Managed Extensibility Framework (MEF), 1055–1056	adding MediaElement tag for playing sound, 871
manifests, 233	Balance property, 877
manipulation, 153–156	Clock property, 873
Margin property, 68, 940	controlling additional playback details, 876
margins	controlling audio declaratively through
keeping settings consistent, 70	XAML markup, 872
setting for StackPanel, 69	controlling audio playback
Thickness structure, 70	programmatically, 871
MarkerStyle property, 944	creating video-reflection effect, code
markup extensions, using in nested tags or XML	example, 881
attributes, 37	error handling, 872
MarshalByRefObject attribute, 1066	ErrorException property, 872
MaskedTextBox control, 1020, 1022	LayoutTransform property, 881
MaskedTextBox, ValidatingType property, 1032	LoadedBehavior property, 871
Material class, 895	Manual mode, 878
Material property, 895	MediaState enumeration, 871
MaterialGroup class, 895	Pause() method, 872
MatrixCamera, transforming 3-D scene to 2-D	placement of, for audio and video, 871
view, 899	Play() method, 872
MatrixTransform class, 366	playing audio with triggers, 872
MaxHeight property, 68	playing multiple audio files, code example,
MaxLength property, 198, 202	875
MaxLines property, 198	playing video, 880
MaxWidth property, 68	Position property, 878
Maya, 910	RenderTransform property, 881
MDI (multiple document interface), 761, 1021–	RenderTransformOrigin property, 881
1022	setting Clipping property, 881
Measure() method, 583, 994	setting Opacity property, 881
measure pass, 583	setting Position to move through audio file,
measure stage, 63	872
MeasureCore() method, 583	SpeedRatio property, 877
MeasureOverride() method, 64, 586	Stop() method, 872
allowing child to take all space it wants, 584	Stretch property, 880
basic structure of, 583	StretchDirection property, 880
calling Measure() method of each child, 583	support for WMV, MPEG, and AVI files, 880
DesiredSize property, 584	synchronizing animation with audio or
determining how much space each child	video file, 878
wants, 583	types of video effects, 881
passing Size object with value of	using separate ResumeStoryboard action
Double.PositiveInfinity, 584	after pausing playback, 875
Media Integration Layer (MIL), 13	using single Storyboard to control audio
MediaClock class, 873	playback, 873
MediaCommands class, types of included	Volume property, 877 MediaFailed event, 869
commands, 270	MediaOpened event, 869
MediaElement class, 239, 1025	MediaPlayer class, 1025
	111Caiai 1ayoi 01000, 1020

creating Window. Unloaded event handler to StaysOpenOnClick property, 844 call Close(), 869 MergedDictionaries collection, 522, 528 lack of exception handling code, 869 MergedDictionaries property, 303 MediaFailed event, 869 mesh, building basic, 893 MediaOpened event, 869 MeshGeometry class, 914 no option for synchronous playback, 869 MeshGeometry3D class Open() method, 869 Normals property, 893–894 Play() method, 869 Positions property, 893-894 playing multiple audio files, 876 table of properties, 893 supplying location of audio file as URI, 869 TextureCoordinates property, 893–895 table of useful methods, properties, and TriangleIndices property, 893-894 events, 869 MeshHit property, determining whether torus MediaState enumeration, 871 mesh has been hit, 926 MediaTimeline class, 437, 873 MessageBeep Win32 API, 868 MEF (Managed Extensibility Framework), MessageBox class, 762 1055-1056 MessageBoxButton enumeration, 762 MemoryStream, 978 MessageBoxImage enumeration, 762 Menu class Microsoft Expression Blend, 23 creating scrollable sidebar menu, 842 Microsoft HTML Object Library (mshtml.tlb), DisplayMemberPath property, 842 835 dividing menus into groups of related Microsoft Installer (MSI), 1079-1080 commands, 846 Microsoft Money, weblike interface of, 792 example of Separator that defines text title, Microsoft .NET 2.0 Framework Configuration Tool, 826 IsMainMenu property, 842 Microsoft Office 2007, creating XPS and PDF ItemsSource property, 842 documents, 974 ItemTemplate property, 842 Microsoft Speech Software Development Kit, ItemTemplateSelector property, 842 887 Separator as not content control, 847 Microsoft Word, 228 using menu separators, 846 Microsoft, XPS (XML Paper Specification), 935, MenuItem class Microsoft.Expression.Interactions.dll assembly Command property, 844 design-time behavior support in Expression CommandParameter property, 844 Blend, 330 CommandTarget property, 844 support for behaviors, 326 creating rudimentary menu structure, 843 Microsoft's Composite Application Library displaying check mark next to menu item, (CAL), 1056 845 Microsoft.Win32 namespace, 762, 1025 handling Click event, 844 Microsoft.Windows.Themes, 509 having non-MenuItem objects inside Menu MIL (Media Integration Layer), 13 or MenuItem, 844 Icon property, 845 milcore.dll, 13 including keyboard shortcuts, 843 MinHeight property, 68 MinLines property, 198 InputGestureText property, 845 MinOrphanLines property, 965 IsChecked property, 845 Separator objects, 843 MinWidth property, 68 setting shortcut text for menu item, 845 MinWindowLines property, 965 showing thumbnail icon, 845 Miter line join, 349

mnemonics, 160, 175, 1038	MouseDoubleClick event, 145, 545
modal windows, 754	MouseDown event, 124
Mode property, 252	MouseEnter event, 124, 143, 316
Model3D class, 919	MouseEventArgs object, 121, 143
Model3DGroup class, 910, 912	MouseLeave event, 143, 316, 469
modeless windows, 754	MouseLeftButtonDown event, 145, 494, 768
ModelUIElement3D	MouseLeftButtonUp event, 145
hit testing in, 928–929	MouseMove event, 143
overview, 927–928	MouseOver state, controls, 541
ModelUIElement3D class, 925, 929	MouseRightButtonDown event, 145
ModelVisual3D class, 919, 925, 930	MouseRightButtonUp event, 145
modifier keys, checking status of, 142	MouseUp event, 121
Mouse class, 145	MouseUp() method, 122
mouse cursors, 168–169	MSBuild, using to generate Uid attributes, 243
mouse events, 133	MSDN Magazine, 542
AllowDrop property, 148	mshtml.tlb (Microsoft HTML Object Library),
ButtonState event, 145	835
capturing mouse by calling Mouse.Capture(MSI (Microsoft Installer), 1079-1080
), 146	MultiDataTrigger class, 321
ClickCount event, 145	multiple document interface (MDI), 761, 1021-
creating drag-and-drop source, 148	1022
direct events, definition of, 143	Multiselect property, 763
drag-and-drop operations, 146	multitargeting, 19
DragDrop class, 147	multithreading
DragEnter event, 148	BackgroundWorker component, 1045
dragging-and-dropping into other	BeginInvoke() method, 1043–1044
applications, 148	context, 1041
getting mouse coordinates, 143	CurrentDispatcher property, 1042
IsMouseDirectlyOver property, 144	definition of, 1041
IsMouseOver property, 144	dispatcher, 1042
losing mouse capture, 146	DispatcherObject class, 1042
LostMouseCapture event, 146	DispatcherOperation object, 1044
Mouse class, 145	DispatcherPriority, 1044
mouse click events for all elements, 144	dual-core CPUs, 1041
MouseButton event, 145	Invoke() method, 1045
MouseButtonEventArgs object, 145	performing asynchronous operations, 1045
MouseDoubleClick event, 145	performing time-consuming background
MouseEnter event, 143	operation, 1044
MouseLeave event, 143	single-threaded apartment model, 1041
MouseMove event, 143	System.Threading.Thread object, 1045
PreviewMouseDoubleClick event, 145	thread affinity, 1042
PreviewMouseMove event, 143	thread rental, 1041
state groups, 541	VerifyAccess() method, 1043
MouseButton event, 145	writing good multithreading code, 1045
MouseButtonEventArgs object, 127, 145, 928	multitouch input, levels of support for, 149-157
Mouse.Capture() method, 146	MultiTrigger class, 321, 323

MustInherit class, 1057, 1064	GoBack() method, 807
mutex, definition of, 228	GoForward() method, 807
, ,	Handled property, 808
	how WPF navigation occurs, 808
=N	InitializeComponent() method, 807
■N	IProvideCustomContentState interface, 813-
Name attribute, 31	814
Name property, 269, 554	JournalEntryName property, 812
namespaces	ListSelectionJournalEntry callback, 813
core WPF namespace, 29	methods for controlling navigation stack,
core XAML namespace, 29	810
declaring in XML, 29	Navigate() method, 807–808
defining in XAML, 28	navigating to page based on its URI, 807
.NET and, 29	RemoveBackEntry() method, 810
System.Windows.Shapes, 174	Replay() method, 812, 814
using namespace prefixes, 47	ReplayListChange delegate, 813
in WPF, 29	returning information from page, 816
XML namespaces as URIs, 29	SourceItems property, 813
Narrator screen reader, 885	StopLoading() method, 807
native resolution, 8	suppressing navigation events, 808
Navigate() method, 807–808, 834	table of navigation events, 808
Navigated event, NavigationService class, 809	TargetItems property, 813
NavigateToStream() method, WebBrowser	using Refresh() to reload page, 807
class, 834	WPF navigation as asynchronous, 807
NavigateToString() method, WebBrowser class,	NavigationService property, Page class, 795
834, 840 NavigateUri property, 796, 950	NavigationStopped event, NavigationService
Navigation Property, 736, 330 Navigating event, NavigationService class, 809	class, 809
Navigating event, NavigationService class, obs	NavigationUIVisibility property, 800–801
809	NavigationWindow class, 793, 797
NavigationCommands class, types of included	NearPlaneDistance property, 903
commands, 270	.NET
NavigationFailed event, 797, 809	Code DOM model, 54
NavigationService class	global assembly cache (GAC), 242
AddBackEntry() method, 810–811	ildasm, 235
AddBackReference() method, 813–815	mapping .NET namespace to XML
adding custom items to journal, 811	namespace, 46
Application class, 808	namespaces in, 29
building linear navigation-based	p/invoke, 769
application, 809	probing, 240
CanGoBack property, 807, 810	replacing .NET properties with dependency properties, 105
CanGoForward property, 807	ResourceManager class, 236
Content property, 812	ResourceSet class, 236
creating page object manually, 807	satellite assemblies, 240
events of, 809	type converters, 34
ExtraData property, 808	window ownership, 760
GetContentState() method, 813, 815	window ownership, roo

XML capabilities in, 640	problem of sharing Position points and
.NET 1.x, 61	sharing normals, 907
.NET 2.0, 1	understanding, 906
BackgroundWorker component, 1045	Normal state, controls, 541, 572
coordinate-based layout, 62	Normals property, 893–894, 909
enhancing Button and Label classes, 175	NotifyIcon class, 1025
flow-based layout panels, 62	NotifyOnValidationError property, 623, 628
FlowLayoutPanel, 61	null markup extension, 179
SoundPlayer class, 865	NullExtension, 38
System.Drawing namespace, 301	NumericUpDown control, 1020
System.Media.SystemSounds class, 868	•
TableLayoutPanel, 61	
.NET Framework 3.0, 17	
no-argument constructors, 47	■0
nonclient area, definition of, 751	object resources
nonrectangular windows	accessing resources in code, 299
adding sizing grip to shaped window, 769	adding resources programmatically, 300
comparing background-based and shape-	advantages of, 293
drawing approaches, 767	application resources, 300
creating shaped window with rounded	ComponentResourceKey, 305
Border element, 765	creating resource dictionary, 302
creating transparent window, 764, 766	defining image brush as resource, 294
detecting mouse movements over edges of	defining resources at window level, 294
window, 769	definition of, 293
initiating window dragging mode by calling	FrameworkElement.FindResource()
Window.DragMove(), 768	method, 299
moving shaped windows, 768	Freezable class, 297
placing Rectangle that allows right-side	generic.xaml file, code example, 306
window resizing, 769	hierarchy of resources, 295
placing sizing grip correctly, 769	ImageSource property, 306
procedure for creating shaped window, 763	Key attribute, 294
providing background art, 764	nonshared resources, reasons for using, 299
removing standard window appearance	resource keys, 301
(window chrome), 764	ResourceDictionary class, 294
resizing shaped windows, 769	ResourceKey property, 296
resizing window manually by setting its	resources collection, 294
Width property, 769	Resources property, 294
setting Window.ResizeMode property, 769	reusing resource names, 296
using Path element to create background,	sharing resources among assemblies, 304
767	static vs. dynamic resources, 295, 297–298
Nonzero fill rule, 347	system resources, 301
normal	TryFindResource() method, 300
calculating normal that's perpendicular to	using markup extension, 295
triangle's surface, 908	using .NET object for resource, 295
definition of, 906	using Shared attribute to turn off sharing,
guidelines for choosing right normals, 908	299
	object-based drawing, 22

ObjectDataProvider class, 637-638 ObservableCollection class, 614, 691 OnApplyTemplate() method, 564, 578-579 P OnAttached() method, TriggerBase class, 327 pack URIs, 237 onChange event, 838-839 PackageStore class, 986 onClick event, 838 Padding property, 79, 173, 553, 940 OnColorChanged() method, 551–552 Page class OnColorRGBChanged() method, 551 comparison to PageFunction class, 816 OnDetaching() method, TriggerBase class, 327 comparison to Window class, 795 OneWayToSource option, 253 table of properties, 795 onFocus event, 838 using navigation to show different page, 796 onMouseOver event, 839 Page element, 28 OnPropertyChanged() method, 609 page functions, 805 OnPropertyChangedCallback() method, 110 page-based navigation OnRender() method, 171, 545, 591–592 accessing WPF navigation service, 806 OnReturn() method, 817 browser applications (XBAPs) and, 802 OnStartup() method, 229 controlling navigation of parent frame only, OnStartupNextInstance() method, 229 opacity masks, 449 creating dependency property in page class, Opacity property, 372–374 805 changing element appearance, 521 creating nested page, 800 DropShadowEffect class, 413 creating new NavigationWindow object as OpacityMask property, 373 container, 793 Open() method, 869–870 creating page-based application with OpenFileDialog class, 653, 762-763 NavigationWindow, 793 OpenGL, 889 creating XBAP, 802 OpenType, 163, 166 differences between page and window, 794 optimal paragraph layout, 959 DispatcherUnhandledException event, 797 Orientation property, 849 embedding page inside window, 799 OriginalSource property, RoutedEventArgs fragment navigation, 798 class, 125 GetNavigationService() method, 806 OrthographicCamera class, 899 handling back button, 801 Oscillations property, ElasticEase class, 453handling WebException, 798 455 hosting pages in another container, 793 OSVersion property, 774 hosting pages in another page, 800 outerHTML property, IHTMLElement object, hosting pages in frame, 799 hosting pages in Web browser, 802 outerText property, IHTMLElement object, 835 Hyperlink class, 796 OverflowMode property, 849 hyperlinks as inline flow elements, 796 overlay icons, 788-789 maintaining state of previously visited OverrideCursor property, 169 pages, 804 OverrideMetadata() method, 560 Microsoft Money'sweblike interface, 792 OwnedWindows property, 760 NavigationFailed event, 797 Owner property, 760 NavigationUIVisibility property, 800–801 owner-drawn controls, 21 operation of WPF page history, 804 OwnerType property, 269 overview, 791

Page class, table of properties, 795	Parse() method, 649
programmatic navigation, 806	partial classes, 30, 53
RequestNavigate event, 796	parts and states model, transitions, 577
returning information from page, 816	parts, FlipPanel control, 572
setting JournalOwnership property of	Password property, 197
embedded frame, 801	PasswordBox control
ShowsNavigationUI property, 797	displaying string of circle symbols to mask
stand-alone Windows applications, 802	characters, 202
StartupUri property, 802	Dispose() method, 202
understanding XAML URIs, 803	lack of clipboard support, 202
using hyperlinks to navigate to websites, 797	MaxLength property, 202
using KeepAlive property, 804	Password property, 197
using navigation to show different page, 796	PasswordChanged property, 202
using several frames in single window, 799	PasswordChar property, 202
web model of application design, 792	use of SecureString object internally, 197,
WindowTitle property, 797	202
PageCount property, 1001	PasswordChanged property, 202
PageDown() method, 190	PasswordChar property, 113, 202
PageFunction class, 816–817	Path class, 335
PageHeight property, 998	Data property, 375
Page.Initialized event, 807	differentiating Geometry and Path objects,
PageLeft()method, 190	376
Page.Loaded event, 807	GetFileName() method, 811
PagePadding property, 998	switching from separate shapes to distinct
PageRangeSelection property, 1013	geometries, 395
PageRight() method, 190	Path element, 767
Pages text box, enabling	Path property, 251
UserPageRangeEnabled property, 1012	path-based animation
PageSetupDialog class, 1025	animating position-related properties, 481
PageSetupDialog control, 1020	Bézier curves in, 483
PageSize property, 1001, 1008	DoubleAnimationUsingPath, 482
PageUp() method, 190	moving image along path, 482
PageWidth property, 998	naming format, 427
PaginateData() method, 1008–1009	PointAnimationUsingPath class, 483
Panel class, 41–42	running at continuous speed, 483
description of, 545	using PathGeometry object to set property
IsItemsHost, 64	481
layout containers as deriving from, 170	PathFigure class, 383
overriding MeasureOverride() and	PathGeometry class, 376, 383
ArrangeOverride(), 64	PathGeometry object, 427, 481
public properties, table of, 63	PathSegment class, classes deriving from, 383
Panel property, GroupStyle class, 704	Pause() method, 870, 872
panel templates, controlling layout of items in	PauseStoryboard action,
list control, 509	ControllableStoryboardAction class, 445
Paragraph element, 943, 984	Pbgra32 format, 417
parameterized constructors, 47	Pen class, 393

Percentage data type, data binding format string, 646	drawing sequence of connected straight lines, 344
performance, of animation, 460	Points property, 344
PerspectiveCamera class, 899, 902	understanding line caps, 348
Petzold, Charles, 474	using StartLineCap and EndLineCap
p/invoke, 769	properties, 348
pipelines, add-in, 1056–1062	PolyLineSegment class, 384
folder structure, 1059–1060	PolyQuadraticBezierSegment class, 384
how works, 1057–1059	Pop() method, 401, 1003
overview, 1056–1057	Popup control
preparing solution, 1060–1062	accepting focus, 186
PipelineSegments.store file, 1068	AllowsTransparency property, 186, 829
pixel shaders, 399	characteristics of, 185
animating pixel shaders, 475–477	Child property, 185
BlurEffect class, 412	defining in XAML, 186
creating with HLSL code, 415	IsOpen property, 186
definition of, 4	IsVisible property, 830
DropShadowEffect class, 413–414	opening secondary window in XBAP, 829
RegisterPixelShaderSamplerProperty()	Placement property, 829
method, 415	PopupAnimation property, 186, 829
ShaderEffect class, 414–415	StaysOpen property, 186, 829
using custom pixel shader, 415	PopupAnimation property, 186, 829
WPF Pixel Shader Effects Library, 416	Position property, 878
pixel snapping, 351	Positions property, 893–894
Placement property, 182–183, 185, 829	Power property, PowerEase class, 456
PlacementRectangle property, 182, 185	PowerEase class, 456
PlacementTarget property, 182–183, 185	PreparingCellForEdit event, DataGrid, 748
Play() method, 866–870, 872	PresentationCore.dll assembly, 13
PlayLooping() method, 866	PresentationFramework.Aero.dll assembly, 509
PlaySync() method, 866–867	PresentationFramework.dll assembly, 13, 509,
plug-ins, 1055	511
Point property, 384–385	PresentationFramework.Luna.dll assembly, 509
Point3DAnimationUsingKeyFrames, 478	PresentationFramework.Royale.dll assembly,
PointAnimation class, 473	509
PointAnimationUsingPath class, 483	PreviewExecuted event, 273, 289
PointLight class, 897, 899	PreviewKeyDown event, 124, 132, 137, 140
Points property, 344	PreviewKeyUp event, 137
PolyBezierSegment class, 384	PreviewMouseDoubleClick event, 145, 545
Polygon class, 335	PreviewMouseLeftButtonDown event, 145
determining fill areas in complex Polygons,	PreviewMouseLeftButtonUp event, 145
346	PreviewMouseMove event, 143
FillRule property, 347	PreviewMouseRightButtonDown event, 145
markup for drawing star, 348	PreviewMouseRightButtonUp event, 145
setting FillRule to NonZero, 347	PreviewTextInput event, 137, 139–140
using Fill brush to fill interior shape, 345	PreviewTouchDown event, 150
Polyline class, 335	PreviewTouchMove event, 150

PreviewTouchUp event, 151	submitting print job, 990
PriceConverter class, 650	System.Printing.PrintQueue object, 1012
primary interop assembly, 1035	Transform object and inflexible printouts,
primitives, 5	993
Print dialog box, 989	triggering printout, 989
Print() method, 966	using Pages text box, 1012
PrintableAreaHeight property, 994	Win32PrintDialog, 992
PrintableAreaWidth property, 994	Windows print queue, 991
PrintDialog class, 762	XpsDocument class, 990
Arrange() method, 994	XpsDocumentWriter class, 993
calling ShowDialog() method, 991	PrintDocument() method, 990, 996, 1006
checking PageRangeSelection property, 1013	printing
creating PrintDialog object, 991	browsing and managing jobs in print queue,
DocumentPage class, 997	1014
DocumentPaginator class, 990, 997, 999	centering block of formatted text on page,
DocumentPaginator, creating, 1000	1004
DocumentPaginator, definition of, 1000	constructing custom printout using visual-
FlowDocument class, 990, 998	layer classes, 1002
handling of modal windows, 992	creating multipage printout, 1006
hiding element by changing Visibility	launching printout without user
property of, 993	intervention, 1013
inability to print on background thread, 993	managing local or remote print queues, 1013
limitations of, 991	managing printer settings and jobs, 1012
maintaining and reusing your printer	pausing PrintQueue or print job, 1016
settings, 1012	PrintDialog class, 989
managing printer settings and jobs, 1012	separating content into pages, 1006
manipulating pages in document printouts,	setting column positions, 1010
1000	System.Printing namespace, 989, 1016
margin and header positions, 1002	System.Windows.Controls namespace, 989
Measure() method, 994	Windows print queue, 991
Print dialog box, 989	PrintPreviewControl control, 1021
PrintableAreaHeight property, 994	PrintPreviewDialog class, 1025
PrintableAreaWidth property, 994	PrintPreviewDialog control, 1021
PrintDocument() method, 990, 996, 1006	PrintQueue class, 1013–1015
printing content of FlowDocument, 996	PrintQueue property, functions of, 1012
printing document with its associated	PrintServer class, 1013–1014
annotations, 999	PrintSystemJobInfo class, 1013, 1015
printing elements without showing them,	PrintTicket class, 1012
995	PrintTicket property, functions of, 1012
printing range of pages, 1012	PrintVisual() method, 990–991, 1003
printing two-column printout with margin, 998	priority binding, 639
	probing, 240
PrintTicket property, 1012	ProcessImageBytes() method, 1063–1068, 1075–1077
PrintTicket property, 1012 PrintVisual() method, 990, 1003	
storing PrintDialog as member variable,	Product Object, 603
storing PrintDialog as memoer variable, 1012	ProductImagePath converter, 713

ProgressBar control, 209, 1072	PushEffect() method, DrawingContext class,
ProgressChanged event, 1051	401, 1004
PromptBuilder class, 885–887	PushOpacity() method, 401, 1004
PromptEmphasis enumeration, 886	PushOpacityMask() method, DrawingContext
PromptRate value, 886	class, 401
PromptVolume value, 886	PushTransform() method, DrawingContext
properties	class, 401, 1004
attached properties, 38	
complex properties, 35	
Content, 41	■ Q
ContentProperty attribute, 40–41	QAT (quick-access toolbar), 864–865
dependency properties, 39	QuadraticBezierSegment class, 384
distinguishing from other types of nested	QuadraticEase class, 455
content, 35	QuarticEase class, 456
NullExtension, 38	quartz.dll library, 865
properties supporting more than one type of	Quick Tabs view (IE 7), 364
collection, 40	quick-access toolbar (QAT), 864–865
property-element syntax, 35	QuinticEase class, 456
ProvideValue(), 37	(
setting complex property, 35	
setting property value dynamically, 37	=D
similarity of attached properties to extender	■R
providers, 39	RadialGradientBrush class, 353, 472, 474, 593
simple properties and type converters, 34 StaticExtension, 37	Center property, 357
System.Windows.Markup.MarkupExtension,	changing lighting or color, 521
37	creating radial gradient with offset center, 357
Text, 41	proportional coordinate system, 356
TypeExtension, 38	RadiusX property, 357
using markup extension, 37	RadiusY property, 357
property mapping, 1039	using GradientOrigin property, 356
property resolution system (WPF), 425, 432	RadioButton control, 179–180
property translators, 1039	RadioButton element, 660, 663
property value inheritance, 165, 310	RadioButton.Focusable property, 662
property wrapper, 109	Radius property, BlurEffect class, 412
property-based animation, 425	RadiusX property, 338, 357, 377
PropertyChanged event, 608	RadiusY property, 338, 357, 377
PropertyChanged update mode, 259	RaiseEvent() method, 121, 552
PropertyChangedCallback, 109–110, 114, 116	RangeBase class
property-element syntax, 35	table of properties, 207–208
PropertyGrid control, 1020, 1022	Value property, 207, 565
<propertygroup> element, 241</propertygroup>	ValueChanged event, 207
ProvideValue() method, 37	range-based controls, 208–209
public key token, 238	Raw touch support, 150-153
PushClip() method, DrawingContext class, 401,	RayMeshGeometry3DHitTestResult, 926
1004	RCWs (runtime callable wrappers), 1034

ReasonSessionEnding property, 220	Requery command, 283
RecognizesAccessKey property, 515	RequerySuggested event, 279
Rectangle class, 335, 337–338, 514	RequestNavigate event, 796
RectangleGeometry class, 375–377	requireAdministrator application, 233
reflection, 511, 1055	ResizeBehavior property, 88
Reflector, 118	ResizeDirection property, 88
using Reflector plug-in, 398	ResizeGrip element, 509
viewing embedded resources, 235	ResizeMode property, 752, 769, 772
Refresh() method, 807, 834	resolution independence, 7, 21
Register() method, 107	ResolvedAnchor property, 985
RegisterAttached() method, 112, 587	resource dictionaries
RegisterClassCommandBinding() method, 557	adding resource dictionary in Visual Studio
RegisterClassHandler() method, 558	522
RegisterEvent() method, 124	creating, 302
RegisterPixelShaderSamplerProperty()	generic.xaml, 304
method, 415	MergedDictionaries property, 303
RegisterRoutedEvent() method, 120	merging individual dictionaries into
RelativeSource property, 260–261, 562	generic.xaml file, 305
RelativeSourceMode enumeration, table of values, 262	merging it into application's resource collection, 303
RemoveBackEntry() method, 810	naming correctly, 304
RemovedItems property, 205	reasons for using, 304
RemoveFromJournal property, 817	ResourceDictionary object, 303
RemoveHandler() method, 120	setting application's Build Action, 302
RemoveRequested event, 451	using in other applications, 306
RemoveSignature() method, 975	ResourceDictionary class, 294, 529
RemoveStoryboard action,	ResourceDictionary object, 303
ControllableStoryboardAction class, 445	ResourceId, 718
RenderCapability class, 4	ResourceKey objects, 301, 715
RenderCapability.Tier property, 3–4	ResourceKey property, 296
RenderDefaulted property, 507	ResourceManager class, 236, 528
RenderedGeometry property, Shape class, 336	resources
rendering artifacts (3-D), preventing, 903	accessing in code, 299
Rendering Tier 0, 4	adding programmatically, 300
Rendering Tier 1, 4	application resources, 300
Rendering Tier 2, 4	assembly resources, definition of, 293
RenderOpen() method, 400, 402, 592, 1003	binary resources, 234
RenderPressed property, 507	ComponentResourceKey, 305
RenderTransform property, 367, 468, 881, 993–	creating resource dictionary, 302
994	defining, 26
RenderTransformOrigin property, 368, 469, 881	FrameworkElement.FindResource()
RepeatBehavior property, 437–439	method, 299
RepeatButton class, 178, 534	generic.xaml file, code example, 306
Replay() method, 812, 814	object resources, definition of, 293
ReplayListChange delegate, 813	resource keys, 301
ReportProgress() method, 1051, 1072, 1075	sharing resources among assemblies, 304

static vs. dynamic, 297	setting MaxLength property, 198
storing error message strings as resources,	sluggish performance, 967
248	storing content as FlowDocument object,
system resources, 301	967
TryFindResource() method, 300	TextSelection class, 971
Resources property, 294, 313	unsupported features, 967
Resources tab, Project Properties window, 235	using XAML format to save documents, 970
ResourceSet class, 236	using XamlReader.Load()method, 967
RestoreBounds property, 753, 757	Right property, 94
ResumeStoryboard action,	RotateTransform class, 365, 367–368, 468, 472,
ControllableStoryboardAction class, 445	491
retained graphics model, 424	RotateTransform object, changing button
RibbonButton class, 861	shape or position, 521
RibbonCheckBox class, 861	RotateTransform3D, rotating 3-D object
RibbonComboBox class, 862	around specified axis, 920, 932
RibbonCommand class, 855	Round line join, 349
RibbonDropDownButton class, 862	routed events, 15
RibbonLabel class, 862	adding, 551
ribbons	definition of, 119
adding, 853–854	providing event bubbling and tunneling, 551
application menu, 856–858	RoutedCommand class
and commands, 855–856	CanExecute() method, 269, 277, 279
overview, 852	CanExecuteChanged event, 277
sizing, 862–864	Execute() method, 269
styling, 854–855	implementing ICommand interface, 268–
tabs, groups and buttons, 859–862	269
RibbonSeparator class, 862	infrastructure added for event tunneling and
RibbonSplitButton class, 862	bubbling, 268
RibbonTextBox class, 862	InputGestures collection, 269
RibbonToggleButton class, 861	Name property, 269
RichTextBox control	OwnerType property, 269
building simple rich text editor, 970	target as element where event handling
declaring FlowDocument, 967	begins, 269
detecting word breaks and grabbing word,	RoutedEvent property, RoutedEventArgs class,
code example, 973	125
displaying markup for current flow	RoutedEventArgs class, 121, 125, 273
document, 969	RoutedEventArgs.Handled property, 128
FlowDocument, 197	RoutedEventHandler class, 552
formatting selected text, 970	RoutedPropertyChangedEventHandler class,
loading and saving files in different formats,	552
967–968	RoutedUICommand class, 268–269
not using embedded controls inside of, 974	row details display area, DataGrid, 744–745
RTF content and, 967	Row property, 81
saving document using TextRange object,	RowBackground property, DataGrid, 733
969	RowDefinition element, 81
Section element, 970	RowDefinition object, Height property, 83
	RowDetailsTemplate property, DataGrid, 744

RowDetailsVisibilityMode property, DataGrid, Grid layout container and, 197 HorizontalScrollBarVisibility property, 190 RowEditEnding event, DataGrid, 748-749 IScrollInfo, 191 RowFilter property, 701 LineDown() method, 190 RowHeaderStyle property, DataGrid, 742 LineLeft() method, 190 RowHeaderWidth property, DataGrid, 733 LineRight() method, 190 RowHeight property, DataGrid, 733, 740 LineUp() method, 190 rows, 742-743, 746 PageDown() method, 190 RowSpan property, 86, 947 PageLeft() method, 190 rowsPerPage field, 1008 PageRight() method, 190 RowStateFilter property, 701 PageUp() method, 190 RowStyle property, DataGrid, 741–742 ScrollBarVisibility enumeration, 189 Run element, 187, 943, 949, 956, 984 scrolling content programmatically, 190 Run() method, 216, 220 using ScrollToXxx() methods, 190 runtime callable wrappers (RCWs), 1034 VerticalScrollBarVisibility property, 189 RuntimeNameProperty attribute, 32 wrapping layout container in, 188 RunWorkerCompleted event, 1049, 1053 Section element, 948, 970, 984 SecureString object, 197, 202 SeekStoryboard action. ControllableStoryboardAction class, 445 Segments property, PathFigure class, 383 satellite assemblies, 240 Selected event, 206 SaveFileDialog class, 762 SelectedDate property, DatePicker class, 211 SaveSize() method, 758 SelectedDateChanged event, DatePicker class, SaveTo() method, 1012 212 ScaleTransform class, 366, 468, 472 SelectedDateFormat property, DatePicker class, ScaleTransform object, 521 ScaleTransform3D, 919 SelectedDates property, DatePicker class, 211 scope, 284 SelectedDatesChanged event, 212 ScreenSpaceLines3D class, 902 SelectedIndex property, 658 scRGB standard, 161 SelectedItem property, 205, 658, 746 ScrollBar class SelectedItems property, 658 LineUpCommand and SelectedText property, 199 LineDownCommand, 536 SelectedValue property, 658 setting properties in various orders, 117 selectedVisual field, 406 ScrollBar control, 208 selection, DataGrid, 745 ScrollBar element, 509 SelectionBoxItemTemplate property, 688 ScrollBarVisibility enumeration, 189, 733 SelectionChanged event, 199, 205-206, 745 ScrollChrome class, 509 SelectionEnd property, 209 scrolling, deferred, 621 SelectionLength property, 199 ScrollIntoView() method, DataGrid, 746 SelectionMode property, 203, 212, 658, 746 ScrollToXxx() method, 190 selectionSquareTopLeft field, 410 ScrollViewer, 63, 171 SelectionStart property, 199, 209 CanContentScroll property, 191 Selector class, 545, 686 combining with Expander, 197 selectors, 202 custom scrolling, 191 SelectTemplate() method, 665-666

Separator objects, 843	Rectangle class, 335
SetContent() method, 226	RenderTransformOrigin property, 368
SetProperty() method, 586	repeating shape, 366
SetSize() method, 758	Round line join, 349
SetSpeedRatio() method, 448	setting line joins, 349
SetStoryboardSpeedRatio action,	setting shape's center point, 368
ControllableStoryboardAction class, 445	setting SnapsToDevicePixels property of
SetTargetElement method, 492	UIElement, 351
Setter objects, 311	shape resizing and border thickness, 342
Setters property, Style class, 313	Stretch property, table of enumeration
Setter.TargetName property, 314, 526	values, 339
setting CommandTarget property manually,	StretchDirection property, 343
280	StrokeDashArray property, 349
Setup Project template, 1080	StrokeDashCap, 351
SetValue() method, 109, 113, 550, 570	StrokeDashOffset property, 351
SetZIndex() method, 96	StrokeLineJoin property, 349
Shader Effects Library, WPF, 477	StrokeMiterLimit, 349
ShaderEffect class, 411, 414–415	supplying brush for Stroke or Fill property,
shading, pixel shaders, 416	337
shadow effects, DropShadowEffect class, 413-	table of properties, 335
414	Transform class, 365
ShadowDepth property, DropShadowEffect	Transform object, 336
class, 413	using Canvas to control shape placement
Shape class, 16	and overlap, 340
angling shape, 366	using Viewbox element to resize shapes
animating shape, 367	proportionally, 341
Bevel line join, 349	Shared attribute, 299
choosing layout containers for shapes, 340	shared size groups, 91
comparing RenderTransform and	SharedSizeGroup property, 92, 670
LayoutTransform, 369	Shazzam tool, 415
creating ellipse, 337	Short Date data type, 647
creating rectangle, 337	Show() method, 754, 762
drawing dashed lines, 349	ShowDialog() method, 754, 761, 991
Ellipse class, 335	ShowDocument() method, 229
Geometry object, 336	ShowDuration property, ToolTipService, 185
LayoutTransform property, 369	ShowFrequentCategory property, JumpList
Line class, 335, 343	class, 781
markup for rotating square, 367	ShowGridLines property, 80
Miter line join, 349	ShowOnDisabled property, ToolTipService, 185
not using antialiasing for specific shape, 351	ShowsNavigationUI property, 795, 797
Path class, 335, 375	ShowsPreview property, 89
pixel snapping, 351	Shutdown() method, 219–220
placing certain shapes in autosized	ShutdownMode property, 218
container, 343	sieve of Eratosthenes, 1046
Polygon class, 335, 345	SignDigitally() method, 975
Polyline class, 335, 344	Silverlight 2.0, 840

Silverlight class library assembly, creating limitations of, 865 actions, 327 Load() method, 866 Silverlight XAML, 25 LoadAsync() method, 866 SimpleStyles project, 538 LoadCompleted event, 866 SineEase class, 456 loading and playing sound asynchronously, SingleCriteriaHighlightTemplateSelector class, 667, 677 no queueing feature for playing multiple SingleInstanceApplicationWrapper class, 229 audio snippets, 867 SingleInstanceApplicationWrapper.OnStartup Play() method, 866-867 NextInstance() method, 232 PlayLooping() method, 866 single-thread affinity (STA), 15 PlaySync() method, 866–867 Size property, 385, 997 procedure for playing sound, 866 SizeToContent property, 74, 197, 240, 753 SoundLocation property, 866 sizing WAV audio files, 865 quick-access toolbar, 864-865 SoundPlayerAction class ribbons, 862-864 connecting Click event to sound, 867 SkewTransform class, 366 deriving from TriggerAction, 867 SkipStoryboardToFill action, playing sounds through declarative trigger. ControllableStoryboardAction class, 445 Slider control, 1077 sounds always played asynchronously, 868 IsSnapToTickEnabled property, 257 Sounds and Audio Devices icon, 868 RangeBase class, table of properties, 208 Source property, 125, 260–261, 529, 640, 696, SelectionEnd property, 209 799, 873 SelectionStart property, 209 SourceInitialized event, 135 setting position selection range, 209 SourceItems property, 813 SourceName property, 874 TickFrequency property, 257 Ticks collection, 208 Span element, 949 uses for, 208 Span. Tag property, 957 Slider controls, using in color picker, 547 Speak() method, 885 SmallImageSource property, RibbonCommand special characters, 42 class, 856 SpecularMaterial class, 895, 913 snapshot-and-replace behavior, 443 SpecularPower property, 913 SnapsToDevicePixels property, 351, 510, 682 speech recognition, 887 Snoop utility, examining visual tree of running Speech Recognition Grammar Specification WPF application, 506 (SRGS), 888–889 SolidColorBrush class, 161, 352-353 speech synthesis, 885 Solution Explorer, 217, 239 SpeechDetected event, 888 SomethingClicked() method, 127–128 SpeechHypothesized event, 888 Sort property, 701 SpeechRecognitionRejected event, 888 SortDescription objects, adding, 702 SpeechRecognized event, 887–888 SortDescriptions property, 696 SpeechRecognizer class, 887–889 sound effects, animation programming, 497 SpeechSynthesizer class, 885 Sound icon, 868 SpeedRatio property, TimeLine class, 437, 877 SoundLocation property, 866 SpellCheck.IsEnabled property, 200 SoundPlayer class, 1025 SpellingReform property, 200 embedding sound files into compiled spline key frames, 480 assembly as binary resource, 867

splitter bars, 87	static resources, defining resource before
SpotLight class, 897, 899	referring to it, 295
SpreadMethod property, 355	StaticExtension, 37
Springiness property, ElasticEase class, 453, 455	StaticResource, 671
Square value, MarkerStyle property, 944	StaticResource reference, 514
square-drawing application, 403	StatusBar class, 847, 851
SRGS (Speech Recognition Grammar	StatusBarItem object, 851
Specification), 888–889	StaysOpen property, 182, 186, 829
SrgsDocument, 888	StaysOpenOnClick property, 844
SSML (Synthesis Markup Language), 887	StickyNoteControl class, 987
STA (single-thread affinity), 15	stitching (z-fighting), 903
StackPanel, 79	Stop() method, MediaPlayer class, 871–872
arranging elements vertically or	StopLoading() method, 807
horizontally, 67	StopStoryboard action,
button stack example, 65	ControllableStoryboardAction class, 445
changing alignment defaults, 69	Store database, 600, 651
considerations when sizing button, 72	StoreDataSetPaginator class, 1007, 1012
description of, 64	StoreDB class
DesiredSize property, 72	adding UpdateProduct() method, 607
Height property, 71	binding to ADO.NET data objects, 615
HorizontalAlignment property, 68	binding to collection of objects, 609
IScrollInfo and logical scrolling, 191	building data object, 603
layout properties, table of, 67	caller inform design pattern, 603
Margin property, 69	collection items
setting control margins, 69	displaying and editing, 610
Thickness structure, 70	inserting and removing, 614
using in Visual Studio, 66	DataContent property, 613
VerticalAlignment property, 68	DataContext property, 605
Width property, 71	displaying bound object, 604
StartLineCap property, 348	DisplayMemberPath property, 612
StartPoint property, 355, 383–384	enabling database updates, 606
Startup event, 216	GetProduct() method, 601
StartupUri attribute, 1029	GetProducts() method, 611
StartupUri property, 217, 802	handling change notification, 607
state animations, defining, 575	IEnumerable interface, 610
state groups	INotifyCollectionChanged interface, 614
CommonStates group, 541	INotifyPropertyChanged interface, 608
creating state groups, 575	ItemsControl class, table of properties, 609
default transition, 577	making instance available through
defining, 575	Application class, 602
FocusStates group, 541	OnPropertyChanged(), 609
transition animations, 577	options for making available to application
VisualStateGroups element, 575	windows, 601
states	preventing field from being edited, 613
FlipPanel control, 572	Product object, 603
transitions, 577	PropertyChanged event, 608

Storyboard class	applying different style formats to different
animation programming, 487–488, 492, 495–	element types, 315
496 BeginStoryboard action, 440	applying only one Style object to element at once, 317
BeginStoryboard.HandoffBehavior property,	applying style-based event handlers, 316
443	attaching event handlers for MouseEnter and MouseLeave events, 316
creating property trigger that triggers storyboard, 442	automatically applying styles by type, 319
	benefits of, 312
defining storyboard, 440	
fusing second animation into first animation's timeline, 443	comparing event setters and event triggers, 317
HandoffBehavior.Compose, 443	comparing to CSS, 309
managing simultaneous animations as one	complications arising from automatic styles,
group, 444	320
SetSpeedRatio() method, 448	creating collection of EventSetter objects,
snapshot-and-replace behavior, 443	316
storyboard, definition of, 440	creating Style object, 313
TargetName property, 440–441	creating style that builds upon another style,
TargetProperty property, 440–441	318
Stream property, 236	creating System.Windows.Style object as
StreamGeometry class, 376	resource, 311
StreamResourceInfo object, 236	defining style to wrap various font properties, 311
Stretch property, 173, 336, 339, 342, 359, 362,	definition of, 309
880	disadvantages of style inheritance, 319
StretchDirection property, 343, 880	example of standardizing font properties of
StringFormat property, 645–647	window, 310
Stroke objects, 96	identifying property to be set, 314
Stroke property, Shape class, 335, 343	linking triggers to styles through
StrokeDashArray property, Shape class, 336, 349	Style.Triggers collection, 320
StrokeDashCap property, Shape class, 336, 351	naming convention, 311
StrokeDashOffset property, Shape class, 336,	not using styles and resources together, 313
351 StrokeLineJoin property, Shape class, 336, 349	omitting key name when setting TargetType property, 319
StrokeMiterLimit property, Shape class, 336,	overriding style characteristics, 312
349 Strokes collection, 96	pulling style out of Resources collection using FindResource() method, 312
•	setters as only changing dependency
StrokeStartLineCap property, Shape class, 336	property, 314
StrokeThickness property, Shape class, 336	setting BasedOn attribute of style, 318
Style class	setting element's Style property, 311
creating Style object, 313 table of properties, 312	setting style programmatically, 312
TargetType property, 503	setting TargetType property of Style object,
	315
Style property, 311, 939	Style class, table of properties, 312
styles	Style objects as wrapping collection of Setter
adding Setter objects, 311 advantages of, 299	objects, 314

support for triggers and templates, 309 System. Media namespace, 865 using BasedOn property to create chain of SystemParameters class, 755 inherited styles, 318 System, Printing namespace, 989, 1013, 1016 using resources to hold styles, 309 System.Printing.PrintQueue object, 1012 using Setter. TargetName property, 314 System.Security.Principal.WindowsIdentity using styles and resources together, 313 class, 980 using to set any dependency property, 309 SystemSounds class, 868 wiring up events to event handlers, 316 System. Speech.dll assembly, 885 Style.Triggers collection, 320 System. Speech. Recognition namespace, 887 stylus events, 133 System.Speech.Recognition.SrgsGrammar namespace, 888 SuppressExceptions property, 652 System.Speech.Synthesis namespace, 885 SweepDirection property, 386 System.Threading.DispatcherObject, 15 SynchronizationContext class, 1050 System. Threading. Thread object, 1042, 1045 Synthesis Markup Language (SSML), 887 System.TimeSpan, 434 system DPI setting, 7, 9 System. Windows namespace, 301 System.Add.dll assembly, 1067 System. Windows. Annotations names pace, 977 System.AddIn.Contract namespace, 1064, 1077 System. Windows. Application class, 1025 System.AddIn.Contract.dll assembly, 1067 System.Windows.Clipboard class, 149 System.AddIn.dll assembly, 1065 System. Windows. Controls namespace, 626. System.AddIn.Hosting namespace, 1070 890, 987, 989 System.AddIn.Hosting.AddInStore class, 1068 System.Windows.Controls.ContentControl, 16 System.AddIn.Hosting.AddInToken class, 1068 System.Windows.Controls.Control, 16 System.AddIn.Pipeline namespace, 1064, 1078 System. Windows. Controls. Decorator class, 75 System.AddIns.Pipeline.ContractHandle System.Windows.Controls.ItemsControl, 16 object, 1067 System.Windows.Controls.Page class, 792 SystemBrushes class, 352 System. Windows. Controls. Panel, 16, 684 System.Collections.Generic namespace, 557 System. Windows. Controls. Primitives SystemColors class, 161 namespace, 178, 186, 509, 511, 851 System.ComponentModel namespace, 1047 System.Windows.Controls.Primitives.RangeBas System.ComponentModel.Component class. e class, 565 1026 System.Windows.Data.CollectionViewSource System.ComponentModel.PropertyGroupDesc class, 692 ription, 703 System.Windows.Data.DataSourceProvider System.ComponentModel.SortDescription, 702 class, 637 System.Data namespace, 701 System.Windows.DependencyObject, 15 System. Drawing namespace, 301 System.Windows.Documents namespace, 939 System.Drawing.dll, 1022, 1026 System.Windows.Documents.TextRange class, System.Drawing.Graphics class, 775 SystemDropShadowChrome class, 509 System. Windows. Forms. Application class, 1025 System. Environment class, 774 System. Windows. Forms. Control class, 1032 System.Globalization.NumberStyles value, 649 System.Windows.Forms.dll, 1022, 1026 System.IO.Compression namespace, 829 System.Windows.Forms.Integration System.IO.DriveInfo class, 730 namespace, 1031 System.IO.FileSystemWatcher, 731 System.Windows.FrameworkElement, 15 System.IO.IsolatedStorage namespace, 828 System. Windows. Freezable class, 162 System.IO.Packaging namespace, 986 System.Windows.Input.Cursor, 168

System.Windows.Input.ICommand interface, 267	TabControl, TabStripPlacement property, 193 TabIndex property, setting, 141
System.Windows.Input.RoutedCommand	Tablitem control, IsSelected property, 193
class, 268	TabItem control, representing page in
System.Windows.Interactivity.dll assembly	TabControl, 171, 193
connecting action to element with trigger,	
329	Table element, 945–947 TableCell element, 947
creating actions, 327	
design-time behavior support in Expression	TablePays element, 046
Blend, 330	TableRow element, 946
support for behaviors, 326	TableRowGroup element, 945 TabletPC, handling stylus input on, 65
System.Windows.Interop.HwndHost class,	TabPanel, 65
1041	
System.Windows.LogicalTreeHelper, 503	tabs, on ribbon, 859–862
System.Windows.Markup, 965	TabStripPlacement property, 193
System.Windows.Markup.MarkupExtension, 37	Tag property, 730, 772
System.Windows.Media namespace, 869	tagName property, IHTMLElement object, 835
System.Windows.Media.Animation	Target property, 175
namespace, 426–428, 451	TargetElement property, Storyboard class, 492
System.Windows.Media.Brush, 352	TargetInvocationException, 629
System.Windows.Media.Color, 549	TargetItems property, 813
System.Windows.Media.DrawingContext, 545	TargetName property, 440–441, 507, 518
System.Windows.Media.Effects namespace,	TargetProperty property, 440–441, 492
411	TargetType attribute, 561
System.Windows.Media.Fonts class, 166	TargetType property, 313, 315, 503, 719
System.Windows.Media.Media3D namespace,	TargetZone tag, 820
890	taskbar of Windows 7, programming
System.Windows.Media.Pen class, 393	changing taskbar icon and preview, 784–789
System.Windows.Media.Transform class, 365	overview, 779
System.Windows.Media.Visual, 15, 990	using jump lists, 779–784
System.Windows.Media.VisualTreeHelper, 503	tasks, 265
System.Windows.MessageBox class, 762	template bindings, default control template,
System.Windows.Presentation.dll assembly,	574
1078	template selectors, 675
System.Windows.Rect, 756	TemplateBinding, 562–563
System.Windows.Shapes namespace, 174	TemplatedParent property, 773
System.Windows.Shapes.Shape class, 16, 334	TemplatePart attribute, 536, 541, 572
System.Windows.Threading namespace, 1042	templates
System.Windows.Threading.DispatcherTimer,	adding VisualStateManager to, 575
425	building complex, multipart templates, 530
System.Windows.TriggerAction, 441	combining template types in same control, 509
System.Windows.TriggerBase, 320	control template dependencies, 530–531
System.Windows.UIElement, 15	control template dependencies, 330–331 control templates, 508
	creating templates for custom controls, 582
■T	data templates, 508
	ensuring most flexible template support, 573

FrameworkTemplate class, 508 TextChanged event, 137 hiding or showing elements in response to TextWrapping property, 198 trigger, 518 Undo feature, 199 panel templates, 508 using MinLines and MaxLines properties, retrieving control's template and serializing 198 it to XAML, 510 TextChanged event, 137 reusing, 671 TextCompositionEventArgs object, 139 setting sequential order for conflicting TextDecorations class, 164 trigger settings, 519 TextDecorations property, 164 similarity between templates and styles, 519 TextIndent property, 943 template bindings, 515 TextInput event, 137, 139 types of, 508 TextMarkerStyle enumeration, 944 TemplateVisualState attribute, 541 TextPointer objects, 969 text controls, 197 TextRange class, 968-969 text, DataGridTextColumn class, 735-736 TextSearch.TextPath property, 688 text handling, 5 TextSelection class, 971–972 Text property, 41, 197, 269 TextTrimming property, 961 TextAlignment property, 940, 959 texture mapping, displaying image and video TextBlock element, 413, 961 content on 3-D shape, 914 TextBox class, 34, 38, 41, 165, 198 TextureCoordinates collection TextBox control creating multifaceted cube, 917 AcceptsReturn property, 198 markup for creating VisualBrush that loops AcceptsTab property, 198 video playback, 917 AutoWordSelection, 199 markup for mapping one face of cube, 915 BeginChange() method, 200 using ImageBrush to paint bitmap, 914 CanUndo property, 199 using relative coordinates in, 916 creating multiline text box, 198 TextureCoordinates property, 893–895 EndChange() method, 200 TextWrapping property, 198, 961 IsReadOnly property, 199 ThemeInfo attribute, 567 Language property, 200 Themes folder, 560 LineCount property, 198 Thickness structure, 70 pressing Enter key in, 198 ThicknessAnimation class, 426, 467 SelectedText property, 199 this keyword, 773 selecting text, 199 thread affinity, 1042 SelectionChanged event, 199 Thread object, 1076 SelectionLength property, 199 thread rental, 1041 SelectionStart property, 199 Thumb element, 509 setting HorizontalScrollBarVisibility ThumbButtonInfo class, 787-788 property, 198 thumbnail buttons, 786–788 setting VerticalScrollBarVisibility property, thumbnail clipping, 785–786 Tick event SpellCheck.IsEnabled property, 200 bomb-dropping game, 491 spelling-checker feature, 200 DispatcherTimer property, 494 SpellingReform property, 200 TickBar element, 509, 592 Text property, 197 TickFrequency property, 257 TextBox class, 198 Ticks collection, 208