HOUR 14
User Interfaces

What You'll Learn in This Hour:

- The elements of a user interface (UI)
- An overview of the UI elements
- The different UI render modes
- How to build a simple menu system

A *user interface* (UI) is a special set of components responsible for sending information to, and reading information from, the user. In this hour, you'll learn all about using Unity's built-in UI system. You'll start by examining the UI basics. From there, you'll get to try out the various UI elements, such as text, images, buttons, and more. You'll finish this lesson by creating a simple but complete menu system for your games.

Basic UI Principles

A user interface (commonly referred to as a UI) is a special layer that exists to give information to the user and to accept simple inputs from the user. This information and input could take the form of an HUD (heads up display) drawn over the top of your game or some object actually located within your 3D worlds.

In Unity, the UI is based on a *canvas* onto which all the UI elements are painted. This canvas needs to be the parent of all UI objects in order for them to work, and it is the main object driving your entire UI.

TIP

UI Design

As a general rule, you should sketch your UI ahead of time. A fair bit of thought needs to go into what to display on the screen, where it will be displayed, and how. Too much information will cause the screen to feel cluttered. Too little information will leave the players confused or unsure. Always look for ways to condense information and make information more meaningful. Your players will thank you.

TIP

New UI

Unity got a new UI in version 4.6. In older versions, you had to use many lines of confusing code to create UIs, but now it's much easier. The old UI system is still there. If you are familiar with that legacy system, you may be tempted to use it. Please don’t. The legacy system is only still there for debugging, backward compatibility with old projects, and editor extensions. It is not nearly as efficient or powerful as the new system!

The Canvas

A canvas is the basic building block for a UI, and all the UI elements are contained within the canvas. All the UI elements you add to a scene will be child objects of the canvas in the Hierarchy view and must stay as children; otherwise, they’ll disappear from the scene.

Adding a canvas to a scene is very easy. You can add one simply by selecting **GameObject > UI > Canvas**. Once the canvas is added to a scene, you are ready to begin building the rest of the UI.

▼ TRY IT YOURSELF

Adding a Canvas

Follow these steps to add a canvas to a scene and explore its unique features:

1. Create a new project (either 2D or 3D).

2. Add a UI canvas to the scene (by selecting **GameObject > UI > Canvas**).
3. Zoom out so you can see the whole canvas (by double-clicking it in Hierarchy view). Notice how big it is!
4. Note in the Inspector the odd transform component the canvas has. This is a *Rect transform*, and we will discuss it shortly.

NOTE

EventSystem

You may have noticed that when you added a canvas to your scene, you also got an EventSystem game object. This object is always added when you add a canvas. The event system is what allows users to interact with the UI by pressing buttons or dragging elements. Without the event system, a UI would never know if it was being used—so don't delete it!

CAUTION

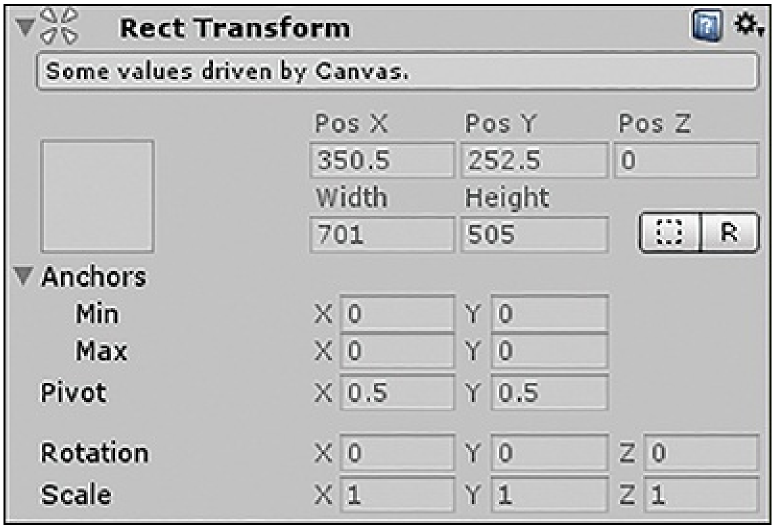
Performance Woes

Canvases are very efficient because they turn the UI elements nested on them into a single static object behind the scenes. This allows them to be processed very quickly. The downside is that when one part of a UI changes, the whole thing needs to be rebuilt. This can be a very slow and inefficient process and can cause a noticeable stutter in a game. Therefore, it is a good idea to use canvas components to separate objects that move a lot onto their own canvas. That way, their movement will force a smaller set of your UI to rebuild and ultimately be much faster.

The Rect Transform

You will notice that a canvas (and every other UI element) has a *Rect transform* rather than the normal 3D transform you are familiar with. Rect, short for *rectangle*, transforms give you fantastic control over the positioning and rescaling of UI elements while remaining very flexible. This allows you to create a user interface and ensure that it works well on a wide range of devices.

For the canvas you created earlier in this hour, the Rect transform is entirely grayed out (see Figure 14.1). This is because, in its current form, the canvas derives its values entirely from the Game view (and, by extension, the resolution and aspect ratio of any devices your game runs on). This mean the canvas will always take up the entire screen. A good workflow is to make sure the first thing you do whenever building a UI is to select a target aspect ratio to work with. You can do this from the Aspect Ratio drop-down in the Game view (see Figure 14.2).



Rect Transform

Some values driven by Canvas.

	Pos X	Pos Y	Pos Z
	350.5	252.5	0
	Width	Height	
	701	505	

Anchors			
Min	X 0	Y 0	
Max	X 0	Y 0	
Pivot	X 0.5	Y 0.5	
Rotation	X 0	Y 0	Z 0
Scale	X 1	Y 1	Z 1

FIGURE 14.1

The Rect transform of a canvas.

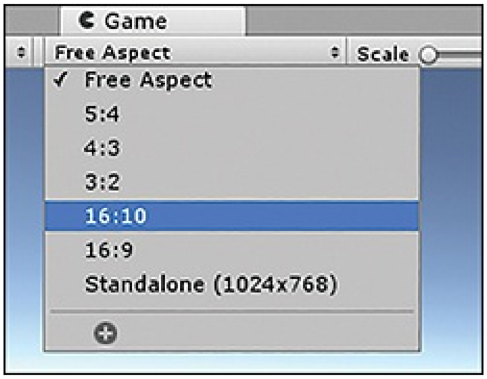


FIGURE 14.2

Setting the game’s aspect ratio.

Rect transforms work a little differently from traditional transforms. With normal 2D and 3D objects, the transform is concerned with determining how far (and with what alignment) an object is from the world origin. The UI, however, is unconcerned with world origin and instead needs to know how it’s aligned in relation to its *anchor point*. (You will learn more about Rect transforms and anchors later, when you have a UI element that can actually use it.)

Anchors

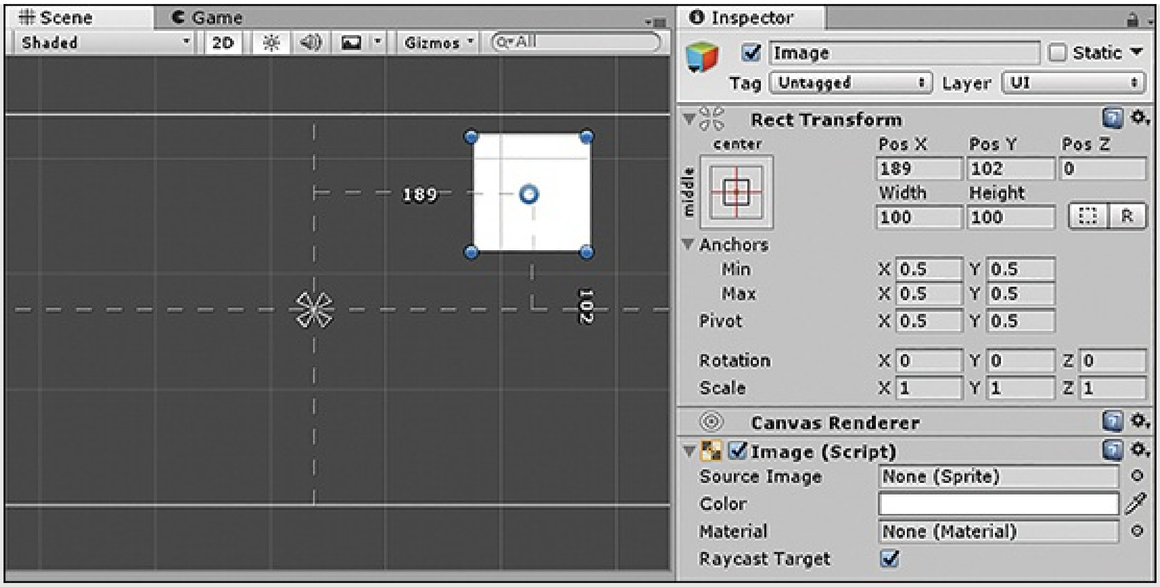
A key concept in making UI elements work is anchors. Every UI element comes with an anchor and uses that anchor to find its place in the world in relation to the Rect transform of its parent. Anchors determine how elements are resized and repositioned when the Game window changes size and shape. In addition, an anchor has two “modes”: together and split. When an anchor is together as a single point, the object knows where it is by determining the distance (in pixels) of its pivot from the anchor. When an anchor is split, however, the UI element bases its bounding box on how far (again in pixels) each of its corners is from each corner of the split anchor. Confusing? Let’s try it out!

▼ TRY IT YOURSELF

Using a Rect Transform

Rect transforms and anchors can be confusing, so follow these steps to better understand them:

1. Create a new scene or project.
2. Add a UI image (by selecting **GameObject > UI > Image**). Note that if you add an image to a scene without a canvas, Unity automatically puts a canvas in your scene and then puts the image on it.
3. Zoom out so you can see the whole image and canvas. Note that it is much easier working with the UI when your scene is in 2D mode (which you enter by clicking the **2D** button at the top of Scene view) and you are using the Rect tool (hotkey: **T**).
4. Try dragging the image around the canvas. Also try dragging the anchor around the canvas. Notice that the lines show you how far the image’s pivot is from the anchor. Also notice the properties of the Rect transform in the Inspector and how they change (see Figure 14.3).



☑ Image □ Static
Tag Untagged Layer UI

Rect Transform
center
middle
Pos X 189
Pos Y 102
Pos Z 0
Width 100
Height 100
R

Anchors
Min X 0.5 Y 0.5
Max X 0.5 Y 0.5
Pivot X 0.5 Y 0.5

Rotation X 0 Y 0 Z 0
Scale X 1 Y 1 Z 1

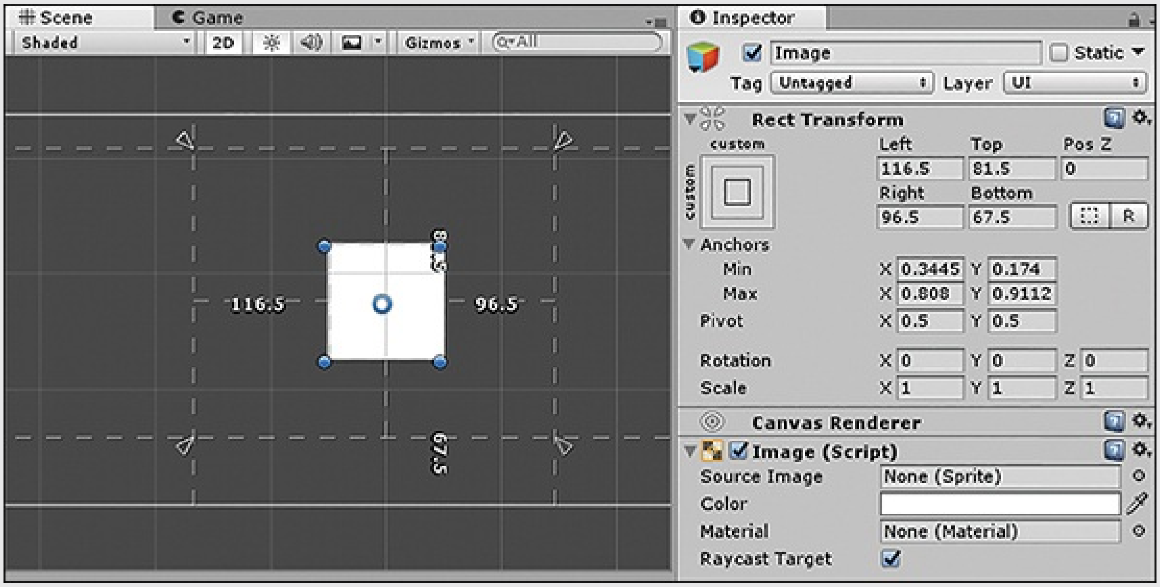
Canvas Renderer

☑ Image (Script)
Source Image None (Sprite)
Color
Material None (Material)
Raycast Target ☑

FIGURE 14.3

The anchor at a single point.

5. Now try splitting your anchor. You can do this by dragging any of the corners of the anchor away from the rest. With the anchor split, move your image around again. Notice how the properties of the Rect transform change (see Figure 14.4). (*Hint:* Where did Pos X, Pos Y, Width, and Height go?)



☑ Image □ Static
Tag Untagged Layer UI

Rect Transform
custom
custom
Left 116.5
Top 81.5
Pos Z 0
Right 96.5
Bottom 67.5
R

Anchors
Min X 0.3445 Y 0.174
Max X 0.808 Y 0.9112
Pivot X 0.5 Y 0.5

Rotation X 0 Y 0 Z 0
Scale X 1 Y 1 Z 1

Canvas Renderer

☑ Image (Script)
Source Image None (Sprite)
Color
Material None (Material)
Raycast Target ☑

FIGURE 14.4

The anchor after being split.

So what exactly does splitting an anchor (or keeping it together) do? In simple terms, an anchor that is a single point fixes your UI element in place relative to that spot. So if the canvas changes size, the element doesn't. Splitting the anchor causes the element to fix its corners relative to the corners of the anchor. If the canvas resizes, so does the element. You can easily preview this behavior in the Unity editor. Using the preceding example, if you select the image and then click and drag the border of the canvas (or any other parent, if you have more elements), the word *Preview* appears, and you can see what will happen when using different resolutions (see Figure 14.5). Try it out with both a single anchor and a split anchor and notice how differently they behave.

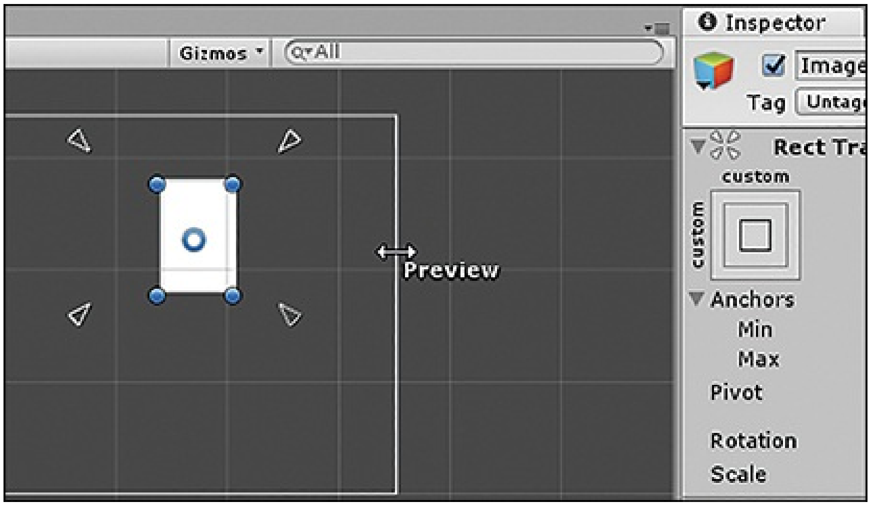


FIGURE 14.5
Previewing a canvas change.

TIP

Getting Anchors Right

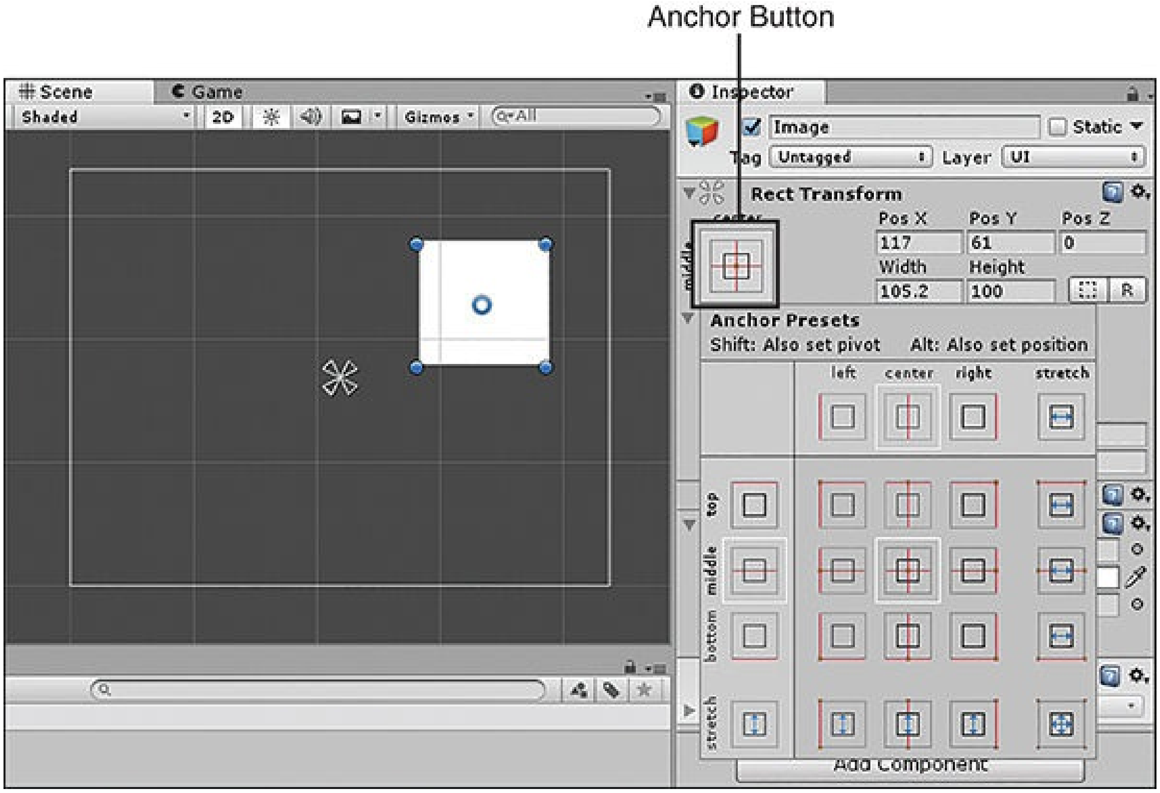
Anchors may seem a little odd at first, but understanding them is the key to understanding the UI. Get the anchors, and everything else just falls into place. When working with UI elements, it is great to get into the habit of always placing the anchor and then placing the object because objects snap to their anchors but not vice versa.

When you get into that habit (place anchor, place object, place anchor, place object, and so on), everything becomes a lot easier. Invest some time in playing with anchors until you understand them.

TIP

The Anchor Button

You don’t always have to manually drag anchors around your scene in order to place them. You can also type their values into the Anchors property in the Inspector (a value of 1 is 100%, .5 is 50%, and so on). If even that is too much work for you, you can use the convenient anchor button that enables you to place the anchor (and additionally the pivot and position) in one of 24 preset locations (see Figure 14.6). Sometimes it pays to be lazy!



Anchor Button

Image

Tag Untagged

Layer UI

Pos X	Pos Y	Pos Z
117	61	0
Width	Height	
105.2	100	

FIGURE 14.6
The anchor button.

Additional Canvas Components

So far, we’ve talked about the canvas a bit but still haven’t even mentioned the actual Canvas component. Truth be told, there isn’t much with the component itself that you need to concern yourself with. You do need to know about render modes, and we look at them in detail later in this hour.

Depending on what version of Unity you are using, you may have a couple extra components. Again, these are very simple to use, so they aren't covered in detail here (there's just too much other good stuff to get to). The Canvas Scaler component allows you to specify how, if at all, you would like your UI elements resized as the screen of your target device changes (for instance, seeing the same UI on a web page versus a high-DPI Retina iPad device). The Graphical Raycaster component, which works with the EventSystem object, allows your UI to receive button clicks and screen touches. It allows you to use raycasting without needing to drag in the entire physics engine to do it.

UI Elements

At this point, you're probably pretty tired of the canvas, so let's get working with some UI elements (also called *UI controls*). Unity has several built-in controls available for you to get started with. Don't worry if you don't see a control that you want, though. Unity's UI library is open source, and plenty of custom controls are being created by members of the community all the time. As a matter of fact, if you're up for the challenge, you can even create your own controls and share them with everyone else.

Unity has many controls that you can add to scenes. Most of them are simple combinations and variations of two basic elements: images and text. This makes sense if you think about it: A panel is just a full-sized image, a button is just an image with some text, and a slider is really three images stacked together. As a matter of fact, the whole UI is built to be a system of basic building blocks that are stackable to get the functionality you want.

Images

Images are the fundamental building pieces of a UI. They can range from background images, to buttons, to logos, to health bars, to everything in between. If you completed the Try It Yourself exercises earlier in this hour, then you already have some familiarity with images, but now you'll take a closer look. As you saw earlier, you can add an image to a canvas by selecting **GameObject > UI > Image**. Table 14.1 lists the properties of an image, which is just a game object with an **Image** component.

TABLE 14.1 Properties of the Image Component

Property	Description

Source Image	Specifies the image to be displayed. This must be a sprite. (For more on sprites, refer to Hour 12, “2D Game Tools.”)
Color	Indicates any color tinting and opacity changes to be applied to the image.
Material	Specifies a material (if any) to be applied to the image.
Raycast Target	Determines whether the image is clickable.
Image Type	Specifies the type of sprite to be used for the image. This property affects how the image scales and tiles.
Preserve Aspect	Determines whether the image will maintain its original aspect ratio, regardless of scaling.
Set Native Size	Sets the size of the image object to the size of the image file being used.

Besides the basic properties, there isn’t much more you need to know about using an image. Work through the following Try It Yourself to see how easy it is to use images.

▼ TRY IT YOURSELF

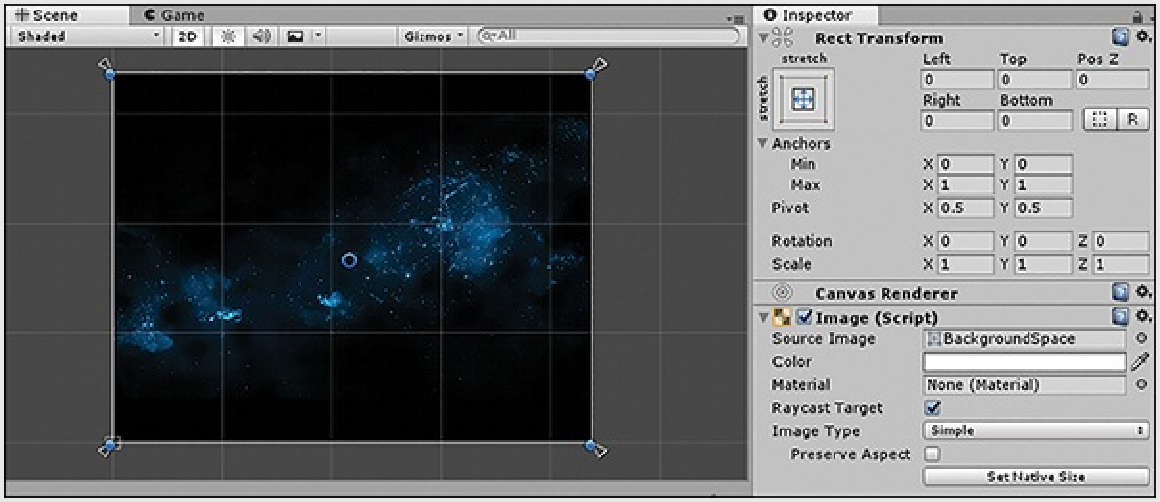
Using an Image

Let’s try creating a background image. This exercise uses the BackgroundSpace.png file from the book assets for Hour 14. Follow these steps:

1. Create a new scene or project.
2. Import BackgroundSpace.png into your project, ensuring that it is imported as a sprite. (Refer to Hour 12 if you don’t remember how to do this.)
3. Add an image to your scene (by selecting **GameObject > UI > Image**).
4. Set the BackgroundSpace sprite as the Source Image property of the Image object.

5. Resize the image to fill the entire canvas. Switch over to the Game view and see what happens if you change the aspect ratio. Notice that the image may get cut off or fail to fill the screen.

6. Split the anchor of the image so that the four corners of the anchor reach the four corners of the canvas (see Figure 14.7). Now switch back to the Game view and see what happens when you change the aspect ratio. Notice that the image always fills the screen and is never cut off—although it may skew.



Rect Transform

stretch

	Left	Top	Pos Z
	0	0	0
	Right	Bottom	
	0	0	
Anchors			
Min	X 0	Y 0	
Max	X 1	Y 1	
Pivot	X 0.5	Y 0.5	
Rotation	X 0	Y 0	Z 0
Scale	X 1	Y 1	Z 1

Canvas Renderer

☑ Image (Script)

Source Image	BackgroundSpace
Color	
Material	None (Material)
Raycast Target	☑
Image Type	Simple
Preserve Aspect	□

FIGURE 14.7

Expanding the image and anchors.

NOTE

UI Materials

As you can see In Figure 14.7, there is a Material property for the image component in the Try It Yourself "Using an Image." It's worth noting that the Material property is completely optional and not required for this UI. Furthermore, in the current canvas render mode (explained in more detail later in this hour), the Material property doesn't do a whole lot. In other modes, however, the Material property can allow you to apply lights and shader effects to UI elements.

Text

Text objects (which are really just text components) are elements you use to display text to the user. If you’ve ever used text formatting controls before (think blogging software, word processors like Word or WordPad, or anywhere else you would use and style text), the Text component will be very familiar. You can add a Text component to a canvas by selecting **GameObject > UI > Text**. Table 14.2 lists the properties of the Text component. Because most text properties are self-explanatory, only the new or unique properties are listed.

TABLE 14.2 Properties of the Text Component

Property	Description
Text	Specifies the text to display.
Rich Text	Indicates whether to support rich text tags within text.
Horizontal Overflow and Vertical Overflow	Specify how to handle a situation in which the text does not fit within the bounding box of the UI element that contains it. The value **Wrap** means text will wrap down to the next line. **Truncate** means that the text that doesn’t fit will be removed. **Overflow** means that the text can spill out of the box. If text does not fit within the box and **Overflow** is not set, the text may disappear.
Best Fit	As an alternative to Overflow (which will not work if Overflow is used), resizes text to fit within the bounding box of the object. With Best Fit, you can choose a minimum and maximum size. The font then expands or shrinks between those two values to always fit within the text box.

It is worth taking a moment to try out the different settings, especially for Overflow and Best Fit. If you don’t understand how to use these properties, you may be surprised to find your text mysteriously disappearing (because it has been truncated), and it may take time to figure out why.

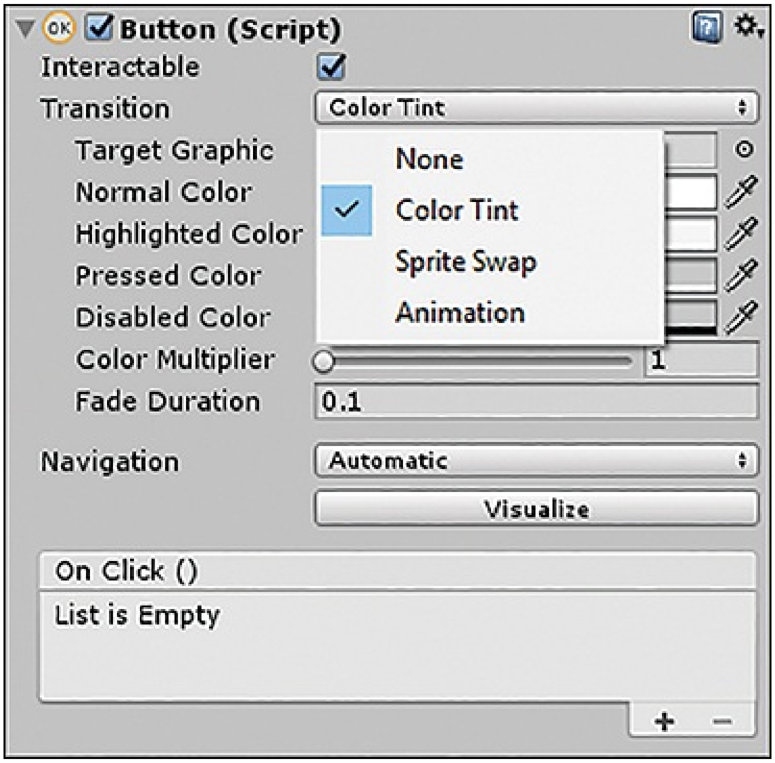
Buttons

Buttons are elements that allow click input from the user. They may seem complex at first look, but remember that, as mentioned earlier, a button is really just an image with a text object child and a little more functionality. You can add buttons to your scene by selecting **GameObject > UI > Button**.

Where a button is different from either of the other controls you’ve seen so far is that it is interactable. Because of that, it has some interesting properties and features. For instance, buttons can have transitions, they can be navigated, and they can have OnClick event handlers. Table 14.3 lists the Button component properties.

TABLE 14.3 Properties of the Button Component

Property	Description
Interactable	Indicates whether the user can click the button.
Transition	Specifies how the button should respond to user interaction (see Figure 14.8). The available events to respond to are Normal (nothing happening), Highlighted (mouse over), Pressed, and Disabled. By default, the button simply changes color (Color Tint). You could also remove any transitions (None) or cause the button to change images (Sprite Swap). Finally, you can choose Animation to use full animations, which can make your buttons look very impressive.
Navigation	Specifies how users will navigate between buttons if they are using devices like controllers or joysticks (that is, no mouse or touch screen). Clicking Visualize allows you to see how buttons will be navigated; this works only if you have more than one button on the canvas.
On Click ()	Specifies what happens when you click the button (as discussed in more detail later in this hour).



☑ Button (Script)

Interactable ☑

Transition Color Tint

Target Graphic

Normal Color

Highlighted Color

Pressed Color

Disabled Color

Color Multiplier 1

Fade Duration 0.1

Navigation Automatic

On Click ()

List is Empty

FIGURE 14.8
The transition type selector.

On Click ()

When users are done marveling at your various button transition effects, they may eventually click some buttons. You can use the On Click () property at the bottom of the Inspector to call a function from a script and to access many other components. You can pass parameters to any method you call, which means the designer can control the behavior without entering code. An advanced use of this functionality might be to call methods on a game object or make a camera look at a target directly.

▼ TRY IT YOURSELF

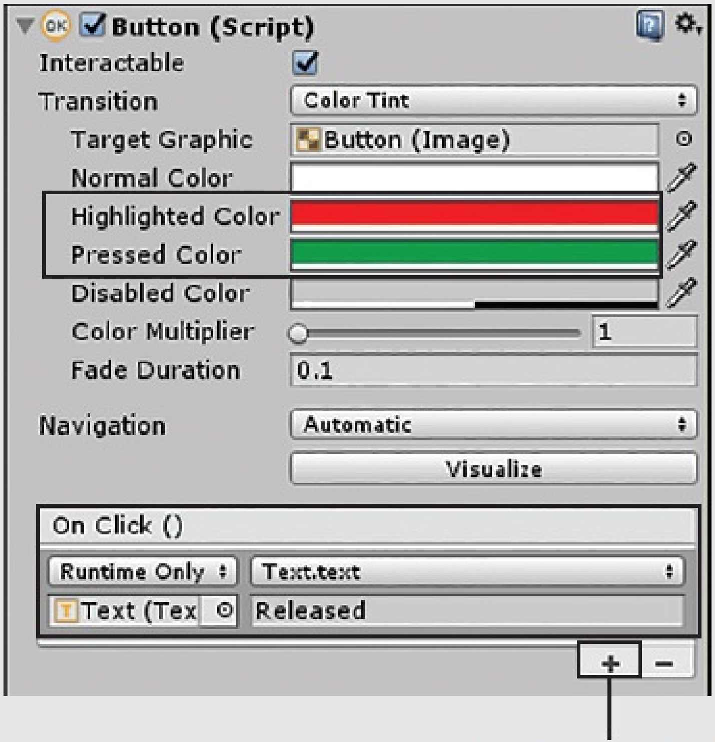
Using a Button

Follow these steps to put what you know so far to practice and create a button, give it some color transitions, and make it change its text when clicked:

1. Create a new scene or project.

2. Add a button to the scene (by selecting **GameObject > UI > Button**).

3. Under the Button (Script) component in the Inspector, set Highlighted Color to red and Pressed Color to green (see Figure 14.9 for the finished settings).



Button (Script) ☑

Interactable ☑

Transition: Color Tint

Target Graphic: Button (Image)

Normal Color: □

Highlighted Color: 🟥

Pressed Color: 🟩

Disabled Color

Color Multiplier: 1

Fade Duration: 0.1

Navigation: Automatic

Visualize

On Click ()

Runtime Only | Text.text

Text (Tex | Released

+ −

Click to Add On Click () Handler

FIGURE 14.9
The finished button settings.

4. Add a new On Click () handler by clicking the little + sign at the bottom of the Inspector (see Figure 14.9). Now that the handler is looking for the object to manipulate, it says None (Object).

5. Expand the button game object in the Hierarchy view so you can see the Text child object. Drag the Text object onto the Object property of the event handler.

6. In the function drop-down (which says No Function), specify what you want the button to do to the chosen object. To do this, click the drop-down (see #1 in Figure 14.10) and then select **Text** (#2) > **string text** (#3).

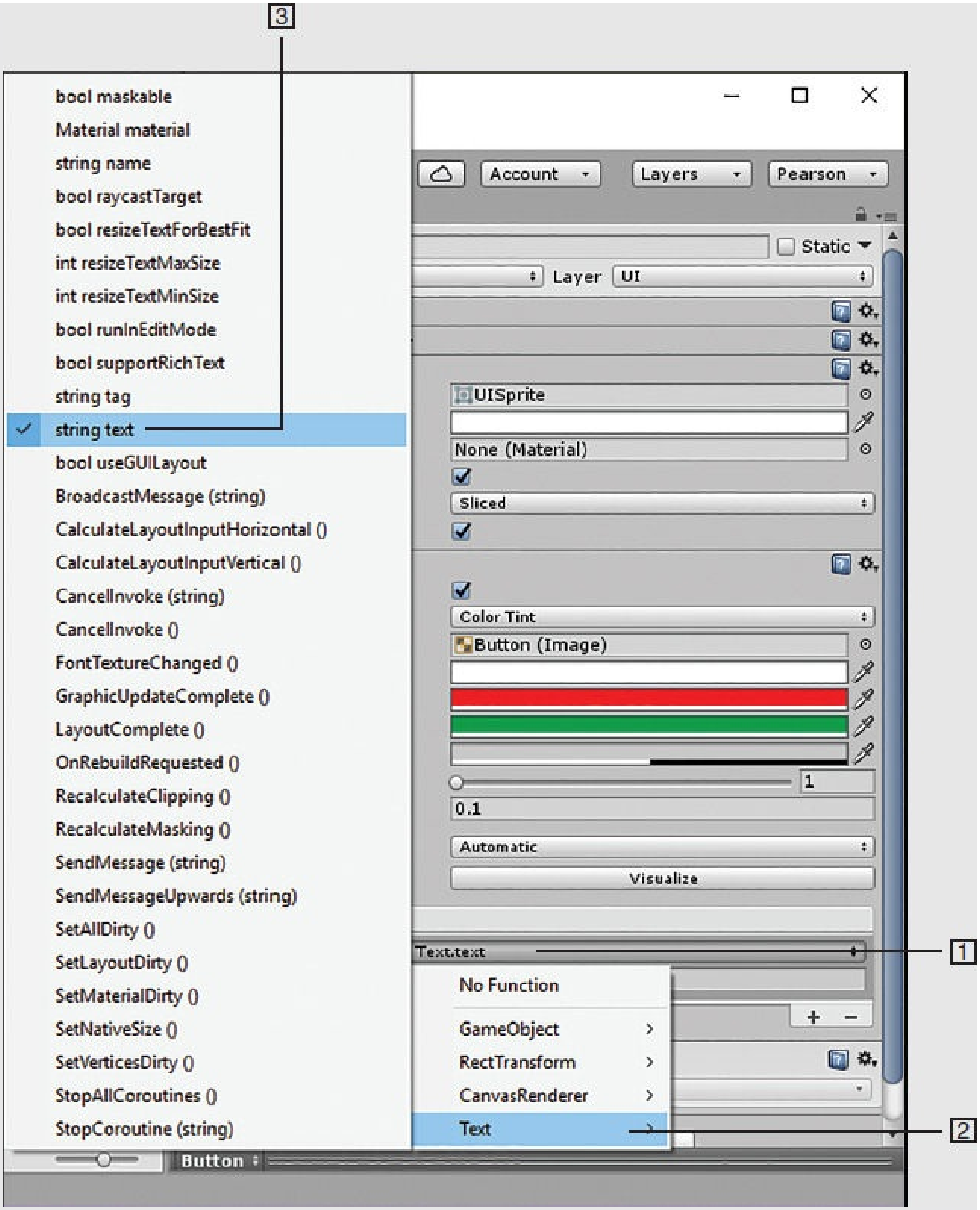


FIGURE 14.10

Setting the click event to change the button text.

7. In the value box that appears, type **Released**.

8. Play the game and try hovering over the button, pressing and holding, and then releasing the button. Notice that the color changes and the text changes when you click.

TIP

Sorting Elements

Now that you are familiar with various elements, it is a good time to mention how they are drawn. You may have noticed that the Canvas component you looked at earlier in this hour has a Sorting Layer property (like the ones you’ve seen with 2D images in other hours). This property is only used to sort between multiple canvases within the same scene. To sort UI elements on the same canvas, you use the order of the objects in the Hierarchy view. Therefore, if you want an object drawn on top of another object, you move it lower in the Hierarchy view so it is drawn later.

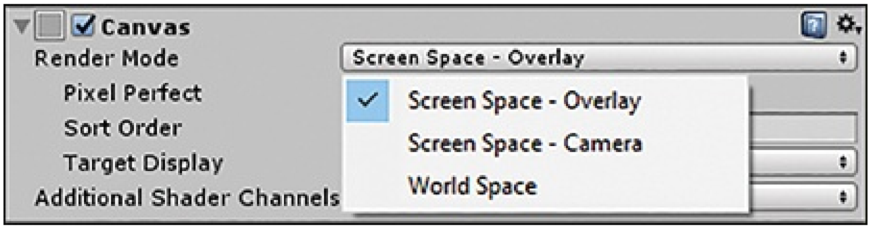
TIP

Presets

Unity 2018.1 added the concept of component presets. *Presets* are the saved properties of a component (such as the UI Text component) that can be applied to quickly set up new components. The presets menu is in the upper-right corner of a component, next to the settings cog in the Inspector view. While presets can work for any type of component, they are specifically mentioned here, instead of earlier, because of how well they work with the UI. A very common use case is wanting all the text in your game to match. You don't necessarily want to make all your text a prefab, but you can quickly apply a text preset.

Canvas Render Modes

Unity offers three powerful options for the way your UI is rendered to the screen. You can choose the mode in the Inspector by selecting **Canvas** and choosing **Render Mode**. You then see the modes shown in Figure 14.11. The use of each canvas mode is very complex, so you shouldn’t try to master them right now. Instead, the aim here is to describe the three modes (Screen Space–Overlay, Screen Space–Camera, and World Space) so that you can choose what is best for your games.



Canvas

Render Mode: Screen Space - Overlay

FIGURE 14.11
The three different canvas render modes.

Screen Space–Overlay

Screen Space–Overlay, which is the default mode, is the easiest-to-use and also least powerful version of the canvas modes. A UI in Screen Space–Overlay mode draws over the top of everything on the screen, regardless of the camera settings or the position of the camera in the world. In fact, where this UI appears in the Scene view bears no relationship to the objects in the world because it isn’t actually rendered by a camera.

The UI appears in the Scene view at a fixed position, with the bottom-left at (0, 0, 0) in the world. The scale of the UI is different from the world scale, and what you see on the canvas is at a scale of 1 world unit for every pixel in your Game view. If you are using this type of UI in your game and find its place in the world to be inconvenient while you’re working, you can hide it to get it out of the way. To do so, you can click the **Layers** drop-down in the editor and hide the eye icon next to the UI layer (see Figure 14.12). The UI is then hidden in the Scene view only (through it will still be there when you run your game). Just be sure not to forget to turn it back on, or you might get confused about why your UI won’t show up!

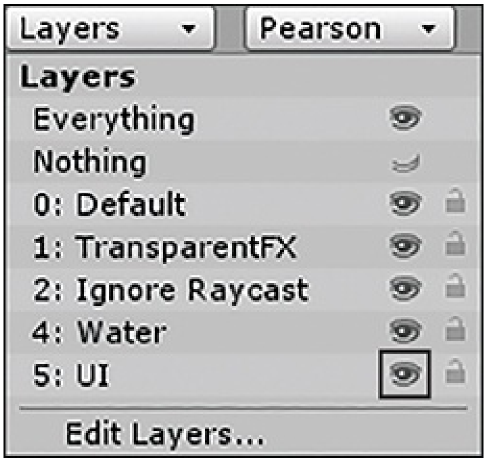


FIGURE 14.12
Hiding your UI.

Screen Space–Camera

Screen Space–Camera mode is similar to Screen Space–Overlay, but the UI is rendered by the camera of your choice. You can rotate and scale UI elements to create much more dynamic 3D interfaces.

Unlike Screen Space–Overlay mode, this mode uses the camera to render the UI. This means effects such as lighting affect the UI, and objects can even pass between the camera and the UI. This can take some extra work, but the payoff is that your interface can feel much more part of the world.

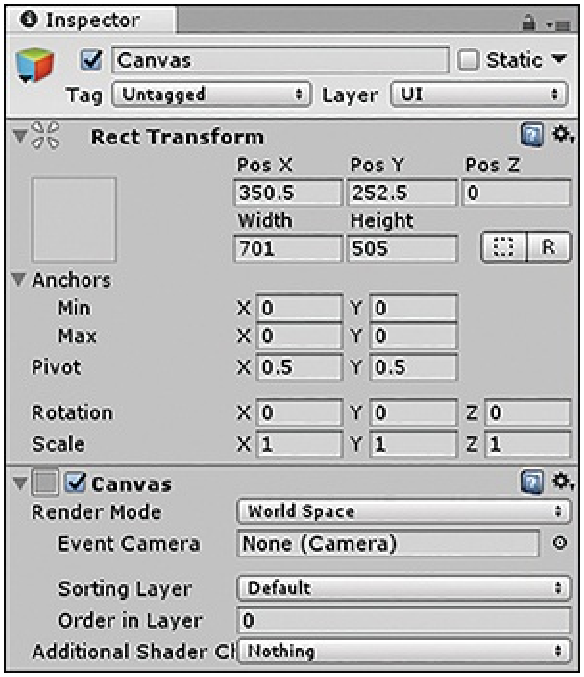
Note that in this mode, the UI stays in a fixed position relative to the camera you chose to render it. Moving the camera also moves the canvas. It can be a good idea to use a second camera solely for rendering your canvas (so it isn’t in the way of the rest of your scene).

World Space

The final UI mode to consider is the World Space mode. Imagine a virtual museum, where every object you look at has detailed information about the object right next to it. Furthermore, this pop-up information could include buttons to allow you to read more or go to other sections of the museum. If you can imagine that, then you are only scratching the surface of what you can do with a World Space mode canvas.

Notice that the Rect transform of the canvas in World Space mode is no longer grayed out, and the Canvas component itself can be edited and resized (see

Figure 14.13). Because in this mode the canvas is actually a game object in the world, it is no longer drawn over the rest of your game, like a HUD. Instead, it is fixed in the world and can be a part of or blended with the rest of your scene objects.



Inspector

☑ Canvas □ Static

Tag Untagged Layer UI

Rect Transform

Pos X 350.5 Pos Y 252.5 Pos Z 0

Width 701 Height 505

Anchors

Min X 0 Y 0

Max X 0 Y 0

Pivot X 0.5 Y 0.5

Rotation X 0 Y 0 Z 0

Scale X 1 Y 1 Z 1

☑ Canvas

Render Mode World Space

Event Camera None (Camera)

Sorting Layer Default

Order in Layer 0

Additional Shader Cl Nothing

FIGURE 14.13

The Rect transform, available with the World Space mode.

▼ TRY IT YOURSELF

Exploring the Render Modes

Follow these steps to look at the three different UI render modes:

1. Create a new 3D scene or project.
2. Add a UI canvas to the scene (by selecting **GameObject > UI > Canvas**).
3. Note that the Rect transform is disabled. Also try zooming in to the Scene view to see where the canvas sits.
4. Switch the render mode to Screen Space–Camera. For Render Camera choose **Main Camera**. Notice that the canvas changes size and position when you do this.

5. Notice what happens when you move the camera. Also notice what happens when you change the camera’s Projection property from Perspective to **Orthographic** and back.

6. Switch to the World Space mode. Note that you can now change the Rect transform for the canvas, move it, rotate it, and scale it.

Summary

You started this lesson by looking at the building blocks of any UI: the canvas and event system. You then learned about the Rect transform and how anchor points help you make versatile UIs that can work on many devices. From there, you explored various UI elements available for use. You then briefly looked at the fundamentally different UI modes: Screen Space–Overlay, Screen Space–Camera, and World Space.

Q&A

Q. Does every game need a user interface?

A. Usually a game benefits from having a well-thought-out UI. It is rare for a game to have no UI whatsoever. That said, it is always a good idea to be a minimalist with a UI, giving the players just the information they need—when they need it.

Q. Can I mix canvas render modes in a scene?

A. Yes, you can. You might want to have more than one canvas in a scene and give them different render modes.

Workshop

Take some time to work through the questions here to ensure that you have a firm grasp of the material.

Quiz

1. What does UI stand for?

2. What two game objects always come along with a UI in Unity?

3. What UI render mode would you use to put a question mark above a player’s head in a 3D game?
4. What render mode is most likely to be best for a simple HUD?

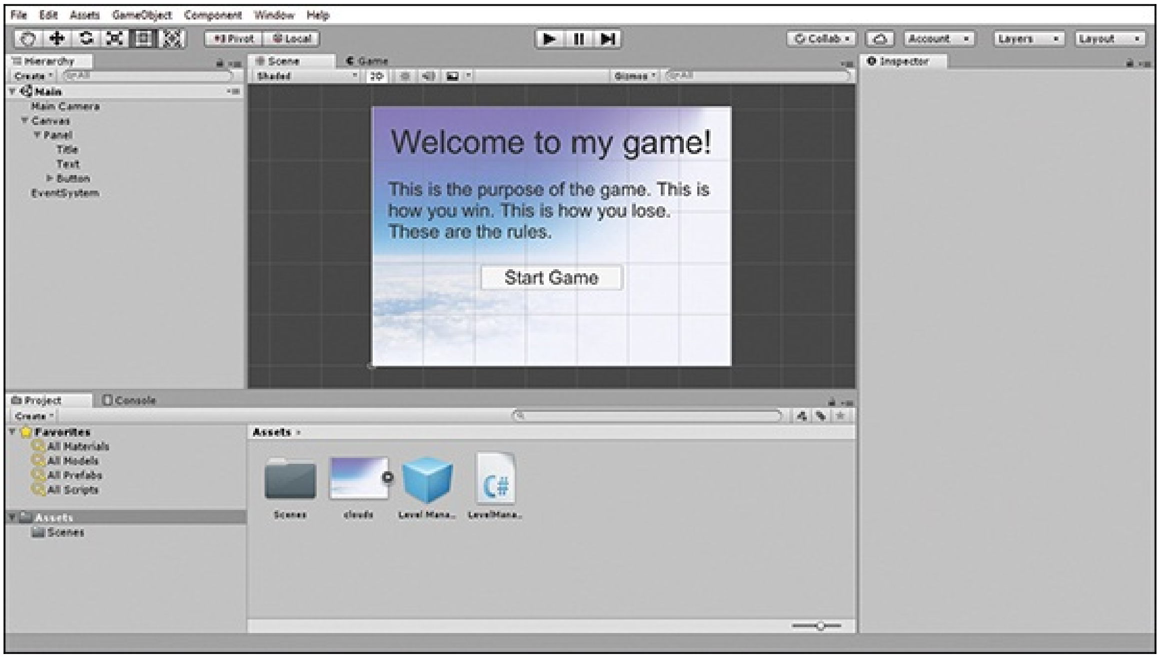
Answers

1. User interface (This was an easy warm-up question!)
2. Canvas and EventSystem components
3. You would use World Space mode because the interface element is positioned within world space, not relative to the player’s eyes.
4. Screen Space–Overlay

Exercise

In this exercise, you will build a simple but complete menu system that you can adapt for use in all your games. You will make use of a splash screen, a fade-in, some background music, and more.

1. Create a new 2D project. Add a UI panel (by selecting **GameObject > UI > Panel**). Note that Unity also adds the required Canvas and EventSystem components to the Hierarchy view for you.
2. Import the Hour14Package.unitypackage file provided in the book files. Click **clouds.jpg** in your Assets folder, and ensure that Texture Type is set to **Sprite (2D and UI)**.
3. Set this image as the source image in the Panel’s Inspector. Note that the image is a little transparent by default, letting the Main Camera’s background color show through. Feel free to adjust the transparency by bringing up the color dialog and adjusting the A slider (where A stands for alpha).
4. Add a title and a subtitle (by selecting **GameObject > UI > Text**). Move them so they sit nicely on the panel (see Figure 14.14).



Welcome to my game!

This is the purpose of the game. This is how you win. This is how you lose. These are the rules.

FIGURE 14.14

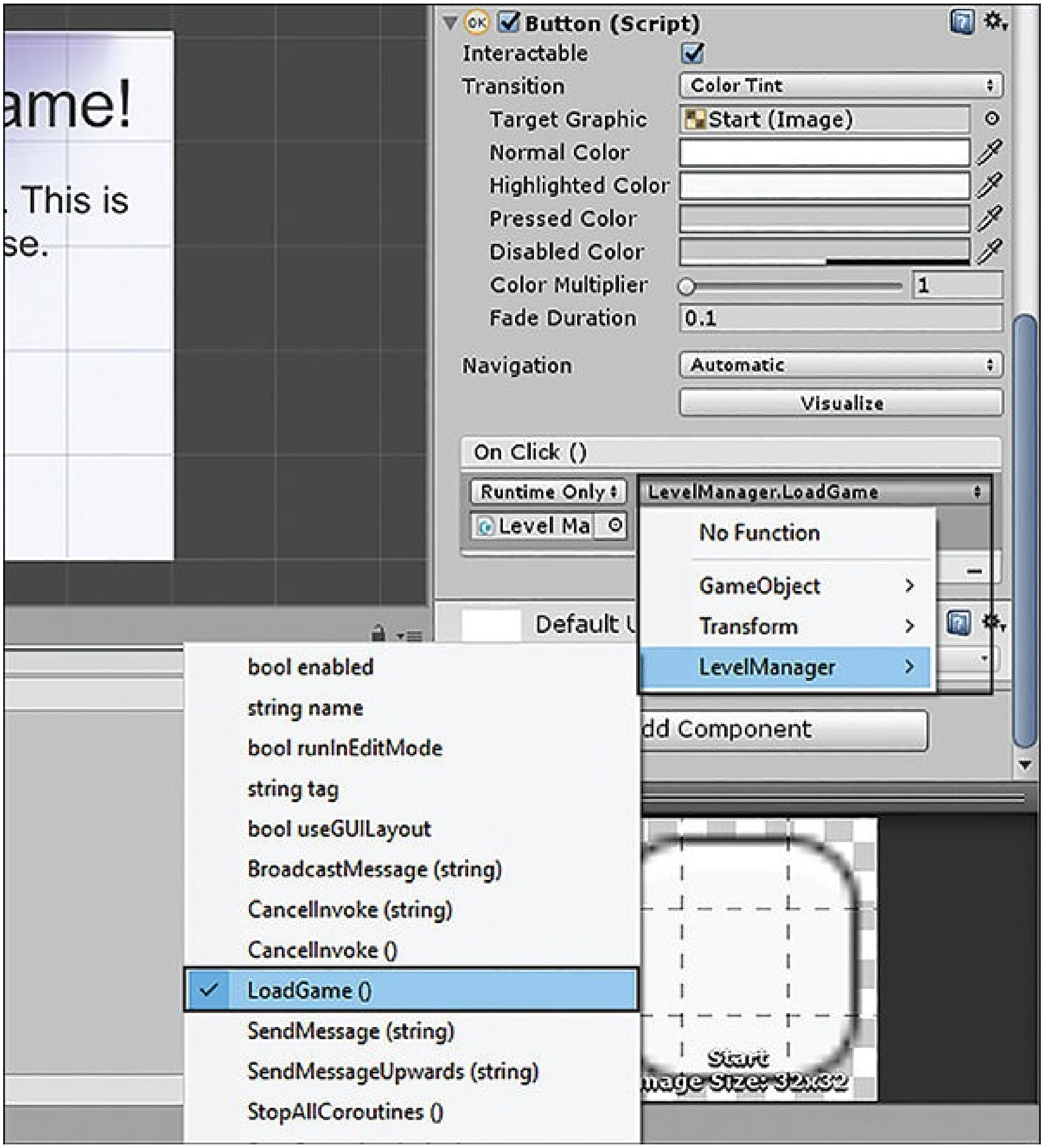
The complete UI.

5. Add a button (by selecting **GameObject > UI > Button**). Name the button **Start** and set its Text child object to say **Start Game**. Position the button where you wish, remembering to select the button (not the Text child object) before you drag.

6. Save your scene as **Menu** (by selecting **File > Save Scene**). Now create a new scene to act as a placeholder for your game and save it as **Game**. Finally, add both scenes to the build order by opening the build settings (by selecting **File > Build Settings**) and dragging both scenes into the Scenes in Build section. Ensure that the Menu scene is on top.

7. Switch back to your menu scene. Drag the LevelManager prefab that you imported from your Assets folder into the Hierarchy view.

8. Find the Start button and set its On Click () property to the level manager’s LoadGame () method (see Figure 14.15).



Button (Script)

Interactable ☑

Transition: Color Tint

Target Graphic: Start (Image)

Normal Color

Highlighted Color

Pressed Color

Disabled Color

Color Multiplier: 1

Fade Duration: 0.1

Navigation: Automatic

On Click ()

Runtime Only

LevelManager.LoadGame

Level Ma

FIGURE 14.15
Setting the Start Game button's On Click () handler.

9. Play your scene. Click the Start Game button, and the game should switch to the empty Game scene. Congratulations! You have a menu system to use in future games!