Static methods, 102, 103
 Step Into command (debugging), 318, 319
 Step Out command (debugging), 318, 319
 Step Over command (debugging), 318, 319
 Stop Debugging command, 82, 83, 318, 319
 Stream, 700, 701
 StreamReader class, 700, 701, 708-711
 StreamWriter class, 700, 701, 706, 707
 Strict type semantics, 100
 String, 104, 105, 252-261, *see also String class*
 concatenation, 104, 105
 empty, 104, 105
 escape sequences, 106, 107
 formatting, 262-264
 manipulating, 254, 255
 null, 104, 105
 parsing, 256, 257
 StringBuilder class, 260, 261
 String class, 108, 252, 253
 Format method, 262-264
 StringBuilder class, 260, 261
 Struct keyword, 372, 373
 Structure, 108, 109, 372, 373
 Structured exception handling, 180, 181
 Structured Query Language (SQL), 496, 497
 Stubs (generating from an interface), 450, 451
 Subclass, 176, 177, 406, 407
 creating, 416, 417
 Substring method (String class), 252-257
 Subtract method (DateTime structure), 250, 251

Superclass, 406, 407
 Switch statement, 134, 135
 Syntax error, 64, 65
 System namespace, 108, 109
 System.Collections namespace, 226-229
 System.Collections.Generic namespace, 226-229, 460, 461
 System.IO namespace, 698-717
 System.Object class, 410, 411
 System.Text namespace, 260, 261

T

Tab control, 748, 749
 Tab order, 278, 279
 setting, 44, 45
 Tab Order view, 278, 279
 Tab Pages Collection Editor, 748, 749
 Tabbed window, 18, 19, 24, 25
 TabIndex property, 42-45, 278, 279
 Table (database), 498, 499
 TableAdapter object, 522, 523
 generating from data source, 536, 537
 TableAdapter Query Configuration Wizard, 580-583
 Tables property (DataSet class), 658, 659
 TabStop property, 42, 43, 278, 279
 Tag (XML), 722, 723
 Tag property
 Form class, 292, 293
 TextBox class, 360, 361
 Template (project), 34, 35
 Testing a project, 26, 27, 80, 81
 Text box
 DataBindings property, 554, 555
 Tag property, 360, 361
 using with data source, 550-559
 using with object data source, 672, 673
 Text data type (SQL Server), 502, 503
 Text Editor toolbar, 70, 71
 Text file, 700, 701, 706-711
 reading, 708, 709
 writing, 706, 707
 Text property, 42, 43
 combo box and list box, 272-275
 menu item, 752, 753
 toolbar item, 592, 593, 758, 759
 Text stream, 700, 701
 Text Visualizer dialog box, 332, 333
 TextAlign property, 43
 TextBox control, *see Text box*
 TextBoxBase class, 408, 409
 TextChanged event, 166, 167
 list box and combo box, 272, 273
 This keyword, 56, 156, 157
 as event sender argument, 388, 389
 creating indexer, 382, 383

- Three-layer architecture, 340, 341
 - with object data sources, 668, 669
- Three-tier architecture, 341, 342
 - with object data sources, 668, 669
- Throw statement, 186, 187
 - argument exception, 384, 385
- Ticks (date and time), 244, 245
- Time, 244-251
 - adding, 250, 251
 - comparing, 250, 251
 - current, 246, 247
 - DateTime structure, 244, 245
 - formatting, 246, 247, 264, 265
 - working with, 250, 251
- TimeOfDay property (DateTime structure), 248, 249
- TimeSpan structure, 250, 251
- Tinyint data type (SQL Server), 502, 503
- ToBool method (Convert class), 110, 111
- ToChar method (Convert class), 110, 111
- Today property (DateTime structure), 246, 247
- ToDecimal method (Convert class), 110, 111
- ToDouble method (Convert class), 110, 111
- ToInt32 method (Convert class), 110, 111
- ToLongDateString method (DateTime structure), 246, 247
- ToLongTimeString method (DateTime structure), 246, 247
- ToLower method (String class), 252-255
- Tool tip
 - adding to control, 761, 762
 - adding to toolbar, 758, 759
- Toolbar, *see also ToolStrip control*
 - Text Editor, 70, 71
- Toolbox, 18, 19, 38, 39
- ToolStrip control
 - adding to a form, 758-761
 - hiding, 760, 761
 - working with, 592-595
- ToolStrip item
 - Click event, 760, 761
 - event handler for, 594, 595
 - ToolTipText property, 758, 759
- ToolTip control, 761, 762
- ToolTipText property (ToolStrip item), 758, 759
- ToShortDateString method (DateTime structure), 246, 247
- ToShortTimeString method (DateTime structure), 246, 247
- ToString method, 110, 111
 - Convert class, 110, 111
 - formatting, 112, 113
 - Object class, 410, 411
 - StringBuilder class, 260, 261
- ToUpper method (String class), 252-255
- Transaction, 664, 665
- Transact-SQL, 506
- Trim method (String class), 252, 253, 256, 257
- True keyword, 92

- Try block, 180, 181
- Try-catch statement, 180-183
 - finally block, 184, 185
 - for file I/O, 704, 705
 - for specific exception types, 184, 185
- Type class, 432, 433
- Typed collection, 226, 227
 - vs. untyped, 228, 229
- Typed dataset, 534, 535
 - properties, 598, 599
 - working with, 598-601

U

- UInt16 data type, 91
- UInt32 data type, 91
- UInt64 data type, 91
- Ulong data type, 91
- Unary operator, 94, 95
 - overloading, 390, 391
- Unboxing, 238
- Uncomment, 70, 71
- Unicode character, 90, 91
- Unique key constraint, 498, 499
- Unique key, 498, 499
- Untyped collection, 226, 227
 - vs. typed, 228, 229
- Untyped dataset, 534, 535, 658-661
- Update Available dialog box (ClickOnce), 778, 779
- Update method (SqlDataAdapter class), 660, 661
- Update method (TableAdapter), 542, 543
- Update statement (SQL), 510, 511
- UpdateCommand property (SqlDataAdapter class), 660, 661
- Use Optimistic Concurrency option, 586, 587
- User interface, 744, 745
- Ushort data type, 91
- Using statement, 228, 229, 478, 479
 - for class library, 488, 489

V

- Validation
 - data, 190-195
 - string handling, 258, 259
- Validator class, 362, 363, 367
- Value (passing by), 160, 161
- Value keyword, 352, 353
- Value property
 - ConvertEventArgs class, 554, 555
 - DataGridViewCell class, 602, 603
 - KeyValuePair<> structure, 234, 235
 - SqlParameter class, 636, 637
 - XmlReader class, 734-737

- Value type, 90, 91, 108, 109
 - nullable, 118, 119
- ValueMember property (combo box), 562, 563
- Values clause (Insert statement), 510, 511
- Varchar data type (SQL Server), 502, 503
- Variable, 92, 93
 - lifetime, 114, 115
 - scope of, 114, 115
- VB, 6, 7
- Verbatim string literal, 106, 107
- Virtual keyword, 414, 415, 418, 419
- Virtual member, 414, 415, 418, 419
 - and abstract keyword, 436, 437
- Visible property
 - control, 760, 761
 - menu item, 752, 753
- Visual Basic, 6, 7
- Visual C#, 6, 7
- Visual C# 2005 Express Edition, 6, 7
- Visual C# Development Settings, 32, 33
- Visual C++, 6, 7
- Visual J#, 6, 7
- Visual Studio
 - Component Designer Tray, 522, 523
 - customizing, 14, 15
 - generating interface stubs, 450, 451
 - Start page, 14, 15
 - starting, 14, 15
 - windows, 24, 25
 - working with classes, 368, 369
 - working with, 18, 19
- Visual Studio 2005, 6, 7
- Visual Studio IDE, 10, 11, 14, 15
- Visualizer dialog box, 332, 333
- Void keyword, 154, 155

W

- WAN (Wide Area Network), 494, 495
- Watch expression, 322, 323
- Watch window, 322, 323
- Web browser, 4, 5
- Web Forms application, 4, 5
- Web Forms controls, 4, 5
- Web server, 4, 5
- Where clause (SQL)
 - Delete statement, 510, 511
 - Select statement, 506, 507
 - Update statement, 510, 511
- Where keyword (generic class constraints), 464, 465
- While statement, 138, 139
- White space (XML), 734, 735, 738
- Wide Area Network (WAN), 494, 495
- Widening conversion, 100, 101

- Width property (ToolStrip item), 592, 593
- Windows application, 4, 5
- Windows Application template, 34, 35
- Windows Forms application, 4, 5
- Windows Forms controls, 4, 5
- WinForms app, 4, 5
- Wiring
 - event handlers, 58, 59, 164-167
 - Load event, 284, 285
- Write method
 - BinaryWriter class, 712, 713
 - Console class, 330, 331
 - StreamWriter class, 706, 707
- WriteAttributeString method (XmlWriter class), 730-733
- WriteComment method (XmlWriter class), 730, 731
- WriteElementString method (XmlWriter class), 730-733
- WriteEndElement method (XmlWriter class), 730-733
- WriteLine method
 - Console class, 330, 331
 - StreamWriter class, 706, 707
- Write-only property, 352, 353
- WriteStartDocument method (XmlWriter class), 730-733

X

- XCopy deployment
 - introduction, 768, 769
 - using, 770, 771
- XML (Extensible Markup Language), 720-725
 - attribute, 724, 725
 - comment, 722, 723
 - declaration, 722, 723
 - document, 720-723
 - element, 722, 723
 - reading, 734-739
 - tag, 722, 723
 - writing, 730-733
- XML documentation, 480-483
 - tags, 480, 481
- XML Editor
 - working with data, 728, 729
 - working with document, 726, 727
- XML file
 - working with data, 728, 729
 - working with document, 726, 727
- XmlReader class, 734-739
- XmlReaderSettings class, 734, 735, 738, 739
- XmlWriter class, 730-733
- XmlWriterSettings class, 730-733

Y

- Year property (DateTime structure), 248, 249
- Yield keyword (with IEnumerable<> interface), 466, 467