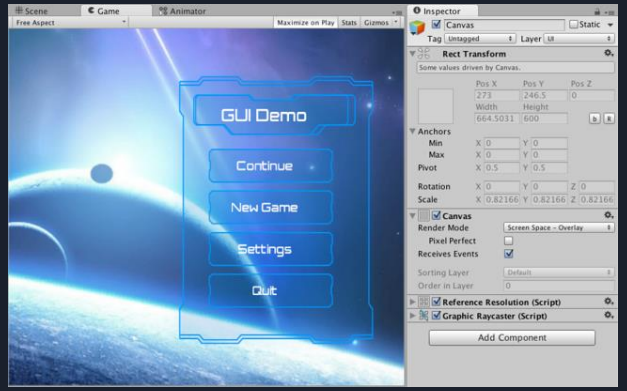
Graphic User Interface Design



Game Development Foundations

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Contents

- Overview
- The Canvas
  - Draw order of elements, Render Modes
- Basic Layout
- Text Boxes, Buttons and Images
- Where to Find More Information
- Summary
- References

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Overview

- The Graphical User Interface (GUI) is anything the user interacts with
  - Buttons, Sliders, Radio Buttons, Check Boxes, Text, etc
- You can create menu or high score screens by combining these different UI elements
- Unity 5 has a completely new User Interface (UI) system
  - More powerful, easier to use

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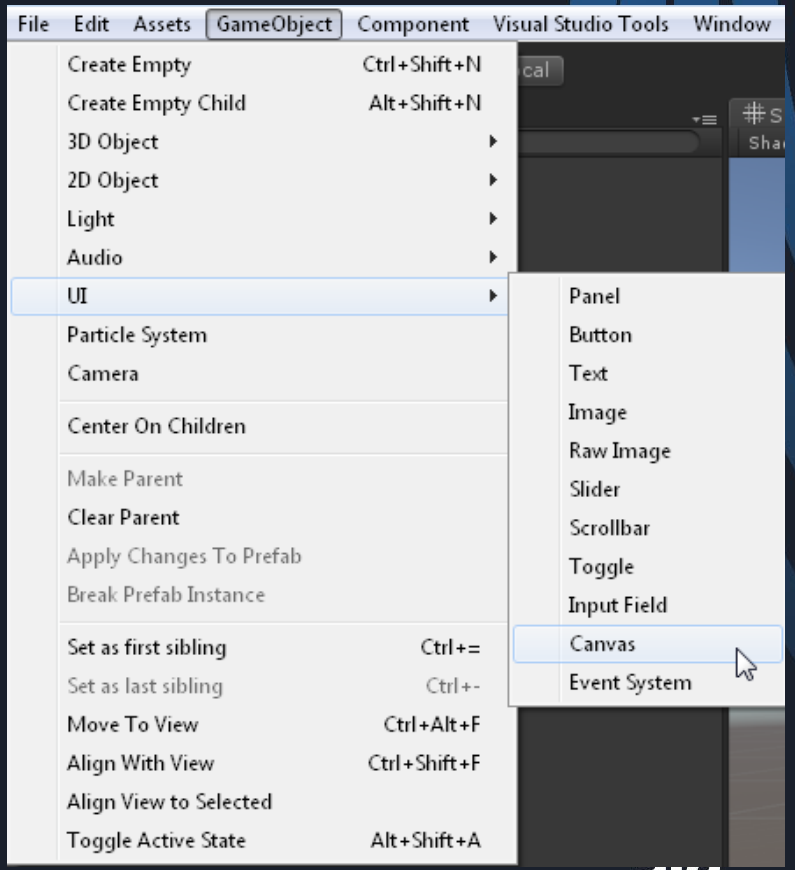
The Canvas

- The Canvas is the area on the screen that all UI elements should be inside of
  - All UI elements must be child objects of the Canvas
- When adding UI components, a Canvas object is created if one does not exist



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The Canvas: Draw Order of Elements

- UI elements are drawn in the same order as they appear in the hierarchy
  - First child is drawn first, second child second, and so on
- Change the order elements are drawn by dragging them
- This only matters if elements are overlapping
  - For example, when your menu screen has a background

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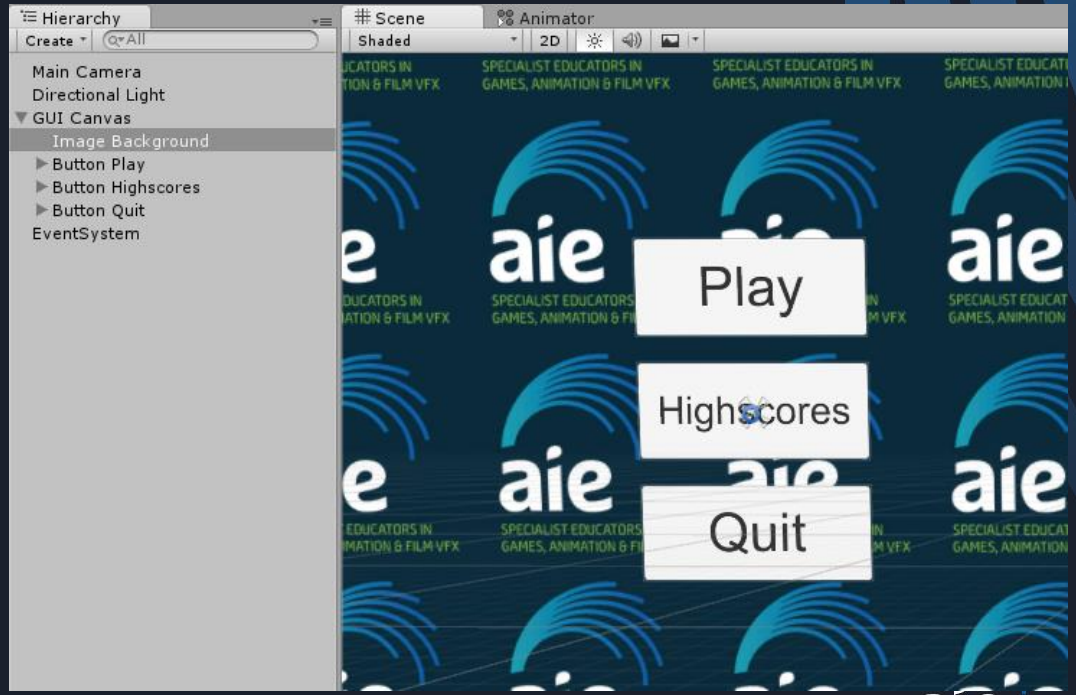
The Canvas: Draw Order of Elements

- The Image is the first element, so is drawn behind the buttons



The Canvas: Render Modes

- There are three render modes, which change how your GUI will be drawn
  - Screen Space – Overlay
    - Places elements on top of the scene. When the screen is resized, the Canvas automatically changes its size to match
  - Screen Space – Camera
    - The Canvas is placed in front of the Camera. UI elements are rendered by the camera (so we can add perspective)
  - World Space
    - The Canvas is drawn like any other scene object. (Your menu is now part of the game world)

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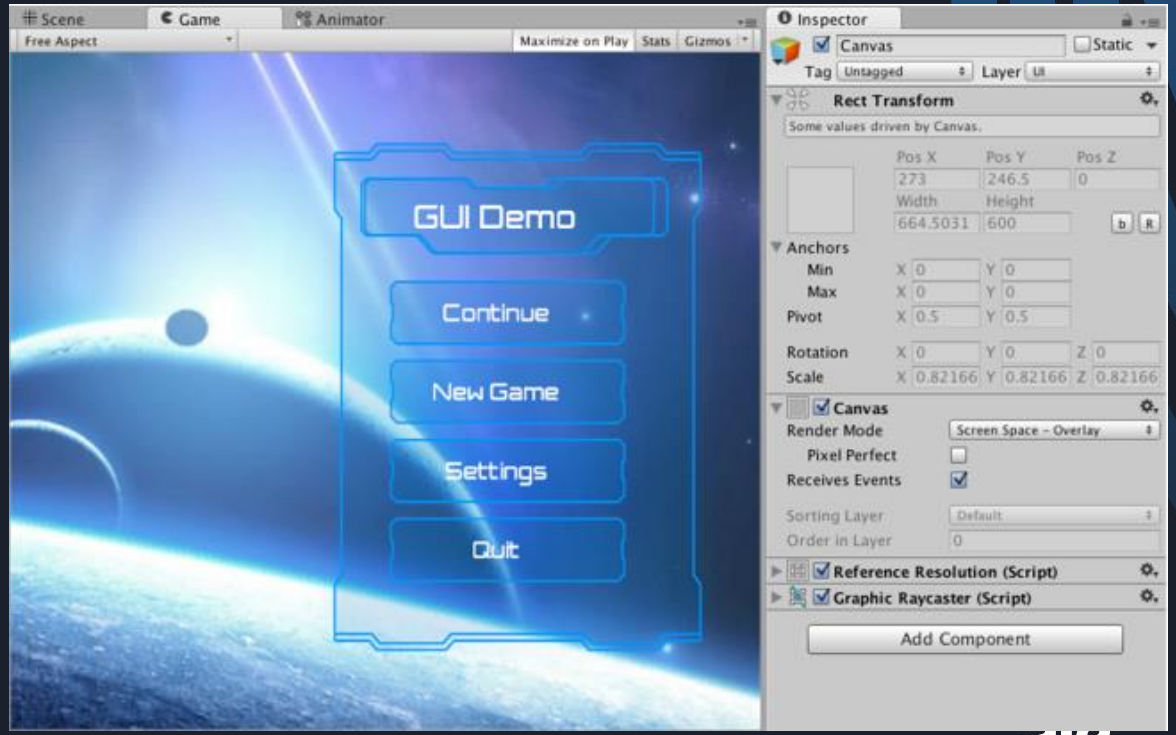
The Canvas: Render Modes

- Screen Space – Overlay
- This is what we'll use for our menus and HUD displays



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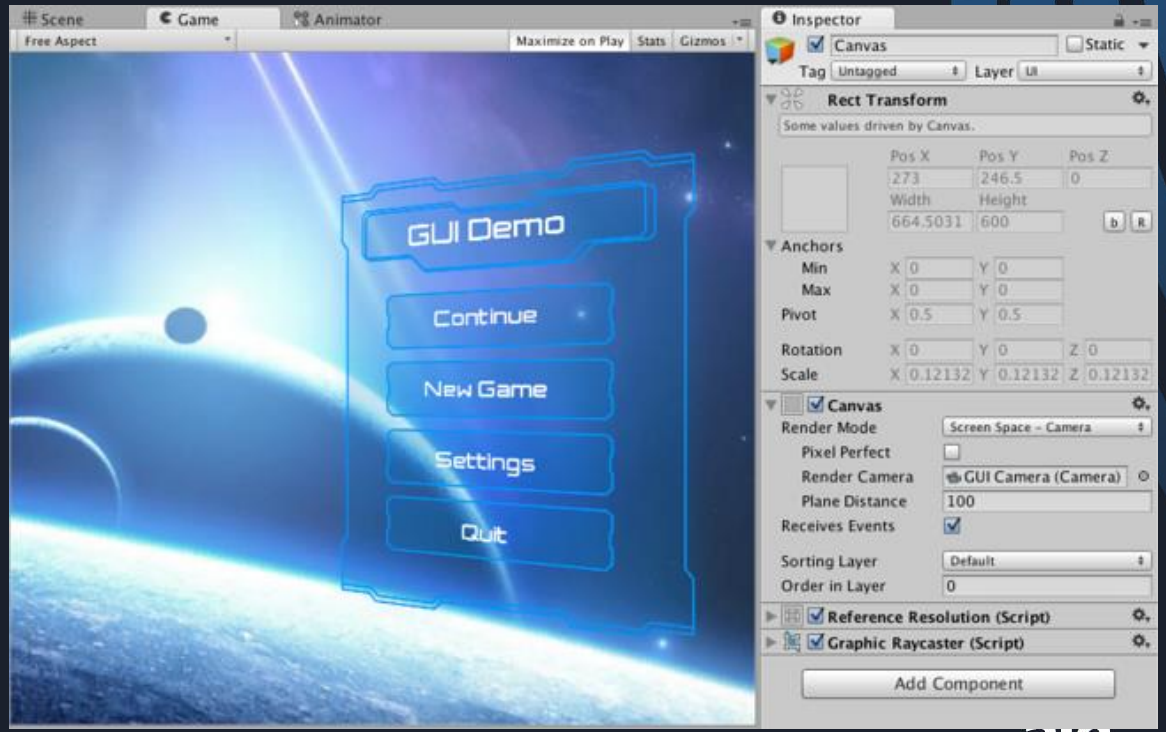
The Canvas: Render Modes

- Screen Space – Camera
- The Camera affects the appearance of the UI



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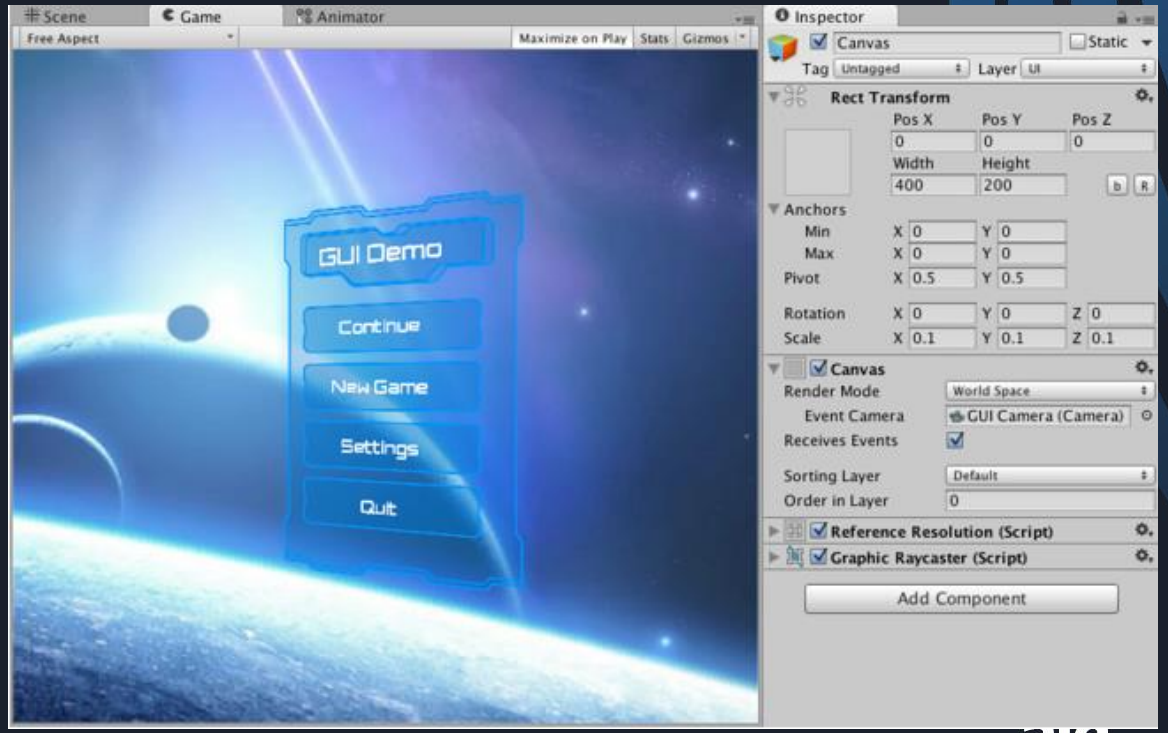
The Canvas: Render Modes

- World Space
- The UI becomes part of the game world



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Basic Layout

- The Rect Tool can be used to move, resize, and rotate your UI elements
- Use the Rect Transform to adjust the position, rotation, scale, width and height of UI elements

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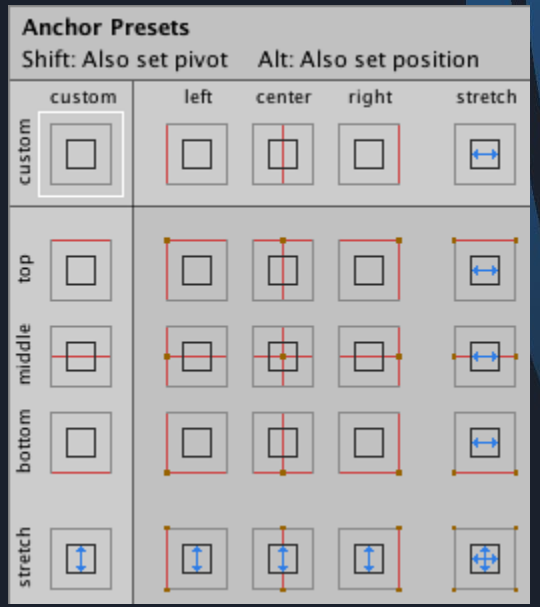
Basic Layout: Anchors

- You can also anchor the UI element to the Canvas to control how the element is repositioned when the screen is resized



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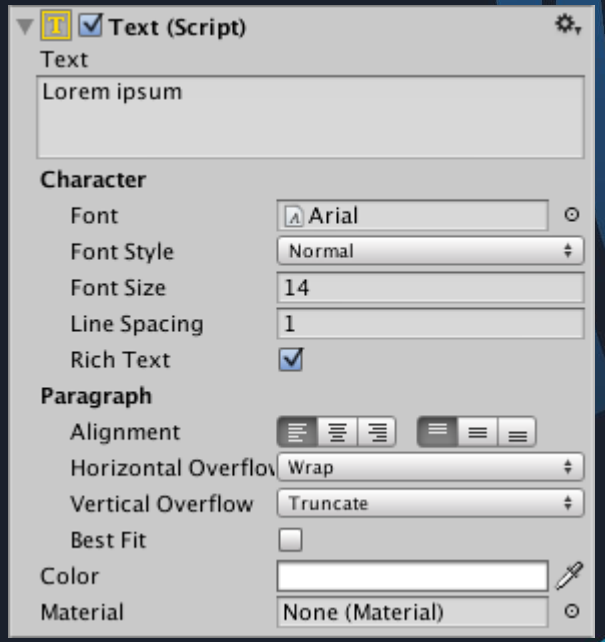
Text Boxes

- Use Text components as labels
- The text to display can be set in the editor, or by using a script
- There are options to control:
  - Font, Font Style and Font Size,
  - Alignment,
  - Horizontal and vertical overflow
  - Best Fit (resize text to fill available space)



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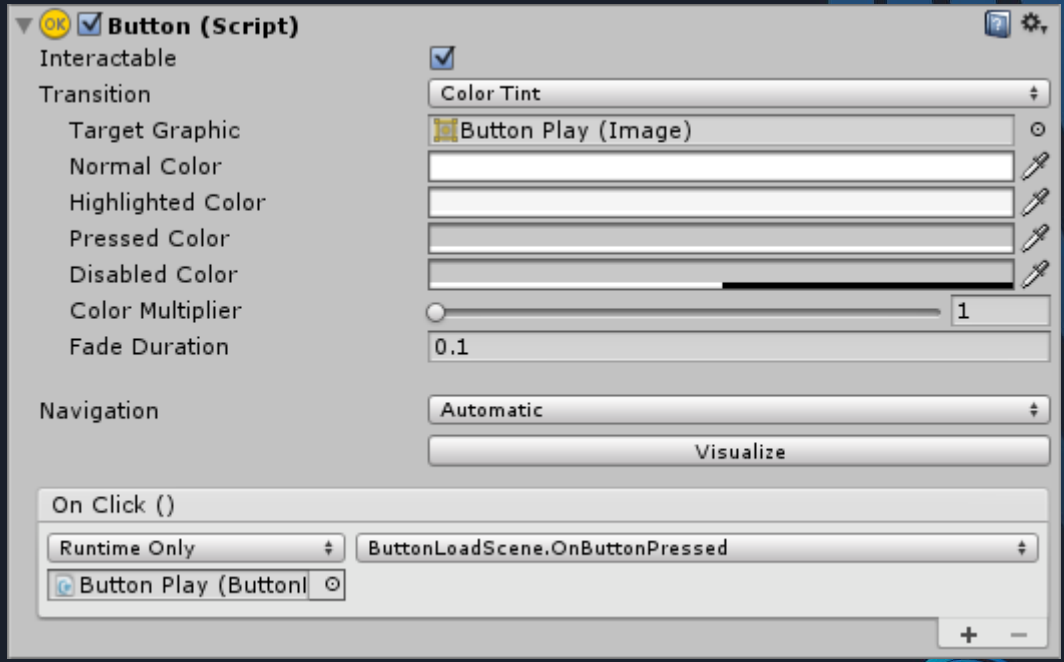
Buttons

- Buttons have an OnClick event to define what action to performed when the button is pressed
- We can specify which function to call from another script attached to the button



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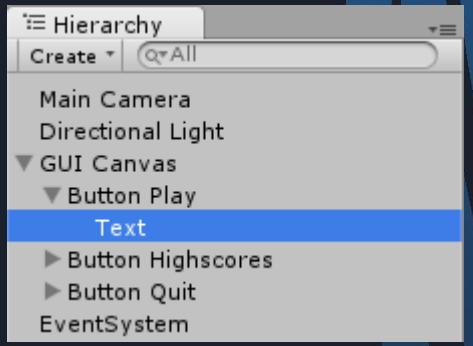
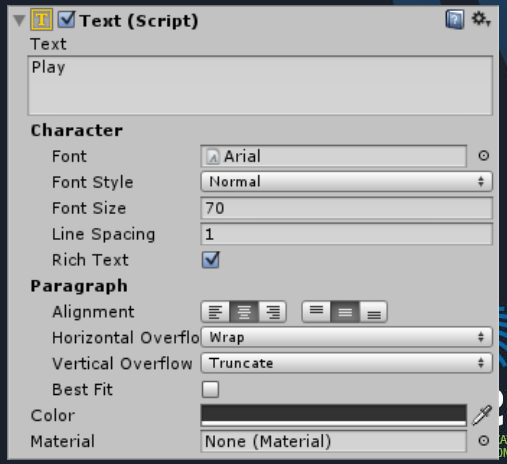
Buttons

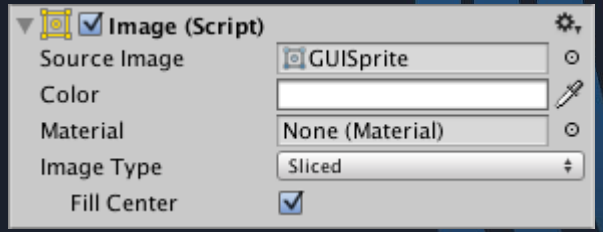
- The text to display on the button is set by adding a Text element as a child of the button
- The text inside this Text element will be drawn on the button
- To draw an image on the button, add an Image child element





Images

- To use an image in you GUI, you need to set the Source Image to a Sprite (discussed next)
- The Type field defines how the sprite will appear:
  - Simple: Scales the whole sprite equally
  - Sliced: Resizing will stretch the center part, but the borders are not distorted
  - Tiled: the sprite is tiled to fill the image
  - Filled: Similar to Simple, but fills from an origin



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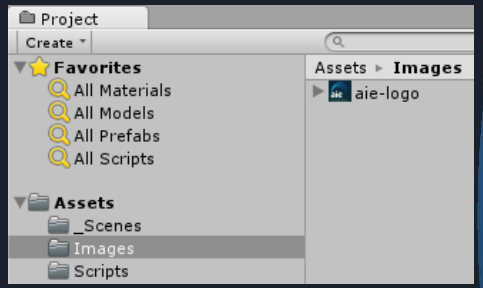
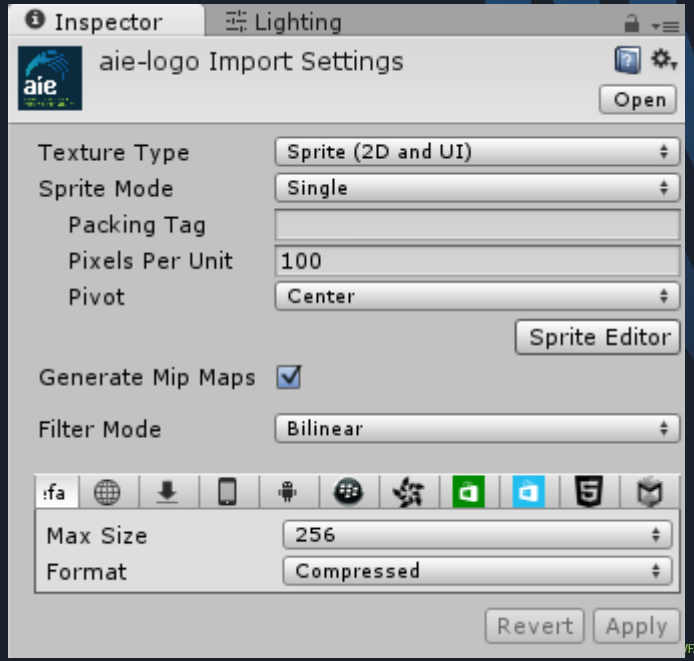
Sprites

- To create a Sprite, add an image to your project
- In the Inspector, for the Texture Type select Sprite
- Your image can now be used for Image elements in your GUI





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Where to Find More Information

- There are many more UI elements you can use
- The Unity site has a lot of information on UI
- For video tutorials
  - http://unity3d.com/learn/tutorials/topics/user-interface-ui
- For the Unity manual on UI
  - http://docs.unity3d.com/Manual/UISystem.html

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Summary

- The Canvas object handles all UI elements in your scene
- All UI elements must be children of the Canvas
- The order UI elements are drawn is the same as their order in the Hierarchy
- There are many options to control how your elements are displayed
- There are many different UI elements, and you can find more information about these on the Unity site

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References

- Unity Technologies. 2015. *Unity - Manual: UI*. [ONLINE] Available at:http://docs.unity3d.com/Manual/UISystem.html. [Accessed 07 September 2015].

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