Microsoft

Step by Step

Microsoft® Expression Blend® 4

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Elena Kosinska and Chris Leeds

Microsoft®

Microsoft® Expression Blend® 4 Step by Step

Elena Kosinska
Chris Leeds

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Dedication

This book is dedicated to my lovely family—my husband, Konstantin, who always believes in me and lends moral support to all my projects, and my beautiful newborn son, Leo, who gave me inspiration for this book.

–Elena Kosinska

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Acknowledgements

A book of this size, about a product with wildly broad capabilities such as Microsoft Expression Blend, requires more than an author, or two. It requires a solid publishing team, and with this book we were lucky enough to have a great team: Kathy Krause (Top-Notch Content Editor), Kathleen Anderson (Technical Reviewer), Russell Jones (Acquisitions and Developmental Editor), and all the good folks at Microsoft Press and O'Reilly Media who put in so much effort and brought so much experience to the production of this book.

We would also like to thank all the Expression Blend users who have helped us design exercises and answer questions that we hope will be of maximum benefit to the user community. And we would like to thank the management and participants in the Microsoft MVP community who have helped us gain deeper contacts and understanding of the Microsoft Expression Studio product group.

Thank you all!

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Introduction

Microsoft Expression Blend 4 is Microsoft's newest interactive design tool. It's intended for designers and developers who need to create user interfaces for rich Internet, desktop, and mobile applications—and it offers tools that support the design of such applications, from conception to completion.

Expression Blend 4 is part of Microsoft Expression Studio 4 Ultimate, a suite of design tools that includes the impressive SketchFlow feature, which helps designers rapidly experiment with dynamic user experiences and create compelling functional prototypes.

Expression Blend provides powerful tools for integrating sample data into your application. If you're just beginning an application design and have no existing sample data to fill it with, Expression Blend provides sample data sources that you can use to populate the application with temporary (but realistic) data. If you do have sample data, Expression Blend lets you use that. In both cases, you'll be able to view the sample data while you design the user interface—even before the application gets connected to the final "live" data source.

With Expression Blend, you can even integrate graphics created in other design tools, such as Microsoft Expression Design, Adobe Illustrator, and Adobe Photoshop. The easiest source for integrating external graphic assets is Expression Design. The Expression Design + Expression Blend combination provides simple integration paths, because both applications are in the Expression Studio family. But you aren't limited to that combination. There are powerful importing tools that integrate assets from Adobe products as well. With Expression Blend, the choice of graphic design tools is up to you.

Expression Blend also makes it easy to enable interactivity without writing code. Behaviors, which are powerful interactivity building blocks, were developed expressly so that designers could add interactivity to applications without writing code. To use behaviors, you simply drag them onto objects in Expression Blend, set their properties, and enjoy the resulting interactivity.

The most common task for user interface designers—skinning controls—involves understanding the structure of common controls and creating reusable styles for applications. Powerful Expression Blend style/template editing capabilities help designers to carefully modify the look and feel of default Microsoft Silverlight or Windows Presentation Foundation (WPF) controls while retaining their functionality.

Expression Blend 4 also makes design workflow easier than ever before. Designers and developers can work seamlessly, sharing projects, code, and designs for better productivity and higher quality results.

How to Access Your Online Edition Hosted by Safari

The voucher bound in to the back of this book gives you access to an online edition of the book. (You can also download the online edition of the book to your own computer; see the next section.)

To access your online edition, do the following:

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3. Enter your 24-character access code in the Coupon Code field under Step 1.

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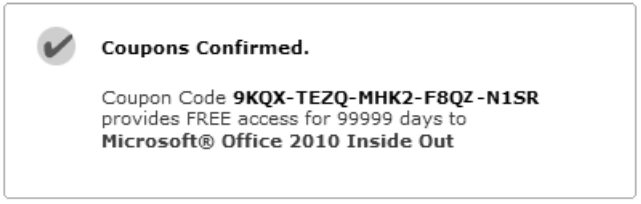

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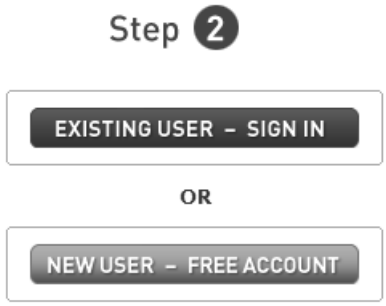

5B. If you are a new user, click the NEW USER – FREE ACCOUNT button under Step 2.

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- This will require filling out a registration form and accepting an End User Agreement.
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6. On the Coupon Confirmation page, click the My Safari button.

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1. On the page that appears after Step 7 in the previous section, click the Extras tab.

2. Find "Download the complete PDF of this book," and click the book title.

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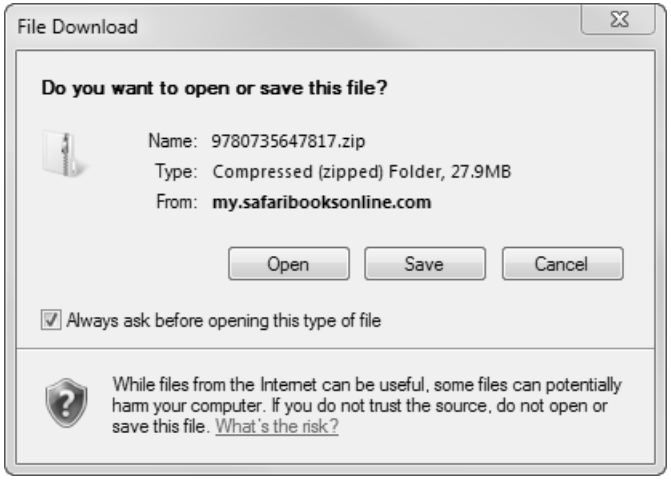

3. Click Save.
4. Choose Desktop and click Save.
5. Locate the .zip file on your desktop. Right-click the file, click Extract All, and then follow the instructions.

Note If you have a problem with your voucher or access code, please contact *mspbooksupport@oreilly.com*, or call 800-889-8969, where you'll reach O'Reilly Media, the distributor of Microsoft Press books.

System Requirements

To perform the exercises in this book, your computer should meet the following requirements:

- Windows XP with Service Pack 3, Windows Vista, Windows 7, or Windows Server 2008 operating system
- Computer with 1 GHz or faster processor
- 1 GB of RAM or more
- 2 GB or more of available hard-disk space
- Microsoft .NET Framework 4
- Silverlight 4
- Support for Microsoft DirectX 9.0 graphics with Windows Vista Display Driver Model (WDDM) Driver, 128 MB of graphics RAM or more, Pixel Shader 3.0 in hardware, 32-bits per pixel
- 1024 × 768 or higher resolution monitor with 24-bit color
- Internet functionality, which requires Internet access (additional fees may apply)

Important Actual requirements and product functionality may vary based on your system configuration and operating system.

Who Should Read This Book?

This book is intended for existing or new User Interface/User Experience designers, developers, and design integrators, as well as those who need some basic knowledge of the tools and capabilities used by designers. Although the book is expressly intended to provide information and step by step examples for new designers, experienced practitioners can use this book as well, to quickly gain familiarity with the Expression Blend 4 user interface and features. The book will also serve Adobe Flash designers who want to expand their professional repertoire into the Silverlight and WPF arena.

Assumptions

The authors expect that you have at least a minimal understanding of the computer you will be using as well as familiarity performing file operations with your chosen operating system. You do not need deep experience in design or development, although a general familiarity with common computer graphics tools is helpful.

What's New in Expression Blend 4

Silverlight 4 and WPF4 projects Expression Blend provides powerful features for designing and developing applications based on Silverlight 4 and Windows Presentation Foundation 4 technologies.

Shapes Expression Blend 4 now includes presets to help designers easily create arcs, arrows, callouts, and polygons, in both sketch and other styles. You can find this feature in the Assets panel within the new Shapes category.

SketchFlow improvements SketchFlow Player now enables panning, scrolling, and screen resizing of SketchFlow prototype applications. The SketchFlow map is available as an overlay on selected screens. SketchFlow can generate documentation as Microsoft Word files, and can even include feedback from your team and customers.

Layout States for the *ListBoxItem* Designers can animate the process of items being added and/or removed from a *ListBox* in Silverlight 4 projects. The new states group includes *BeforeLoaded*, *AfterLoaded*, and *Loaded* states.

Easing functions and Transition Effects Easing functions for animations and Visual State changes are now available for WPF 4 projects. Transition Effects such as *Fade*, *Pixelate*, *Slide In*, and many others are available through the States panel. Designers can easily combine visual effects.

New behaviors Expression Blend 4 has a set of new behaviors, such as *DataStateBehavior*, *SetDataStoreValueAction*, *CallMethodAction*, *FluidMoveBehavior*, and others, which Microsoft added to help designers work with data.

Data Store Designers can now store application variables in Data Store. Variables can be read and written to that storage so that they will be available for different parts of the application.

Adobe Photoshop import improvements Expression Blend now has a faster and improved Photoshop import dialog box that enables designers to easily choose layers to be imported and merge effects for Photoshop files.

Development using the MVVM Pattern Expression Blend 4 supports a new type of project: Silverlight Databound Application. This project type builds on the Model View ViewModel (MVVM) design pattern, which uses data and command bindings to support a loose coupling between a View (a user interface) and a ViewModel (code that coordinates the state of a View with an underlying Model).

Development for Windows Phone Platform With Expression Blend for Windows Phone, available when you install the Windows Phone Developer Tools and Expression Blend 4 Service Pack 1, you can quickly and easily design Silverlight applications for Windows Phone by using the design tools in Expression Blend. As you create your Windows Phone applications, you can easily test them on either the Windows Phone emulator, included as part of the Windows Phone Developer Tools, or in a Windows Phone device attached to your computer.

Acquiring Expression Blend 4

Expression Blend 4 is available as part of Expression Studio 4 Ultimate, which is an integrated group of applications that includes:

- **Expression Blend 4 and SketchFlow** Using industry-proven technologies and languages such as Silverlight, WPF, XAML, Microsoft Visual C#, and Microsoft Visual Basic, Expression Blend enables you to deliver applications that are stable, scalable, accessible, reliable, and highly secure, while maintaining optimum performance. SketchFlow, a feature of Expression Blend 4, revolutionizes how quickly and efficiently designers can demonstrate their vision for an application. SketchFlow projects provide an informal way to quickly explore, iterate, and prototype user interface scenarios, and enable designers to evolve their concepts from a series of rough ideas into an interactive and functional prototype that can be made as realistic as a client or project demands.
- **Expression Web 4 and SuperPreview** Expression Web is a professional design tool used to create engaging, web-connected multimedia experiences. SuperPreview speeds browser compatibility testing by not only showing a high-fidelity rendering of how pages will look on various browsers, but also by identifying an element's tag, size and position, applied styles, and location in a convenient Document Object Model (DOM) tree, so you can quickly remedy any cross-browser issues you uncover.
- **Expression Design 4** Microsoft Expression Design 4 is the perfect companion to Expression Blend or Expression Web. Take advantage of existing artwork, or use intuitive vector drawing tools to quickly build sophisticated vector and image assets. Seamlessly transfer them to your Expression Blend or Expression Web projects knowing that their fidelity and effects will be maintained throughout the entire designer-developer workflow.
- **Expression Encoder 4 Professional** Microsoft Expression Encoder simplifies publishing video to Silverlight. With Expression Encoder, you can encode a wide array of video file formats, stream live from webcams and camcorders, or even record screen videos on your computer. You can also make simple edits to video files as well as add overlays and advertising. Users can choose encoding settings, choose a video player interface from a range of player templates, and publish rich media experiences with Silverlight directly to the web. The professional version of Expression Encoder contains more import and export codecs and unlimited screen recording duration.

Expression Studio 4 Ultimate is also available as an upgrade—and the upgrade isn't limited to users of just Expression Blend 3. It is available to owners of any previous Microsoft Expression product as well as any version of Adobe Creative Suite or Microsoft Visual Studio 2005 or later.

Beyond that, you can get Expression Studio 4 Ultimate as part of the Microsoft Partner program, at *https://partner.microsoft.com/40043420*, and through the WebsiteSpark program at *http://WebSiteSpark.com*.

Finally, if you're a student, you can get Expression Studio 4 Ultimate and a huge collection of other Microsoft development software through DreamSpark, at *downloads.channel8.msdn.com/Default.aspx*. Microsoft DreamSpark lets students download Microsoft developer and design tools at no charge, making it easier for them to learn the skills they need to excel both during school and after graduation.

Sample Projects

Most of the chapters in this book include exercises that let you interactively try out new material learned in the main text. All the sample projects are available for download from the book's page on the web site for Microsoft's publishing partner, O'Reilly Media:

http://oreilly.com/catalog/9780735639010

Click the Companion Content link on that page under the book cover image. When a list of files appears, locate and download the SampleProjects.zip file.

Installing the Sample Projects

Unzip the SampleProjects.zip file that you downloaded from the book's website to a location on your hard drive. To simplify locating and using the sample files, unzip them to your desktop.

What's in the Sample Projects?

This book's sample projects contain Silverlight projects, videos, images, Expression Design, and other graphic assets that are required to complete the chapter exercises that you will encounter in the book.

Organization of This Book

- Chapter 1: Welcome to the Silverlight and WPF World
  - Identify the basics of Silverlight and WPF technologies.
  - Differentiate between designer and developer roles.
  - Recognize products in Expression Studio 4.
  - Understand how Visual Studio can fit into your design process.
- Chapter 2: Exploring the Expression Blend 4 IDE
  - Download and install Expression Blend 4.
  - Open and run your first Silverlight project.
  - Use and customize the Expression Blend 4 user interface.
- Chapter 3: Designing an Interface
  - Create a new project.
  - Place visual elements and common controls in your project.
  - Use layout panels as containers for arranging objects.
  - Use image and video elements.
- Chapter 4: XAML and C#
  - Understand what Extensible Application Markup Language (XAML) is.
  - List basic XAML objects and properties.
  - Use the XAML editor and IntelliSense in Expression Blend.
  - Understand the basics of C#.
  - Explain the relationship of code-behind files to XAML files.
  - Create objects in C#.
  - Change properties of existing objects by using C# code.
  - Respond to events with event handlers.
- Chapter 5: Animations and Transformations
  - Resize user interface (UI) elements.
  - Scale, rotate, skew, and translate your objects.
  - Change the center point of an object.
  - Flip objects.
  - Simulate three-dimensional space via projection.

- Add storyboards.
- Use timelines and keyframes.
- Add animations and change object properties over time.
- Modify storyboards.
- Apply behaviors and run storyboards in response to events.

- Chapter 6: Adding Interactivity
  - Use default Expression Blend behaviors.
  - Run storyboards based on behaviors.
  - Use behaviors to change properties of objects.
  - Use the *ToggleButton* control.
  - Modify the properties of behaviors.
  - Create visual states and switch between them.
- Chapter 7: Creating Design Assets
  - Use Expression Design and its tools and panels.
  - Create graphic assets in Expression Design.
  - Export Expression Design assets as XAML to integrate into Expression Blend.
  - Import objects from Photoshop and Illustrator.
- Chapter 8: Resources
  - Create color resources and use them in Expression Blend applications.
  - Create and apply gradient and image brushes.
  - Convert property values to resource values and apply them to properties of the same type.
  - Modify existing resources.
  - Organize resources by using dictionaries.
- Chapter 9: Skinning Controls
  - Create and use styles for controls and visual elements.
  - Modify existing control templates and create custom templates for controls.
  - Use states to change the behavior of controls.
  - Create a theme for basic controls.
  - Use color, brush, and other types of resources.
  - Use implicit and key-based styles.

- Optimize resources and styles.
- Set template binding for object properties within custom templates.

- Chapter 10: Working with Data
  - Generate sample data.
  - Use styles and templates on data display controls.
  - Work with sample data.
  - Bind object properties to data.
  - Change data templates.
  - Use element property binding.
  - Use Master/Details scenarios to display data.
- Chapter 11: Using SketchFlow
  - Create and run a SketchFlow application.
  - Navigate between SketchFlow screens.
  - Create an application flow.
  - Add controls and use sample data for prototyping.
  - Make your SketchFlow projects interactive.
  - Understand the SketchFlow Player settings.
  - Package your application prototype.
  - Use the feedback functionality to collect new ideas and comments.
  - Generate documentation in Word format.
- Chapter 12: Designer/Developer Collaboration
  - Identify key points in a typical design workflow.
  - Differentiate between designer and developer tasks and roles within the workflow.
  - Identify mixed tasks.
  - Share projects between Expression Blend and Visual Studio.
  - Understand the benefits of using source control.

Conventions and Features in This Book

This book has been designed to lead you step by step through all the tasks you are most likely to want to perform in Microsoft Expression Blend 4. If you start at the beginning and work your way through all the exercises, you will gain enough proficiency to be able to create rich user interfaces for your applications. Each topic is self-contained, but some of them are united with the same theme. If you need a fast way to find the information to perform a procedure, the following features of this book will help you locate specific information:

- **Detailed table of contents** Scan this listing of the topics and sidebars within each chapter to quickly find the information you want.
- **Detailed index** Look up specific tasks and features and general concepts in the index, which has been carefully crafted with the reader in mind.
- **Companion content** Install the practice files needed for the step-by-step exercises through this book's website. See the "Sample Projects" section of this Introduction for instructions on getting and installing the practice files.

In addition, this book presents information using conventions designed to make the information readable and easy to follow:

- Most chapters include step-by-step exercises that you can follow to get guided exposure and practice to completing tasks.
- Each exercise consists of a series of tasks, presented as numbered steps (1, 2, and so on) listing each action you must take to complete the exercise.
- Boxed elements with labels such as "Note," "Troubleshooting," and so on provide additional information, directions for starting or ending the step by step exercises, or alternative methods for completing a step successfully.
- Text that you are supposed to type (apart from code blocks) appears in bold.
- A plus sign (+) between two key names means that you must press those keys at the same time. For example, "Press Alt+Tab" means that you hold down the Alt key while you press the Tab key.
- Tool icons that you need to recognize to work with Expression Blend appear where they are first mentioned. You should strive to memorize these icons and their locations in the Blend user interface as you work through the exercises.

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The authors also maintain a support site for this book and Expression Blend in general. Visit *http://ExpressionBlendStepByStep.com*.

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Chapter 3

Designing an Interface

After completing this chapter, you will be able to:

- Create a new project.
- Place visual elements and common controls in your project.
- Use layout panels as containers for arranging objects.
- Use image and video elements.

In this chapter, you will complete exercises that help you build your skills in creating projects with Microsoft Expression Blend 4. Even if you're not an artist, you will be able to create a multimedia project and run a website—all from within the Expression Blend user interface. The previous chapters dealt mostly with the workspace itself and where you could find the Expression Blend tools. This chapter will help you use the tools and features you learned about in the previous chapters to produce amazing results.

Important Before you can complete the exercises in this chapter, you need to install the downloadable practice files to their default location. For more information about the practice files, see the instructions at the beginning of this book.

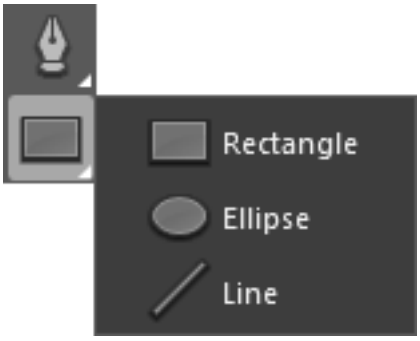
Visual Elements

Expression Blend operates with both vector and bitmap graphics. You can draw both simple and complex vector paths, use built-in shapes, and paste high-quality images into your project. When you place or draw each vector element of your application visually, at the same time Expression Blend creates the XAML markup language that defines those elements. For those who like to draw and work visually, Expression Blend provides a wide variety of design tools.

The Expression Blend 4 Tools panel contains an Objects section that helps you choose the right element and place it on the Artboard.

In addition to layout panels and controls, which you will learn about later in this chapter, this section of the Tools panel includes some common vector tools:

- ***Rectangle*** For drawing squares and rectangles with straight or rounded corners
- ***Ellipse*** For drawing ellipses and circles
- ***Line*** For drawing straight lines



- ***Pen*** For creating simple and complex paths in which you define each node
- ***Pencil*** For drawing lines, curves, or freehand paths, such as signatures and pencil drawings

There are two elements in the Selection section of the Tools panel that help you select and move individual nodes or entire paths and change the attributes of existing shapes:

- ***Selection*** Use this tool to select shapes, paths, and objects so that you can change their properties through the Properties panel or directly on the Artboard.
- ***Direct Selection*** This tool lets you select and edit nested objects and path segments.

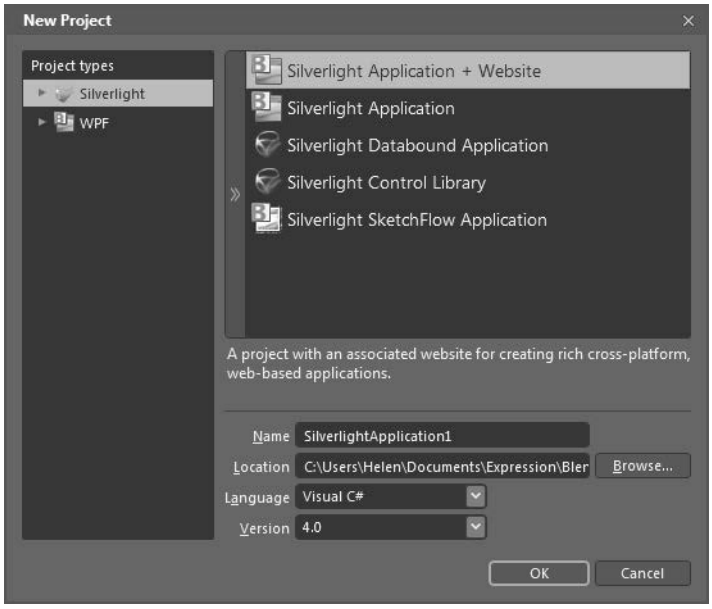
In the next exercises, you will create a new project, drawing its elements by using paths and basic and custom shapes.

Creating a New Project

Before you can draw and add elements on the Artboard, you must create a new project.

Starting a new project

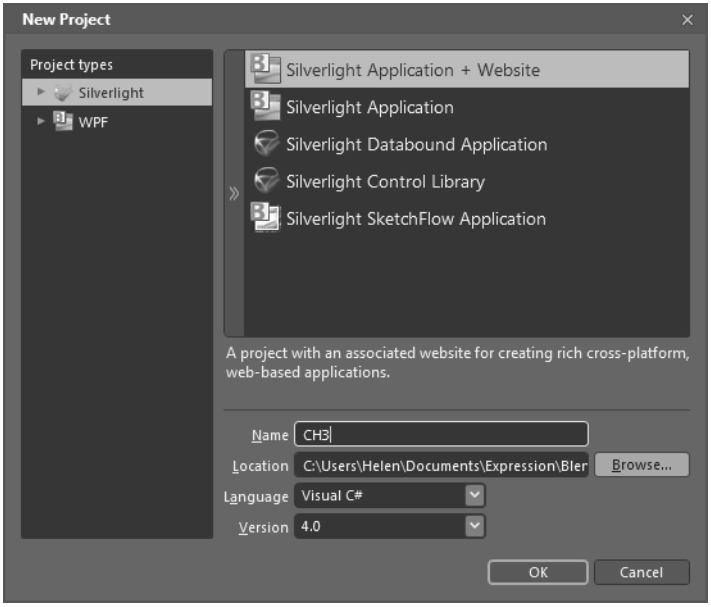
1. On the Windows taskbar, click Start, then click All Programs, Microsoft Expression, and then Expression Blend 4. The Expression Blend welcome dialog box opens. Click New Project on the Projects tab to open the New Project dialog box.
2. By default, the New Project dialog box has two project tabs on the left side: Silverlight and WPF. In this exercise, you'll create a Silverlight project. Click the Silverlight tab if it's not selected yet.



The Silverlight tab contains the following project options:

- **Silverlight Application + Website** A project with an associated website that you can publish to a web server.
- **Silverlight Application** A project that creates an application that can be run in the Silverlight runtime viewer, inside or outside of a browser window.
- **Silverlight Databound Application** A project that uses data and command bindings to support a loose coupling between a View (a user interface) and a ViewModel (code that coordinates the state of a View with an underlying Model).
- **Silverlight Control Library** A project for creating custom controls that can be reused in other Silverlight projects.
- **Silverlight SketchFlow Application** This option allows you to create prototype applications in a very visual manner.

3. Click Silverlight Application + Website. Type the project name **CH3** in the Name field. Accept the default settings in the other fields,



4. Click OK. Expression Blend creates a new project.

Important By default, Expression Blend saves projects to the folder Users\<*user*>\Documents\Expression\Blend 4\Projects\. You can change this location by clicking the Browse button next to the Location field and choosing a different location.

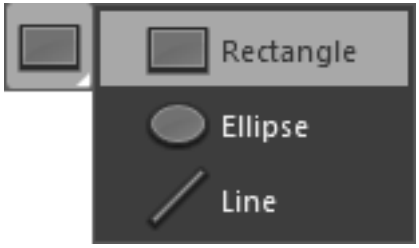
By default, your new project's MainPage.xaml document visually defines an area 640 pixels wide and 480 pixels high on the Artboard.

Note Expression Blend uses *WPF (Windows Presentation Foundation) pixels* when setting size-related properties. WPF pixels are virtual units (device-independent pixels or device-independent units) that are equivalent to the size of a pixel on a monitor set to a screen resolution of 96 dots per inch (DPI). Each unit is approximately 1/96 inch, regardless of monitor size or screen resolution.

The Objects And Timeline panel shows the top-level element of your document, represented by a *UserControl*. The next element, a layout panel, was created by Expression Blend automatically and is named *LayoutRoot* in the visual tree. This layout panel forms a grid into which you can place, arrange, and group elements. Consider the *LayoutRoot* as a container in which you can organize elements in a flexible way.

Using Basic Shapes

Although you can draw basic shapes manually on the Artboard in Expression Blend, it's often faster and more accurate to insert basic shapes rather than drawing them in a free-form style. Expression Blend provides three basic shape tools in the Tools panel: Ellipse, Rectangle, and Line. They share the same button, but clicking the small triangle in the lower-right corner of the button makes all the options visible.

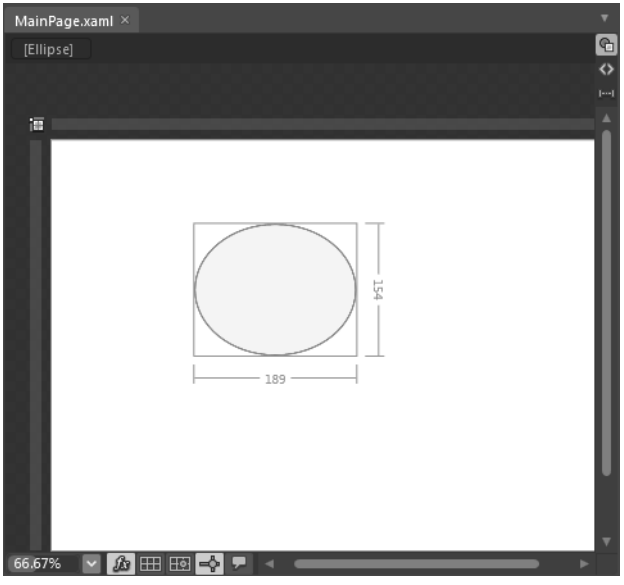


Creating some basic shapes

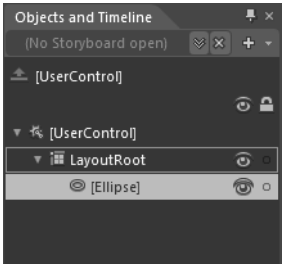
1. In the Tools panel, click Ellipse.

Tip If you can't find the Ellipse button, click the small triangle in the lower-right corner of the Rectangle or Line tool. These three shapes share the same button.

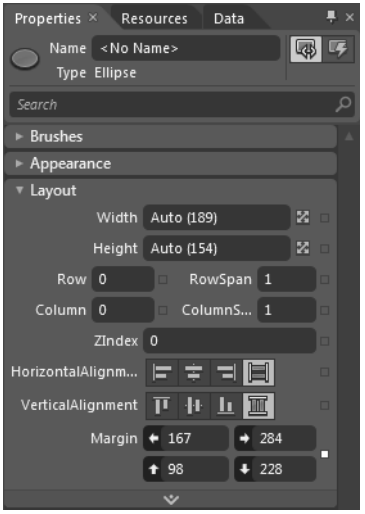
2. On the Artboard, draw an elliptical shape by dragging with your mouse.



In the Objects And Timeline panel, the element you just added has appeared and is the active selection.



3. In the Properties panel, click the arrow to expand the Layout category (if it isn't already expanded). The Properties panel expands and displays the properties for the newly added *Ellipse* object. You are going to change some of them.



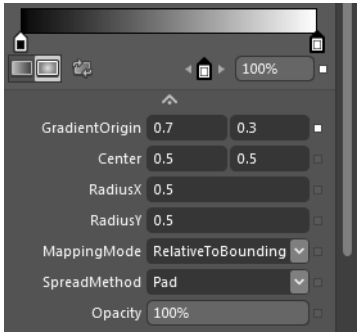
4. Set the width to **100** and the height to **150**. The ellipse you drew on the Artboard changes shape to match the changed width and height.

5. In the Properties panel, find the Brushes category. If it's collapsed, expand it. Notice that the ellipse has a default fill and uses a solid brush by default.

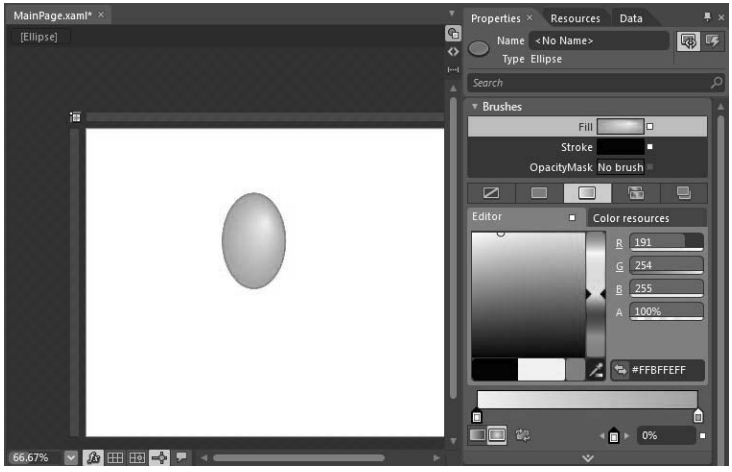
6. Click the Gradient brush tab just above the Color Editor. Expression Blend applies a basic gradient to your ellipse. Below the Color Editor and the Color Bar, click the Radial Gradient button to switch the fill style from a linear gradient to a radial gradient.

Gradient button

7. In the Properties panel, at the bottom of the Brushes category, click the Show Advanced Properties icon (the small white square to the right of the gradient stop offset field). The advanced properties appear. Set the *GradientOrigin* fields to **0.7** and **0.3**.

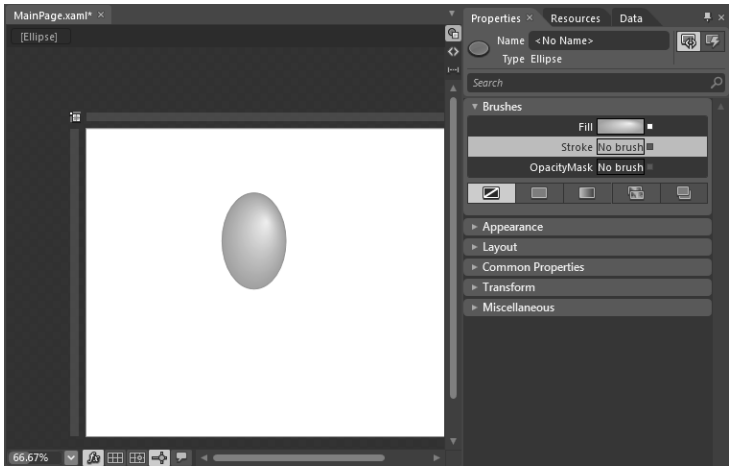


8. Click the Hide Advanced Properties icon to close that panel area.
9. Now you will change the color of each gradient stop. Click the right stop on the Color Bar, type the hexadecimal (hex) color value **#FF00B6BA** into the color field, and then press Enter on your keyboard. The object's color changes.
10. Click the left stop on the Color Bar, type the hex value **#FFBFFEFF** into the color field, and then press Enter. The secondary color of your object changes, and the object now has a three-dimensional appearance.



Tip You might find it easier to use the Color Editor and color eyedropper tool for manipulating colors in most situations. But when you need to set accurate values, typing the hex value in the color field will be your best choice.

11. On the Properties panel, in the Brushes category, click the Stroke horizontal tab. You'll find it grouped with the Fill and OpacityMask horizontal tabs. Select the No Brush subtab. Now the ellipse has no edge border (stroke) and looks even more three dimensional.



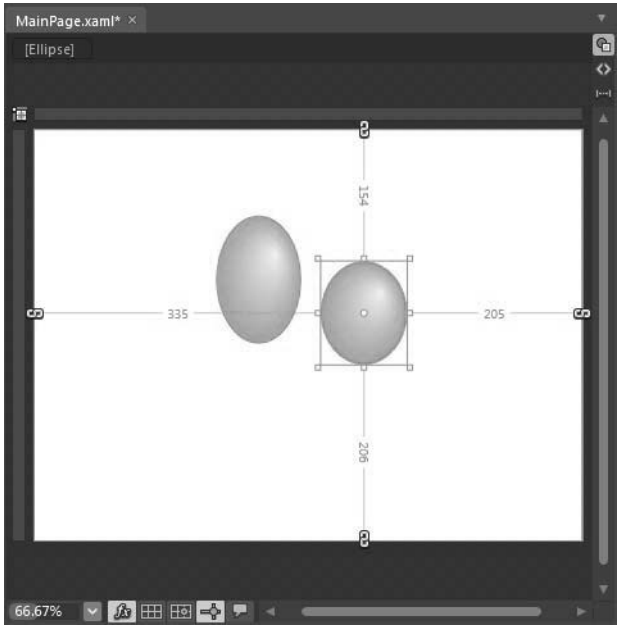
12. Press Ctrl+C to copy the balloon, and then press Ctrl+V to paste it onto the Artboard.

    Notice that there's another entry in the Objects And Timeline panel. That's the balloon object you just pasted.

Selection tool

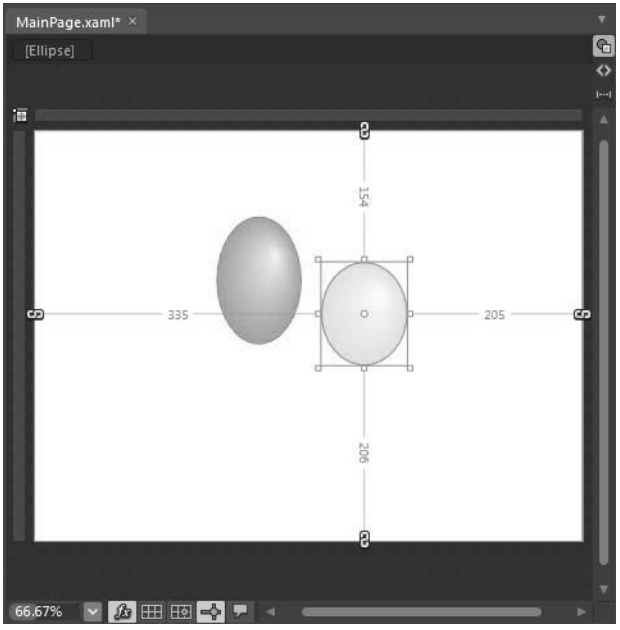
13. On the Tools panel, click the Selection tool button, and then drag the newly pasted balloon to the right and a little lower on the Artboard.

14. In the Layout category of the Properties panel, set the *Height* property to **120**.



15. Next you will change this object's color for each gradient stop. Click the right stop on the Color Bar, type the hex value **#FFFFE100** into the color field, and then press Enter. The object's color changes.

16. Click the left stop on the Color Bar, type the hex value **#FFFFFFFF** into the color field, and then press Enter. You should now have two balloons, one blue and one yellow.



Drawing Paths

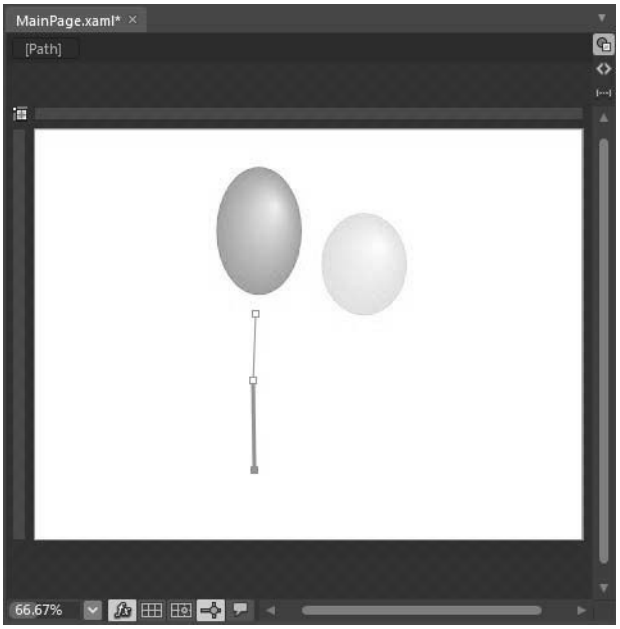
When a predefined shape won't work even with the various manipulations you can apply, you will need to draw it manually. In Expression Blend, you draw shapes by creating paths on the Artboard with Expression Blend's drawing tools. In the following exercise, you will draw strings hanging from the bottom of your balloon shapes.

Drawing free-form paths

Pen tool

1. On the Tools panel, select the Pen tool. Click the Artboard a little below the blue balloon to position the first node. Move the Pen tool downward about an inch, and click again to position the second node. Move the Pen tool down about two inches more, and click the Artboard again to position a third node.

Tip Don't worry if it seems that your path is not ideal. The shape of the curve can be modified during drawing and after the path has been drawn. You can change the position of nodes or redefine the arches of the curve with the help of the Direct Selection tool.



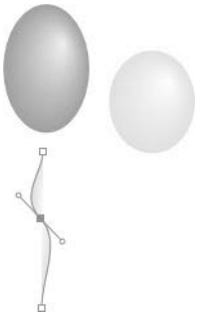
Direct Selection

Convert point pointer

Convert segment pointer

2. On the Tools panel, click the Direct Selection button. Then press and hold the Alt key on the keyboard and click the second node when the cursor changes to the Convert point pointer. Drag down and to the right a little from the node to define the control handles. The cursor changes to the Convert segment pointer.

Tip Dragging defines the control handle of the node, which describes the tangent of the line at that point.



Notice that your string has the same brush and gradient properties you used when you created the second balloon shape.

Solid brush

3. With your newly drawn path still selected, click the Stroke tab in the Brushes category of the Properties panel, and then click the Solid brush tab.

4. Beside the Color Bar, enter **#FF4D4D4D** into the color field, and then press Enter.

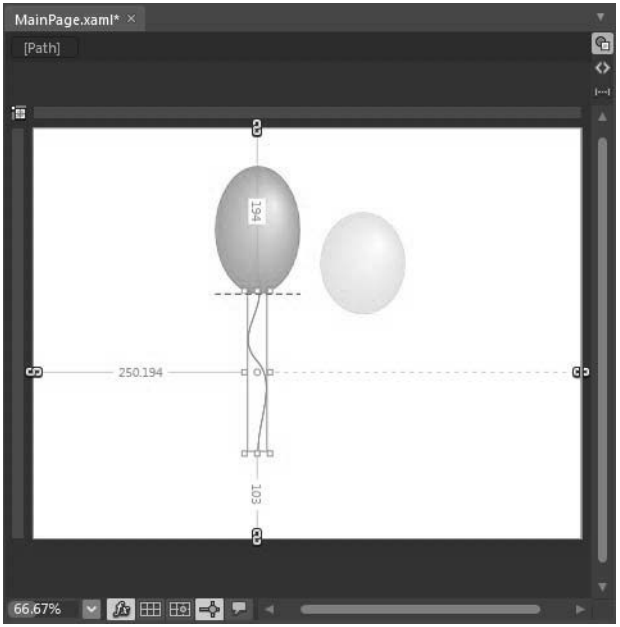
No Brush

5. In the Brushes category, click the Fill tab, and then select the No Brush sub tab. Now your path has only a stroke property for the curve.

Select button

6. In the Tools panel, click the Selection button. Expression Blend displays a bounding box around the object. Drag the string shape upward until a red dashed line appears under the balloon shape.

   The red dashed line indicates that the two paths have touched. This is a feature called *Snapping To Snaplines*. Snapping is very useful for lining objects up to each other on the Artboard.

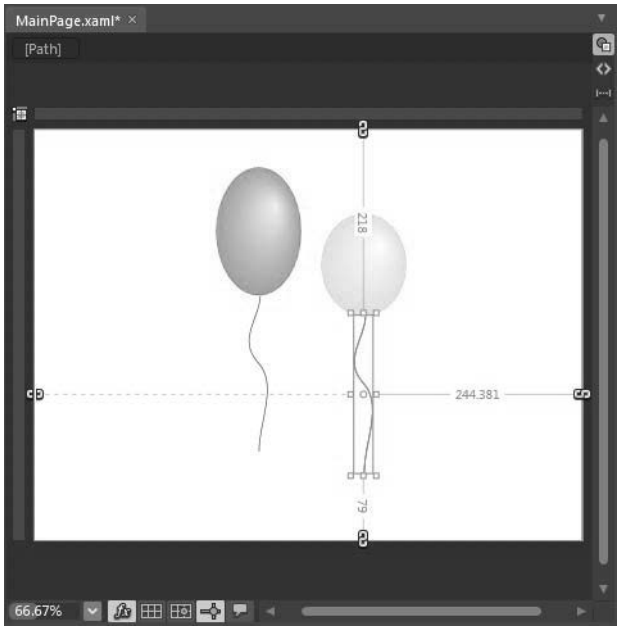


Tip When Snapping To Snaplines is enabled, red dashed lines appear when you drag an object on the Artboard. The feature enables objects to snap to baselines and alignment boundaries.

Snap to Snaplines

Troubleshooting By default, Snapping To Snaplines is turned on, but if you don't see red dashed lines and the string path doesn't snap to the balloon, click the Snapping To Snaplines button in the lower-left corner of the Artboard. Alternatively, you can select Options from the Tools menu. In the Options dialog box, make sure that the Artboard category is selected on the left, select the Snap To Snaplines check box, and then click OK.

7. Press Ctrl+C to copy the path, and then press Ctrl+V to paste the copy to the Artboard. Move the second path to the right and snap it to the bottom of the yellow balloon.



In the next steps, you will create triangles to serve as the tails of the balloons.

8. In the Tools panel, click the Pen tool. You are going to draw a very small triangle by creating its *geometric apexes*.

Zoom box

9. Increase the Artboard zoom level by selecting the 200% preset zoom value from the Zoom box at the bottom of the Artboard. Zooming makes drawing small objects much easier.

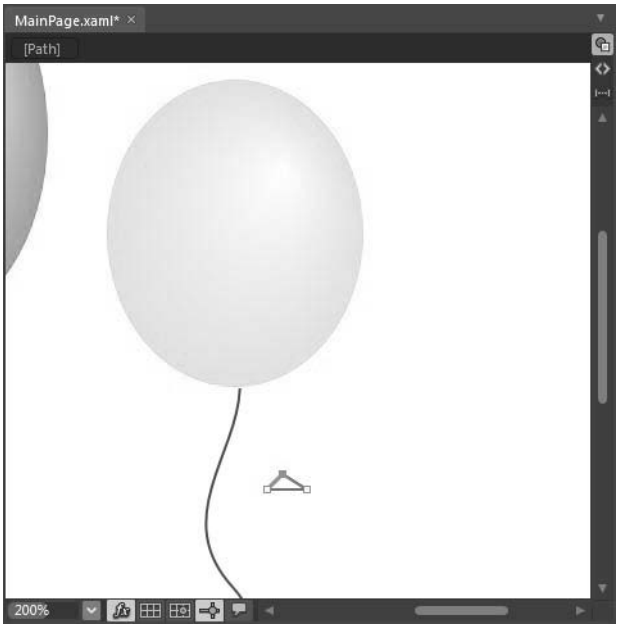
10. Click the Artboard to position the first node at the top apex of the triangle.

11. Move the Pen tool down and to the right, and then click the Artboard to position the second node at the lower-right apex of the triangle.

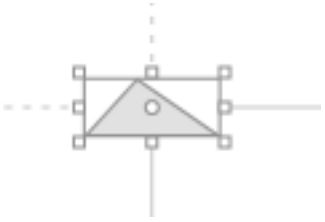
12. Move the Pen tool to the left and click the Artboard to position the third node of the triangle.

Pen tool

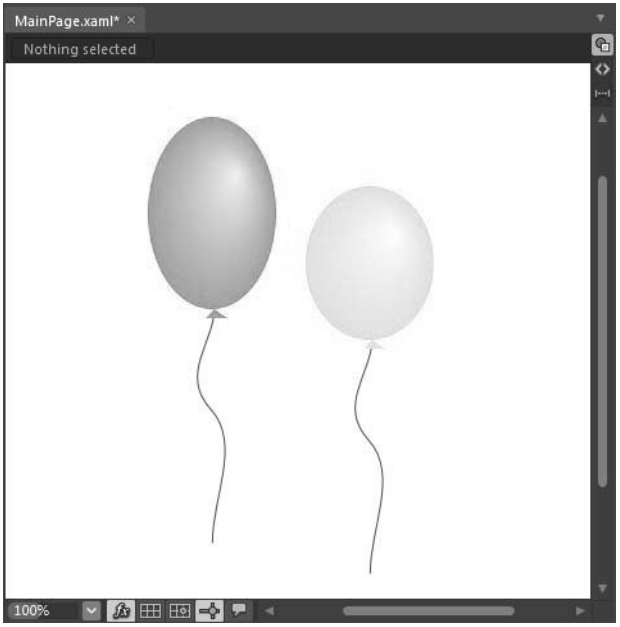
13. Point to the first node. The Pen tool will change to include a small circle to indicate that you are going to close the path. Click the first node you created to close the shape and complete the triangle. Your object should look similar to this one.



14. On the Properties panel, click the Fill tab in the Brushes category, and then select the Solid color brush tab. Beside the Color Bar, type **#FFFFE100** into the color field, and press Enter. The triangle is now filled with a solid yellow color.



15. Click Stroke in the Brushes category, and then click the No Brush tab.
16. Click the Selection Tool and move the triangle under the yellow balloon until a red dashed line appears.
17. Press Ctrl+C to copy the triangle, then press Ctrl+V to paste it onto the Artboard. Move and snap the duplicate triangle to the bottom of the blue balloon.
18. In the Brushes category, click Fill and then enter **#FF00B6BA** into the color field. The triangle's fill color changes to blue.
19. Press Ctrl+- (Ctrl+minus sign) twice to zoom out to the original zoom level.



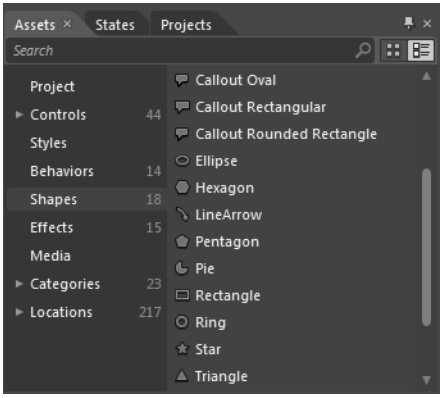
20. From the File menu, select Save or press Ctrl+S to save your project.

To create these balloons you used a few simple shapes, drew a curved path for the strings, and drew a triangle-shaped path for the tail.

Using Custom Shapes

Among the new features in Expression Blend 4 is the ability to easily add and modify custom shapes in your projects. Custom shapes are ideal for meeting requirements that are too detailed for a simple shape such as the one you inserted in the previous section, especially when you need these shapes often enough that it would be inefficient to draw them by hand every time.

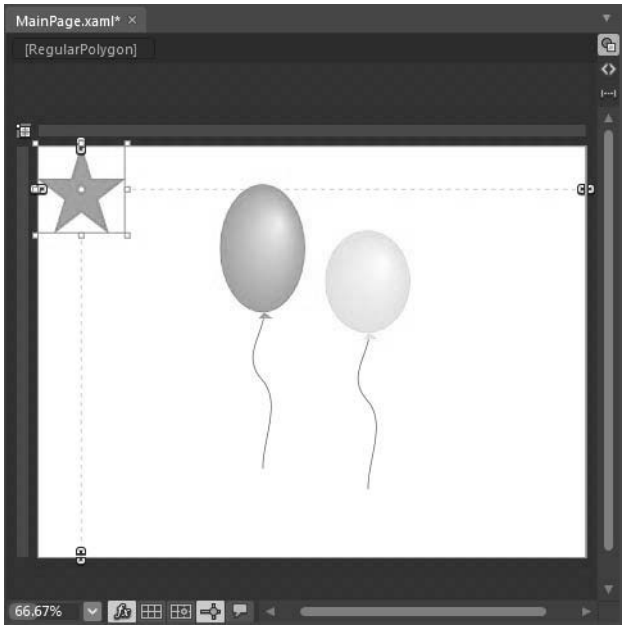
You can find *Shapes* on the left side of the Assets panel. Clicking Shapes displays a list of existing shapes on the right side of the panel that includes arrows, callouts, arcs, polygons, and more.



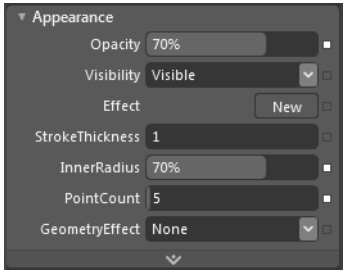
Note Use the CH3 project you created and modified in the previous exercise.

Adding a custom shape

1. Click the Shapes tab on the left side of the Assets panel, and then double-click the Star shape. A star appears in the upper-left corner of your document.



2. In the Tools panel, click the Selection button, and then find the Appearance category in the Properties panel.
3. Enter **70%** in the InnerRadius field, and enter **70%** in the Opacity field.

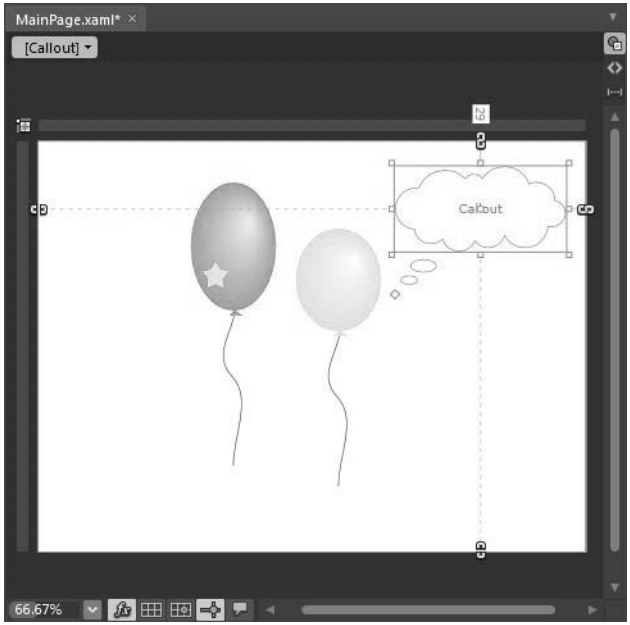


Tip This method is a quick way to apply a basic three-dimensional depth appearance to any object. Try different values in the fields for different appearances.

4. In the Layout panel, enter **30** in the *Width* field and **30** in the *Height* field.

5. In the Brushes category, click Stroke, and then click the No Brush tab. The edge stroke color will disappear from the star. In the Brushes category, click Fill and set the color to white. Move the star until it is on top of the blue balloon.

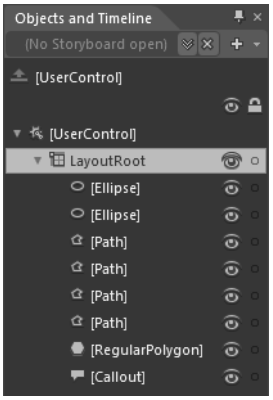
6. In the Assets panel, double-click the Callout Cloud shape. A new object appears in the upper-left corner of your document. In the Brushes category, select Stroke and click the Solid color Brush tab. Enter **#FF00B6BA** into the color field and **#FF00B6BA** into the *Foreground* field. These values set the color of the border and the text of the *Callout* shape, respectively. On the Artboard, drag the cloud shape to the right of the yellow balloon.



Tip Notice the blue boundaries and margin handles that appear around an object when you select it on the Artboard. The margin properties show the amount of space between the outside edges of the selected element and its parent element.

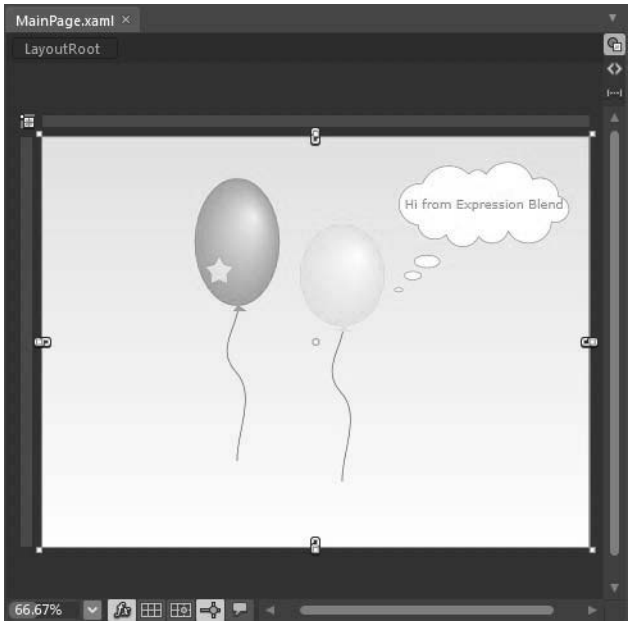
7. Double-click the cloud shape, type **Hi from Expression Blend** inside of it, and then click the Artboard outside of the *Callout* shape to exit text-editing mode.

8. In the Objects And Timeline panel, select LayoutRoot.

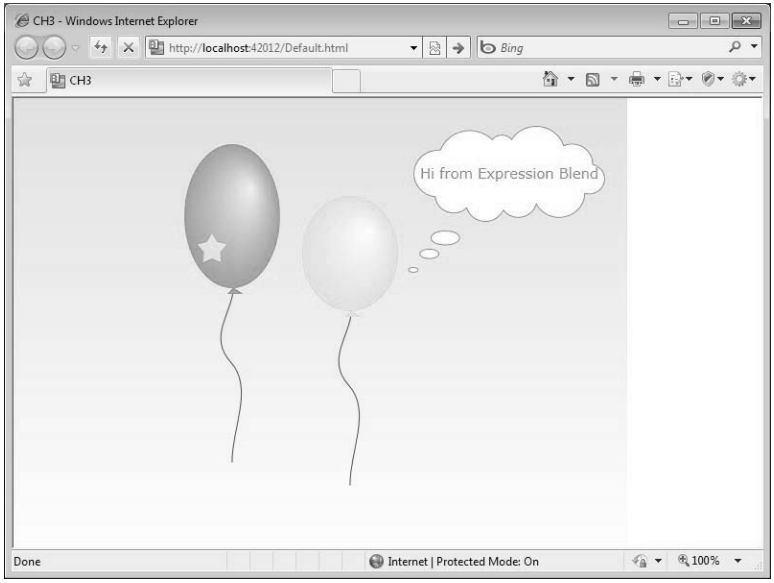


9. In the Properties panel, click the *Background* property, and then click the Gradient brush tab.

10. Click the black stop of the Color Bar, type **#FFA7F0F1** into the color field, press Enter on your keyboard, and then save the document.



11. Press F5 on your keyboard. Expression Blend builds the project, starts the Expression Development Server, and displays the page in your default browser.

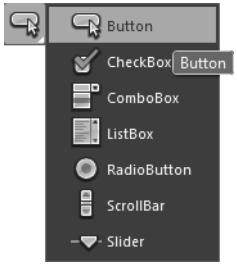


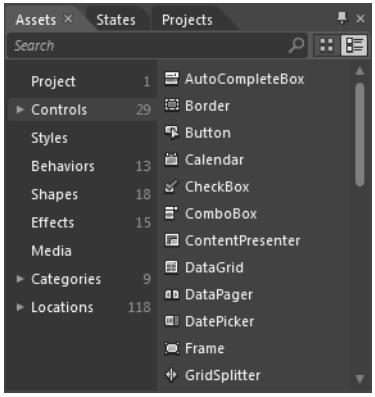
12. Close your browser window and return to Expression Blend.

Using Controls

There are hundreds of controls available for use in your Silverlight projects, both free, open-source controls and commercially made controls. From the simple *Button* and *CheckBox* controls to complex controls such as the *DataGrid* and *Dataform*, controls help you add functionality to your applications quickly and easily.

The Tools panel contains some of the most commonly used controls, but the Controls tab on the Assets panel contains many more.





Adding a control to your document in Expression Blend is very similar to adding any other visual element.

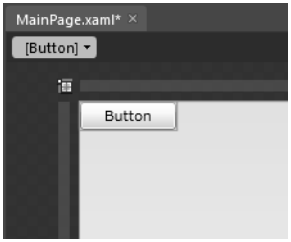
Tip You can find additional controls at Microsoft's Expression Gallery (*http://gallery.expression.microsoft.com/*), and even more ship with the Silverlight toolkit, which can be downloaded from *http://silverlight.codeplex.com/*.

Note Use the CH3 project you created and modified earlier in this chapter.

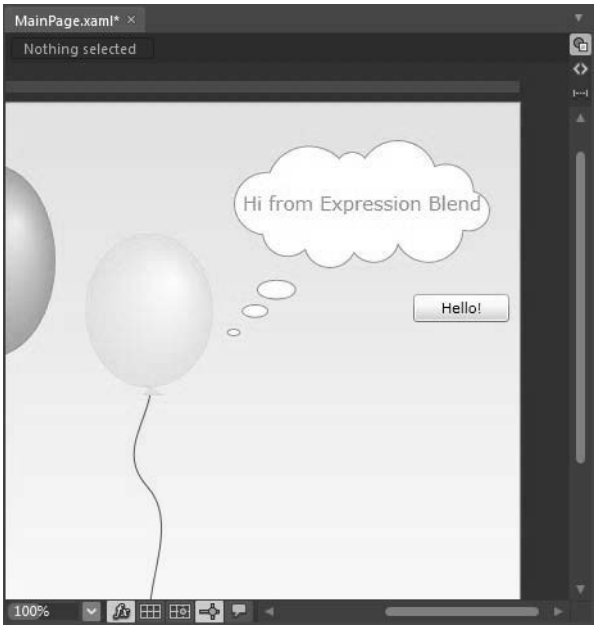
Adding controls to a project

Button icon

1. On the Tools panel, double-click the Button icon. A *Button* control appears in the upper-left corner of your document.

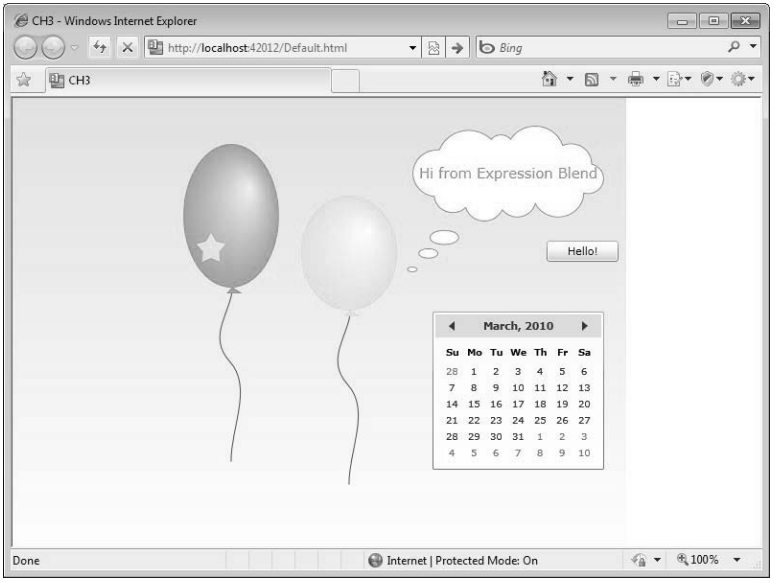


2. Choose the Selection tool from the Tools panel, double-click the *Button* control on the Artboard, and type **Hello!**. Click the Artboard somewhere outside the *Button* to exit text input mode, and then drag the *Button* below the *Callout* shape.



Tip You can double-click a control icon in the Tools or Assets panel to insert that control at its default size. Alternatively, you can click the control icon once to select that control, and then draw the control on the Artboard with your mouse at whatever size you want.

3. In the Assets panel, in the Control group, double-click Calendar to insert a *Calendar* control at its default size, and then move the new *Calendar* control to the lower-right corner of the document.
4. Press F5 to view these newly added controls in your browser. Take a few minutes to examine how your browser renders the controls, especially the *Calendar* control.



5. Close the browser window and return to Expression Blend.

Using Layout Panels

Layout elements serve as containers for the objects in your project. With layout elements you can control the size, positioning, and arrangement of their child elements. If you are familiar with laying out HTML pages, you can think of a layout element as similar to a div tag, table cell, or other container element. There are several types of layout panels available for use in your Silverlight projects:

Grid

- ***Grid*** This is the most common layout panel. It looks like a flexible next-level table. The *Grid* is composed of rows and columns that have numerous properties useful in layout, such as *MinWidth*, *MinHeight*, *MaxWidth*, and *MaxHeight*. It's also possible to set sizing options such as *Fixed*, *Star*, and *Auto* with the *Grid*. Objects that you place in a *Grid* layout panel will automatically resize when you resize your application. That's the main advantage of this element.

Canvas

- ***Canvas*** This layout panel has limited capabilities. The *Canvas* will never change the positioning of its child elements. Objects that you place in this panel will not automatically resize when you resize your application, but sometimes it's very useful, such as for background elements in a project.

StackPanel

- ***StackPanel*** You can use this layout element to stack its child objects either horizontally or vertically, depending on its *Orientation* property.

Scroll Viewer

- ***ScrollViewer*** This layout element can hold content bigger than it is! Users can scroll to view portions of the contents that extend beyond the edges of the control. The *ScrollViewer* allows only a single child element, so you need to use other layout elements to include multiple objects. Scroll bars appear when the content exceeds the bounds of this panel.

Border

- ***Border*** As its name implies, this element provides a way to create borders around another element. It can also be used to set a background for bordered areas. Like the *ScrollViewer*, the *Border* layout element can only have one child element.

Viewbox

- ***Viewbox*** With this layout element you can stretch and scale a single child element to fill the available space.

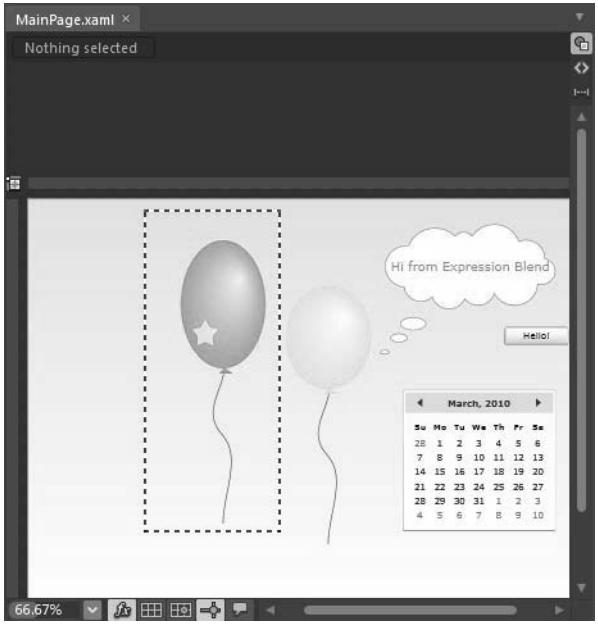
Arranging Objects

In the preceding exercise, you placed all of the objects in one container: the *LayoutRoot*. The *Button* and *Calendar* controls, the balloons, and the small details are all child elements of the LayoutRoot. But imagine that you need to move all of these small parts together and maintain their positions relative to each other. To accomplish this higher level of layout control, you will have to use grouping, which will enable you to easily select, move, and transform the group as if all of the objects in the group were one object.

Note Use the CH3 project you created and modified in the previous exercises.

Using layout elements to arrange objects

1. In the Tools panel, click the Selection tool icon. Drag on the Artboard to draw a marquee around the blue balloon and all of its elements. Expression Blend selects all the elements within the marquee.

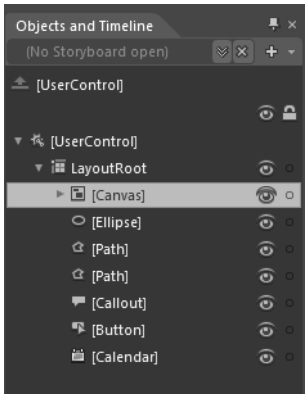


The Objects And Timeline panel also lists the selected elements.

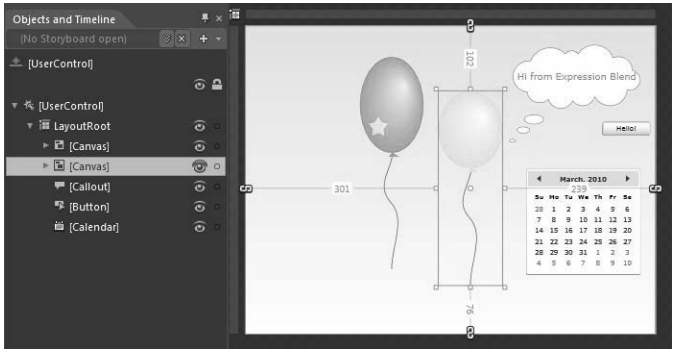
Tip You can also use the Objects And Timeline panel to select multiple objects. Just hold down the Ctrl key on your keyboard and click the label for each object you want to select.

2. On the Artboard, right-click the selected objects to see the shortcut menu.
3. Point to the Group Into menu, and then click Canvas. Expression Blend groups the blue balloon along with the other selected individual component parts into a *Canvas* layout element.

   Look in the Objects And Timeline panel. You'll see a new element named *Canvas* that contains the selected elements. The *Canvas* layout element will never change the positions of the child elements it contains.

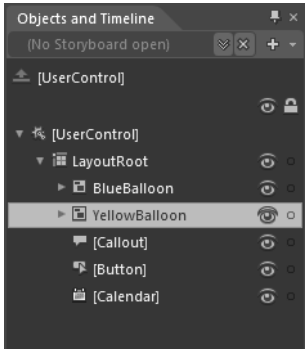


4. Group the yellow balloon and its component parts onto their own *Canvas* element by repeating the steps you just performed on the blue balloon.



   As a project becomes more complex, it also becomes difficult to identify objects in the Objects And Timeline panel. It's a good practice to give your project elements names that make them easier to identify.

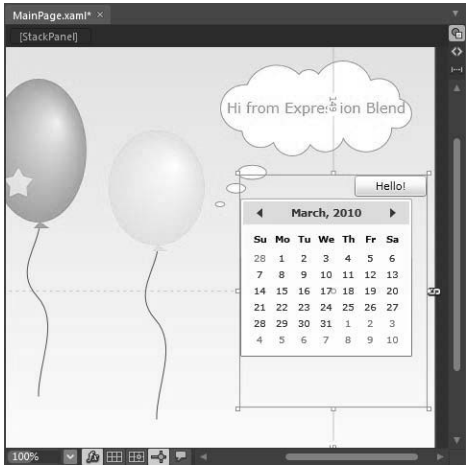
5. Double-click the first *Canvas* element in the Objects And Timeline panel, type **BlueBalloon**, and then press Enter on your keyboard. Double-click the second *Canvas* element in the Objects And Timeline panel, type **YellowBalloon**, and then press Enter.



Tip Don't use spaces in element names. Expression Blend will replace spaces with underscores.

6. On the Artboard, click the *Button* control, and then hold down the Ctrl key and click the *Calendar* to select both controls at the same time.

7. Right-click the selected objects to view the shortcut menu. Point to the Group Into menu, and then click StackPanel. Notice that the *StackPanel* object arranges your elements vertically by default.



When you first add it, the *StackPanel* looks like it takes up more space than necessary. This happened here because you placed the *StackPanel* around both of the controls, so it kept their positions relative to each other. You can contract the *StackPanel* so that it tightly contains its child elements.

8. On the Properties panel, in the Layout category, set the vertical alignment to center and enter **0** into the top and bottom *Margin* fields.

Tip Change the *Orientation* property in the Layout category to orient elements horizontally or vertically in a *StackPanel*. You can achieve the same effect by setting the margins for an element relative to its layout element. To do that, click the margin (link) icons that appear around the element on the Artboard when the element is selected and is in Grid layout mode.

9. In addition to the Group Into command on the shortcut menu, you'll also see an Ungroup command. To ungroup the grouped set of objects, click the *StackPanel* element in the Objects And Timeline panel, and then right-click it to view the shortcut menu.

10. Select Ungroup. Expression Blend deletes the *StackPanel* that contained the *Button* and the *Calendar* controls.

Tip If you prefer not to use a shortcut menu, you can access the Group Into and Ungroup options from the Object menu.

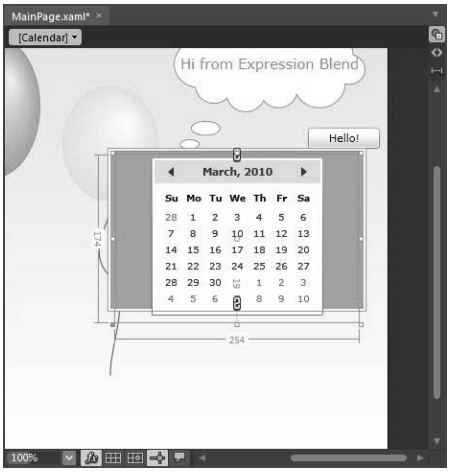
11. The next layout element is *Border*. Click the *Calendar* and, on the Object menu, point to Group Into, and then click Border. Visually, nothing happens.

12. In the Background category on the Properties panel, click the Solid color brush tab and enter **#FF00B6BA** in the color field. In the Layout category, enter **5** into all of the *Padding* property fields.

13. In the Appearance category on the Properties panel, enter **2** into all of the *BorderThickness* fields.

14. Click the Solid color brush tab for the *BorderBrush* property on the Properties panel, and set the color to white. Now you have a double-border effect.

15. A *Calendar* is a non-scalable control by default. Select the *Calendar* in the Objects And Timeline panel and try to scale it by using the on-object handles that appear on the Artboard when you point to one of the corners of its blue bounding box. Only the width and height properties change.



16. Press Ctrl+Z (Undo) on your keyboard as many times as necessary to undo your attempt to scale the *Calendar*.

Expression Blend provides a *Viewbox* layout element that enables you to scale one or more objects simultaneously.

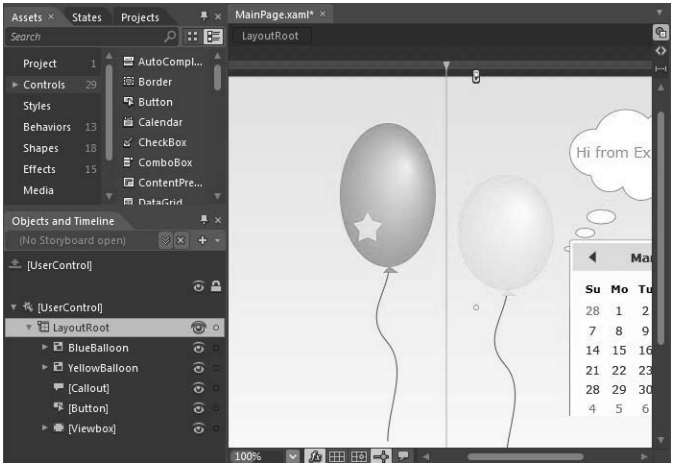
17. Click the *Border* element in the Objects And Timeline panel to select it, and then right-click it to view the shortcut menu. Point to the Change Layout Type menu, and then click Viewbox. The background and borders disappear, because the *Viewbox* element doesn't have *Background* or *Border* properties.

18. Press Shift on your keyboard and scale the *Viewbox* a little by using the on-object handles that appear on the Artboard.

19. Click LayoutRoot in the Objects And Timeline panel.

The *Grid* layout element lets you create a resizable application that can adjust to various client screen sizes and resolutions. It automatically resizes (or auto-sizes) according to the available window size. A *Grid* layout panel organizes its contents in rows and columns. There are several ways you can add or modify the rows and columns. The easiest method is by drawing visual boundaries between the rows and columns on the Artboard.

20. Expression Blend places rulers on the top and left of the *Grid* layout panel; the rulers look like blue lines. If you point to the top ruler, you'll see the pointer change to an arrow with a plus sign, and Expression Blend draws an orange line that shows where it will add a new column separator. Click the top ruler to add a column to the *Grid* layout panel so that the blue and yellow balloons are separated by the orange line.



Tip The *Grid* layout element has only one column and one row by default.

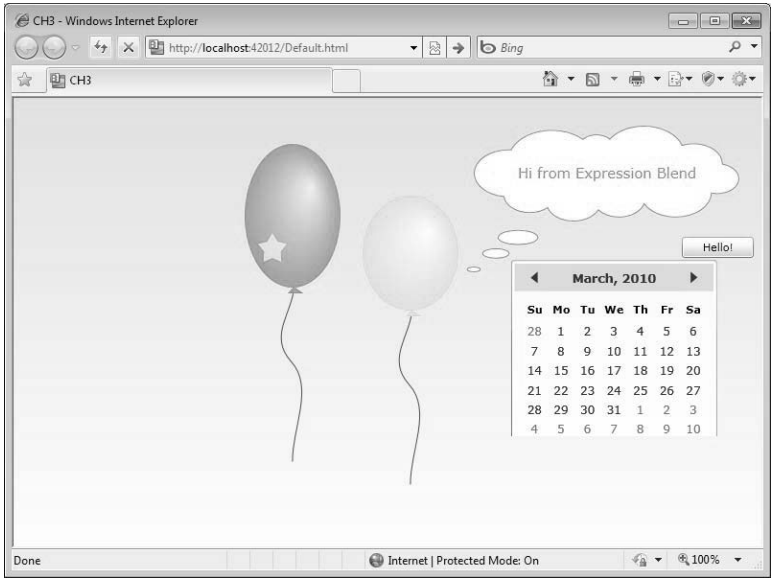
When you created this application at the beginning of the chapter, the main page had fixed sizes. You will now change this behavior.

21. Click the *UserControl* element in the Objects And Timeline panel, and then click the Show Advanced Properties icon at the bottom of the Layout category on the Properties panel.

Set To Auto

22. Enter **640** in the *MinWidth* field, and **480** in the *MinHeight* field. In the Layout category, click the Set To Auto icon next to both *Width* and *Height*.

23. Press F5 to run your application and display it in your default browser. Resize the browser several times to see the strange effect: elements move depending on the browser size, and the *Callout* shape might change in width.

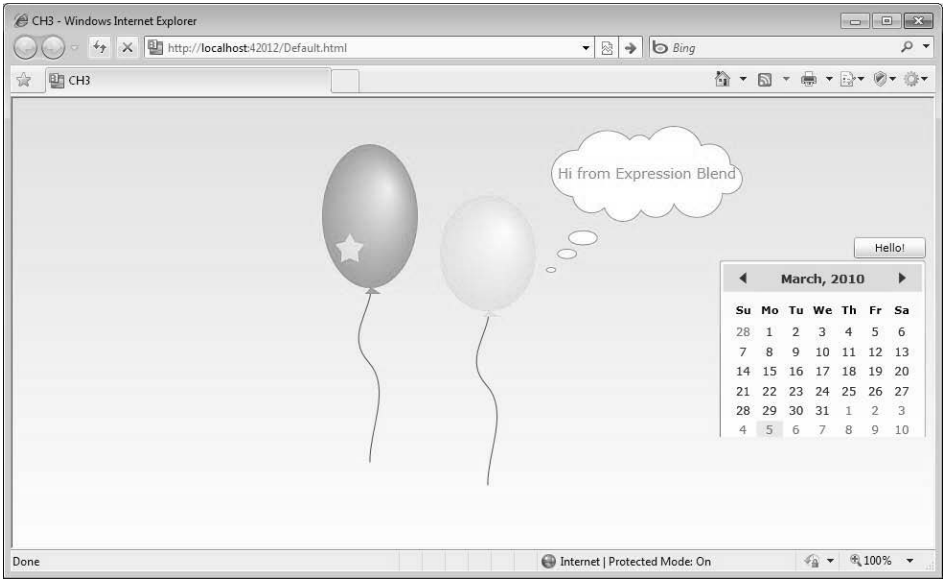


Tip If your application is resizable at runtime, you can prevent your elements from disappearing by setting the minimum width and minimum height properties.

In the next steps, you will modify the grid so that the browser will place objects correctly when you resize the browser. The blue balloon will remain close to the yellow balloon and stay on the right side of the first column. The yellow balloon and the cloud will stay on the left side of the second column, and the *Button* and *Calendar* controls will stay on the right side of the second column.

Link

24. On the Artboard, click the *Callout* object, and then click the right margin (link) icon that appears to the right of this object on the Artboard.
25. Click the *Viewbox* object in the Objects And Timeline panel, and then click the left and bottom margin (link) icons that appear to the left and at the bottom of this object on the Artboard.
26. Click the *BlueBalloon* object in the Objects And Timeline panel. Make sure that the value of the left margin is set to 0 in the Properties panel; if it is not, click the left margin icon on the Artboard to unbind the *BlueBalloon* object from the left.
27. Press F5 to run the application and view it in your default browser. Try resizing the window of your browser now. You can see the power that the *Grid* layout element gives you to control what happens when the screen size changes.



Tip You can delete a grid divider by double clicking that divider on the ruler at the top or left of the Artboard.

Congratulations! You have just finished the introduction to layout elements. You will work with layout elements often in the following chapters.

Using Images and Video

In addition to drawing visual elements and adding controls and layout elements to your project, you can also insert images, video, and other media elements. These capabilities of Expression Blend help you create meaningful projects that can take advantage of existing media assets and help you convey a message to the viewer.

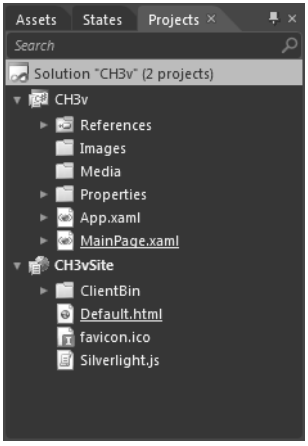
Using Images

In this exercise, you will add a basic image to a Silverlight project. Because many businesses and sites already have an inventory of creative assets such as images, the skills you will develop in this exercise are important in repurposing existing creative assets.

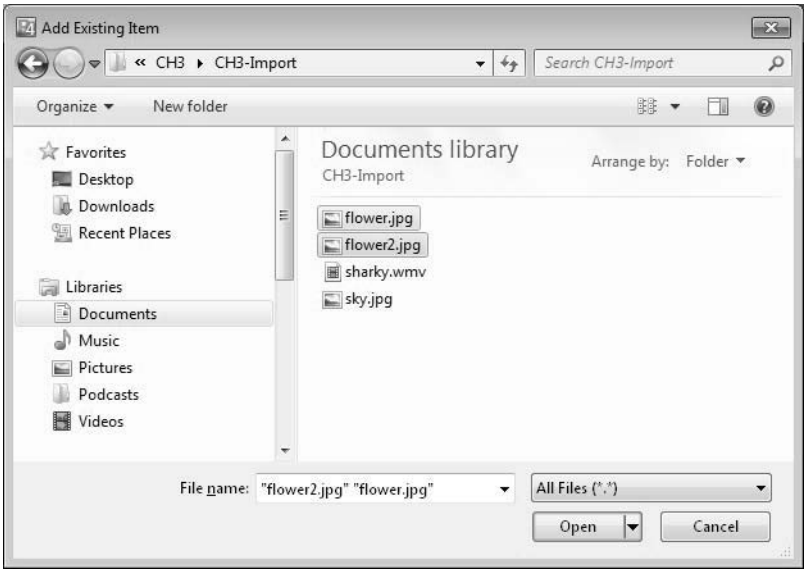
Note Use the CH3v sample project from the CH3 folder located in the \Sample Projects folder.

Adding and modifying images in a project

1. Click Open Project/Solution on the File menu. The Open Project dialog box opens. Click Browse and browse into the CH3v folder, then double-click the CH3v.sln file. (Solution files always have an .sln extension.) Click the Projects panel for your solution.



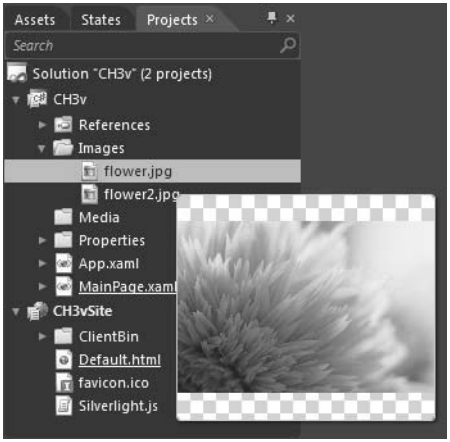
2. In the folder list for the CH3v project, click the Images folder.
3. On the Project menu, click Add Existing Item. The Add Existing Item dialog box opens. Click Browse, and then browse to the CH3\CH3-Import folder in this book's companion files.



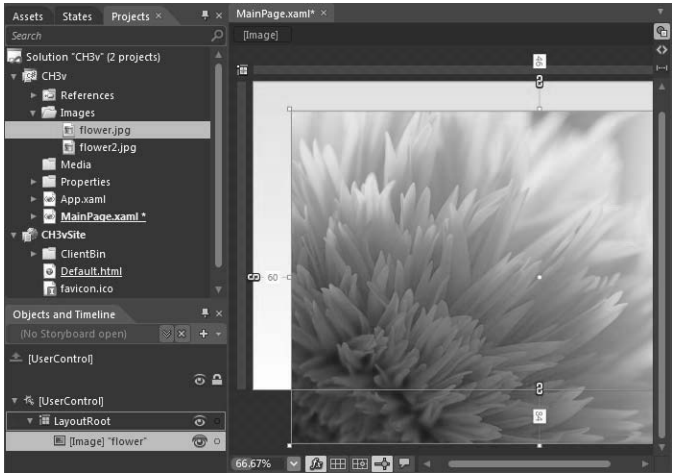
4. In the CH3-Import folder, select the flower.jpg file, press and hold the Ctrl key on your keyboard, and then click the flower2.jpg file to select both files. When both files are selected, click Open.

   The two images will now appear in the Images folder of the CH3v project.

Tip It's a good practice to segregate your project's files into folders with names that reflect their contents, such as Images, Video, Audio, and so on. This practice will help keep your projects manageable over the long term.



5. Click the MainPage.xaml file in the CH3v project folder. Drag the flower.jpg image from the Images folder of the Projects panel onto the Artboard.



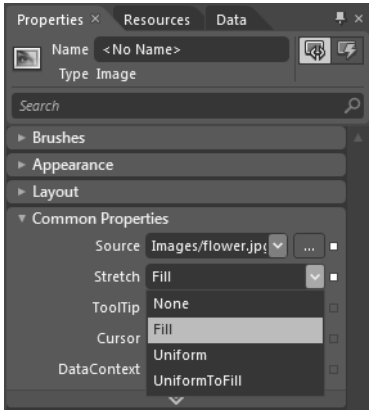
Advanced Options

6. In the Layout category of the Properties panel, click the Advanced Options icon beside each of the *Margin* fields, and then click Reset. Expression Blend sets all the margins to zero, and your image fills its allocated space.

Tip You can make many changes to your objects right on the Artboard. Click an object on the Artboard to select it, and then use the on-object handles that appear when you point to the corners of its blue bounding box. These handles let you rotate, resize, flip, and move your image.

Be sure to set the *Width* and *Height* fields to Auto in the Layout category. If you don't set a width or height value for an Image, it will be displayed at the image's original dimensions.

7. In the Common Properties category of the Properties panel, click the *Stretch* property.



Expression Blend provides four different stretching options:

- **None** This option doesn't stretch the image at all.
- **Fill** The image is scaled to fit the output dimensions. Because the content's height and width are scaled independently, the original aspect ratio of the image might not be preserved, and the image might be distorted when it completely fills the output area.
- **Uniform** This is the default option. The image is scaled to fit the output dimensions, and its aspect ratio is maintained.
- **UniformToFill** The image is scaled so that it completely fills the output area but preserves its original aspect ratio.

8. Set the *Stretch* setting to None, and see how image appearance changes on the Artboard. Try setting the *Stretch* property to Uniform and UniformToFill, and then set it back to the Fill value.
9. In the Common Properties category of the Properties panel, click the drop-down list next to the *Source* property field, and then click the flower2.jpg file. Notice that the image on the Artboard changes.

Tip You can easily change the source of an image by selecting it from the drop-down list next to the *Source* property field in the Common Properties category of the Properties panel. That list displays all the images available in a project.

This introduction to using images in Expression Blend would be incomplete if it didn't teach you how to apply some simple effects to pictures in your projects. There is only one property available in the Brushes category of the Properties panel: *OpacityMask*. *OpacityMask* is a brush type for which color is ignored; instead, the brush transfers opacity to the masked object.

10. Click the image on the Artboard to make sure it is selected, and then click Gradient Brush for the selected *OpacityMask* property, under Brushes.

11. Enter **0%** in the *Alpha* field for the left gradient stop. Notice how the image on the Artboard changes.

Wherever the opacity mask is opaque, the masked object will be opaque, and wherever the opacity mask is transparent, the masked object will be transparent. That's why you can see the background through the top part of the image but not through the bottom part. Expression Blend makes many such image effects available, including drop shadow, blur, and more. You will see more about all of these effects in subsequent chapters.

Using Video

Using media elements in your project can help you deliver information to your visitors in an easy-to-consume way and goes far beyond the visual impact afforded by static elements such as text and images. Over the past few years, video use on the web has exploded. Expression Blend provides tools that help designers provide high-end media experiences.

Media File Formats

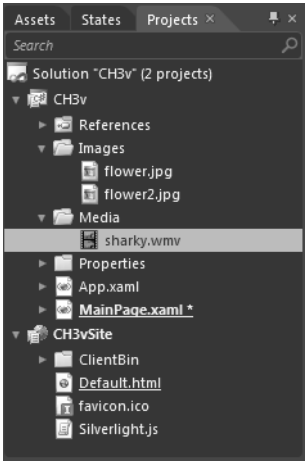
Expression Blend supports most common video file types, including .asf, .avi, .dvr-ms, .ifo, .m1v, .mpeg, .mpg, .vob, .wm, and .wmv. Expression Blend also supports audio file types such as .aif, .aifc, .aiff, .asf, .au, .mid, .midi, .mp2, .mp3, .mpa, .mpe, .rmi, .snd, .wav, .wma, and .wmd. In fact, Expression Blend supports the full list of video and audio file formats that Windows Media Player 10 supports.

The process for adding media elements to a project is very similar to the one you've already seen for adding images. In this exercise, you will add a basic video to the project you worked with in the previous exercise.

Note Use the CH3v sample project from the CH3 folder located in the \Sample Projects folder.

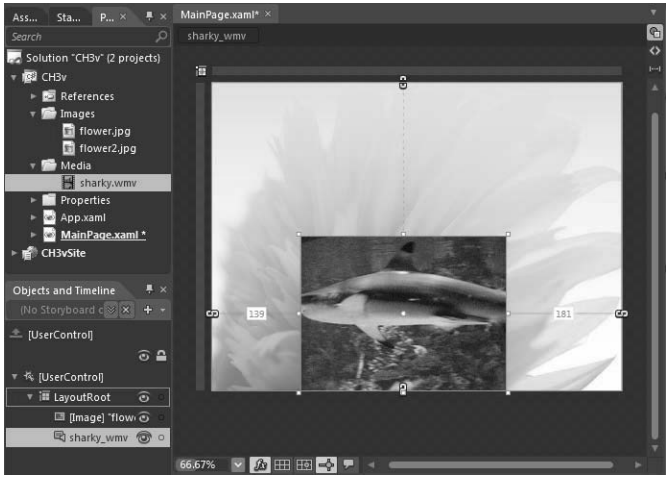
Adding video to a project

1. Click the Projects panel for your solution. In the CH3v project folder list , click the Media folder to select it.
2. Click Add Existing Item on the Project menu. In the Add Existing Item dialog box, click Browse, and browse to the ...\CH3\CH3-Import folder.
3. In the CH3-Import folder, click the sharky.wmv file, and then click Open. A video file appears in the Media folder of your CH3v project.

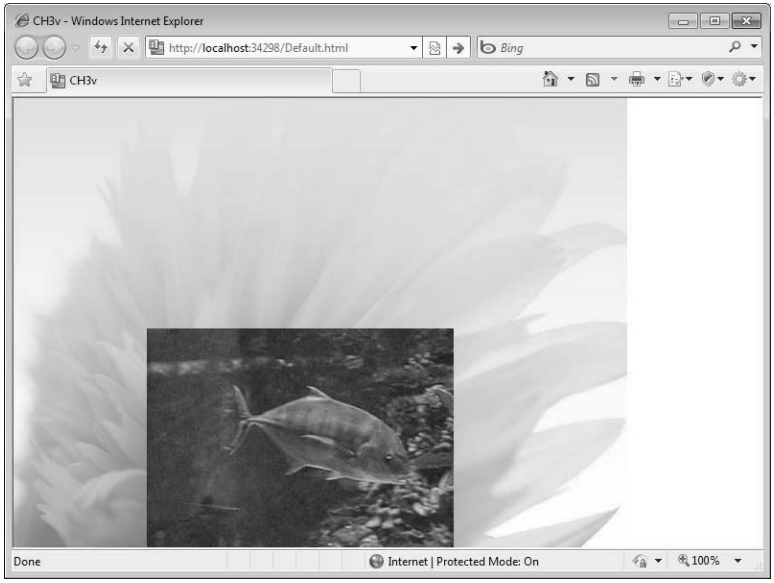


Tip Organize your videos by placing them in special folders such as Video, Media, and so on. Practicing folder segregation now will save you from difficulties later on.

4. Drag the sharky.wmv video from the Media folder of the Projects panel onto the Artboard, and snap it to the bottom boundary.



5. Press F5 on your keyboard. Expression Blend builds the project and displays it in your default browser. You'll see the video playing in your running project.



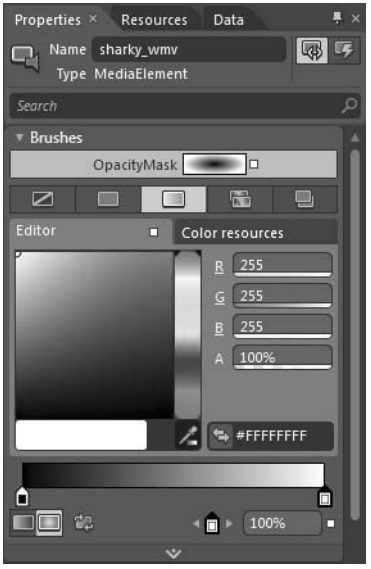
Tip To apply stretching features to video (like the ones you used for images in the preceding section), click the Show Advanced Properties button in the Media category of the Properties panel.

By default, when Expression Blend inserts a new video, the *AutoPlay* function is enabled and the volume is set to half volume.

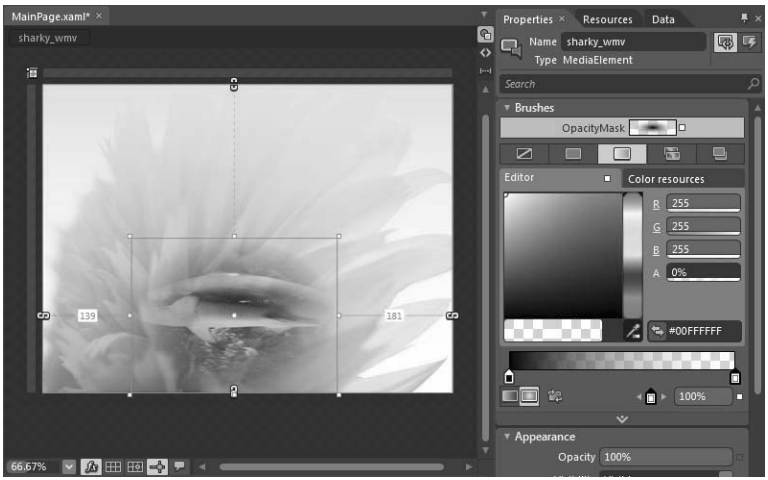
6. To make sure that the video doesn't play automatically, in the Media category of the Properties panel, clear the check box beside the *AutoPlay* field, and then press F5 on your keyboard to view the project in your browser.

Troubleshooting This video example doesn't include an audio track. You can test changing the volume property by using your own video files.

7. Close the open browser and return to Expression Blend.
8. In the Media properties category of the Properties pane, click the check box beside the *AutoPlay* field to re-enable the automatic behavior.
9. Click the video on the Artboard to make sure it is selected, and then click Gradient Brush for the selected *OpacityMask* property under Brushes.



10. Below the Color Editor and the Color Bar, click the Radial Gradient button to switch the fill style from linear gradient to radial gradient.
11. Enter **0%** in the *Alpha* field for the right gradient stop. Observe how the image on the Artboard changes.



12. Press F5 to build the project and view it in your default browser.

Using visual effects on video files is a fast, easy way to make the video seem more integral to the project. You will learn more about controlling and working with video later in Chapter 4, "XAML and C#," Chapter 5, "Animations and Transformations," Chapter 6, "Adding Interactivity," and Chapter 9, "Skinning Controls."

Key Points

- With Expression Blend, you can work with a variety visual elements.
- You can create basic shapes, draw your own paths, or use built-in shapes.
- There are hundreds of free, open-source and commercial controls you can use in Silverlight projects.
- Layout elements work as containers and control the positioning, size, dimensions, and arrangement of their child elements.
- You can use Grid, Canvas, StackPanel, ScrollViewer, Border, and Viewbox layout panels for arranging objects.
- Images and media elements can make a project more compelling.
- Expression Blend provides tools to add visual effects to objects in a project.

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