Tutorial – Unity User Interface

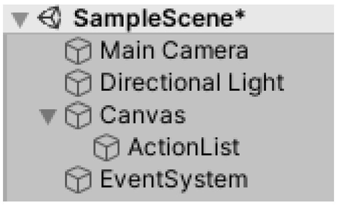
This tutorial series will take you through creating a moderately complex GUI in Unity. We'll start with laying out some basic components, and build up to creating lists of components through scripting.

Creating some UI Components

Create a new project in Unity called "GUITutorial".

In the sample scene we'll lay out some areas for controls.

Create an Image in the Heirarchy using the right click **UI->Image** menu item. You'll see a few components created. You get a Canvas to hold the Image, and an EventSystem. All UI components need to live on a Canvas. The first canvas in your scene will also create an EventSystem, which drives the UI polling loop that triggers events like button clicks, mouseovers and so on.



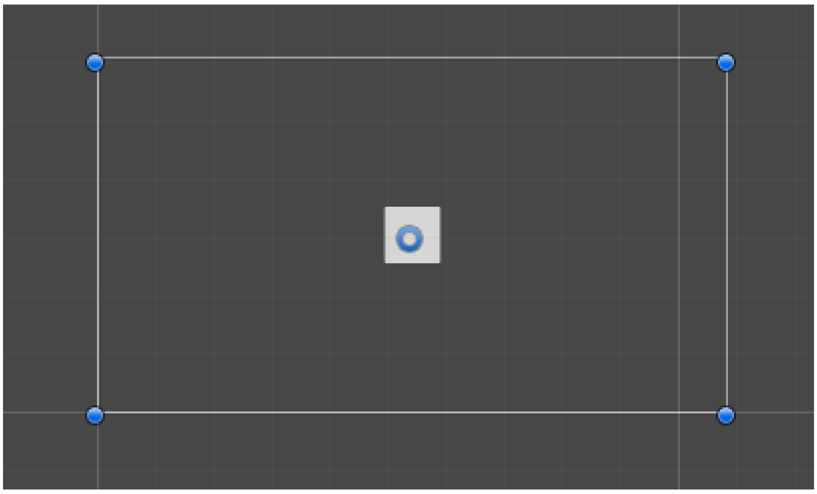
```
▼ SampleScene*
    Main Camera
    Directional Light
  ▼ Canvas
      ActionList
    EventSystem
```

Rename the Image as ActionList – we're going to use this to hold a list of actions available to the player.

Editing the UI visually

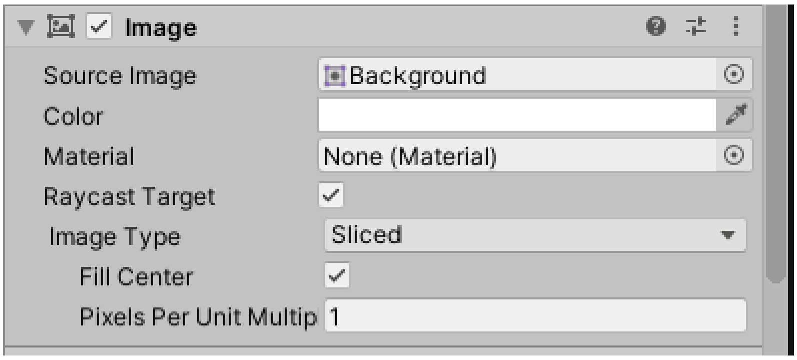
In the Scene view, click the little 2D button on the top frame.

Double click on the Canvas and you'll see something like this in the Scene view. This 2D orthographic view is ideal for editing UI components.



The ActionList image is currently centred on the screen. Move it to the top left corner of the canvas using the gizmo handles.

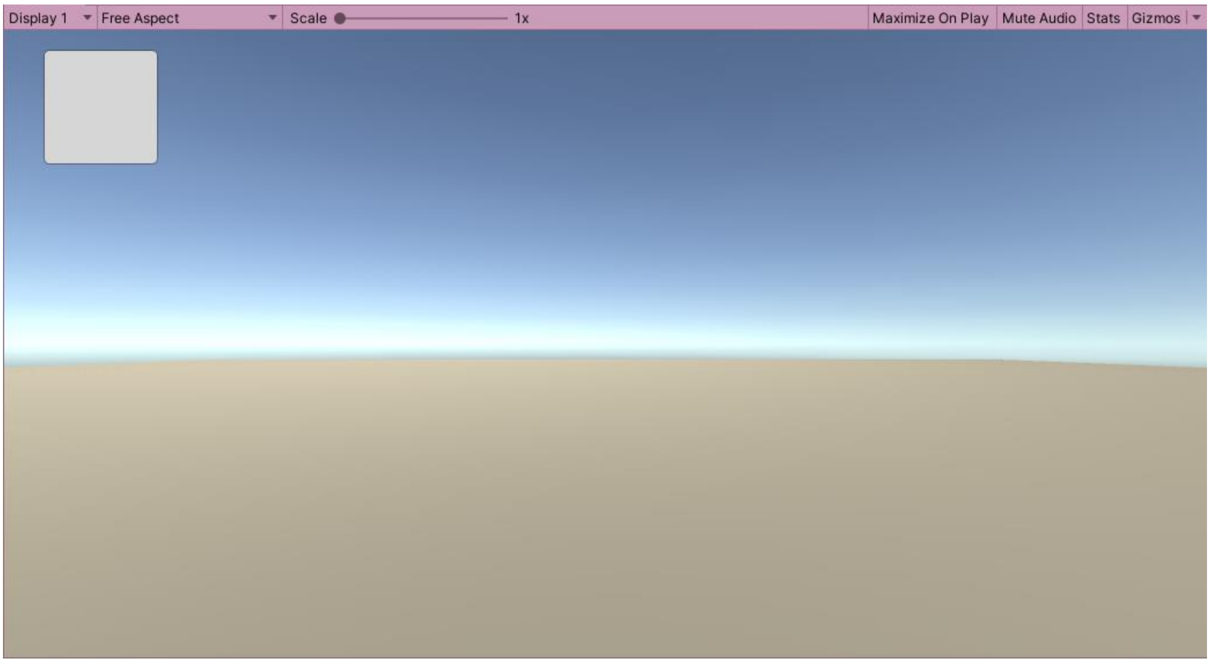
Give it a standard Background Image by setting the Source Image field in the inspector.



Image

Source Image: Background
Color:
Material: None (Material)
Raycast Target: ☑
Image Type: Sliced
Fill Center: ☑
Pixels Per Unit Multip: 1

Press Play and you should see the UI component against the skybox.



Now resize the screen, making it smaller, and you'll see your ActionList disappear off the edge of the screen!

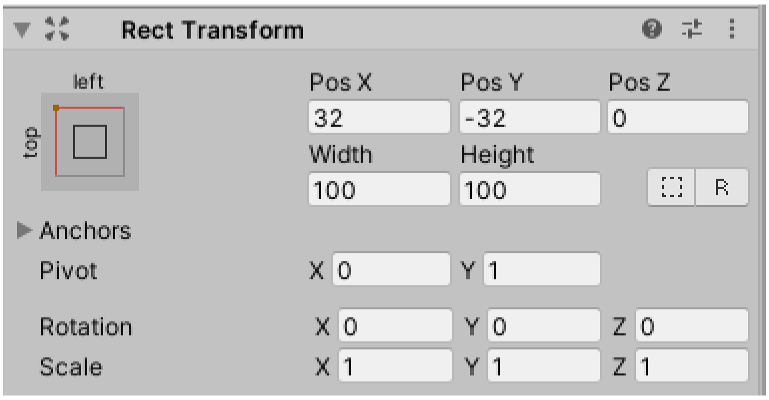
Anchors and Pivots

We want to have the ActionList stay in the top left corner when we resize the screen.

Select the ActionList and let's set this up in its RectTransform component.

A RectTransform is derived from Transform, and contains extra information as to how the UI component sits in relation to its parent.

We want here to have a 32 pixel border between the edge of the ActionList and the edge of the screen at all times. To express this we set the pivot to (0,1) ie left edge and top edge of the action list. We anchor that to the top left of the canvas using the selection of icons in the top left of the RectTransform inspector. And we position it's pivot at (32, -32) ie 32 pixels right of the canvas's right edge, and -32 pixels up (ie 32 pixels down) from the top.



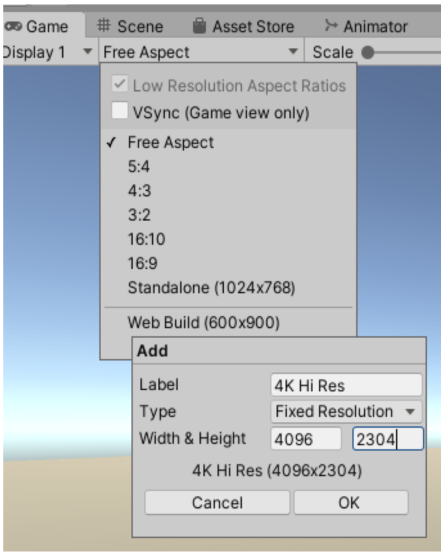
	Pos X	Pos Y	Pos Z
	32	-32	0
	Width	Height	
	100	100	
Pivot	X 0	Y 1	
Rotation	X 0	Y 0	Z 0
Scale	X 1	Y 1	Z 1

Now press play and resize the screen, and you'll see that the ActionList stays in the top left corner of the screen at all times.

Screen Resolutions

A good game UI will often be required to work on different screen resolutions. Unity allows us to test this by setting up some custom screen resolutions in the editor.

Let's make a 4K screen by dropping down the item on the Game View frame that says Free Aspect, and adding a new resolution to it. (A 4K screen at 16:9 aspect ratio is 4096 x 2304 pixels)

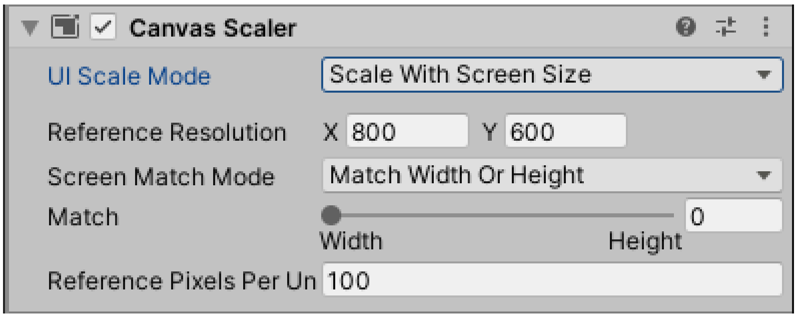


Label: 4K Hi Res
Type: Fixed Resolution
Width & Height: 4096 2304
4K Hi Res (4096x2304)

We can then select this resolution. You'll see your ActionList becomes quite small now, as it's still 100x100 pixels. On a high res device any content might become unreadable!

In the Canvas, we want to change the scaling mode in the **Canvas Scaler** component.

Set it from the default **Constant Pixel Size** to **Scale With Screen Size.**



Canvas Scaler

UI Scale Mode: Scale With Screen Size

Reference Resolution: X 800 Y 600

Screen Match Mode: Match Width Or Height

Match: 0 (Width – Height)

Reference Pixels Per Un 100

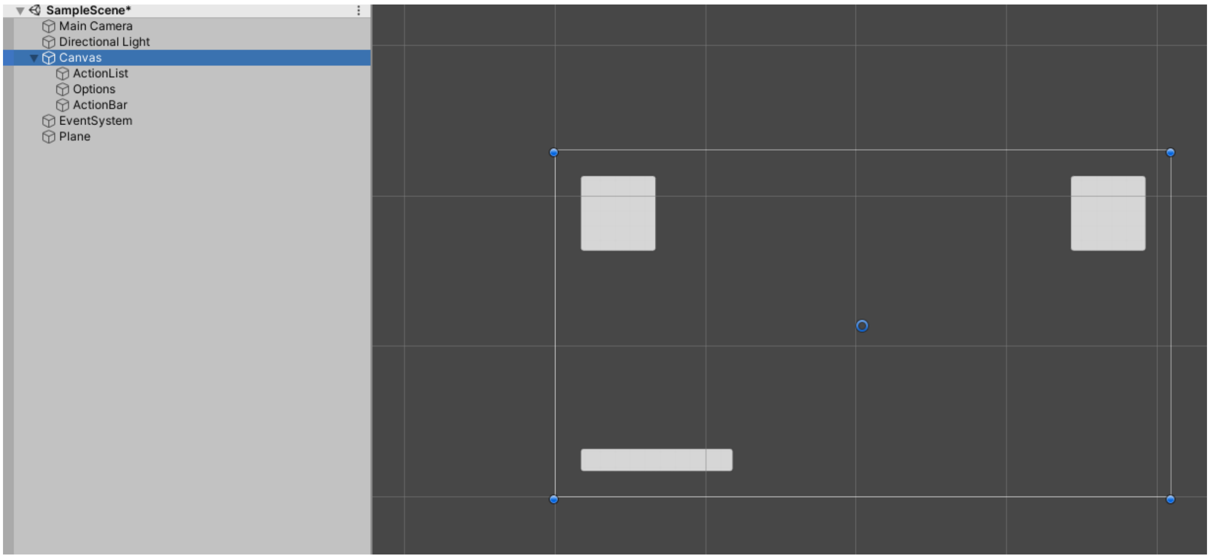
This means that Unity treats the Canvas as being 800 pixels wide, no matter what resolution you have. An object like the ActionList. Set to 100 pixels width will now be scaled to fill 1/8th of the screen width, whatever that may be.

You'll be able to switch between the 4K high res screen mode and Free Aspect in the game view now without compromising the readability of your controls.

Completing the UI

Set up a few more components.

We'll have an Options object anchored to the top right, and a long narrow object called ActionBar anchored to the bottom left. All three should keep a 32 pixel border between themselves and the edge of the screen. In each case, figure out that the pivot, anchor and anchored position should be.



Test these by resizing the screen and changing resolution.

Keep this UI Checklist in mind:

- When you make a Canvas, set it to Scale with Screen Size
- When you place a component, name it so that it's clear what it does
- Decide on an anchor and pivot before positioning it