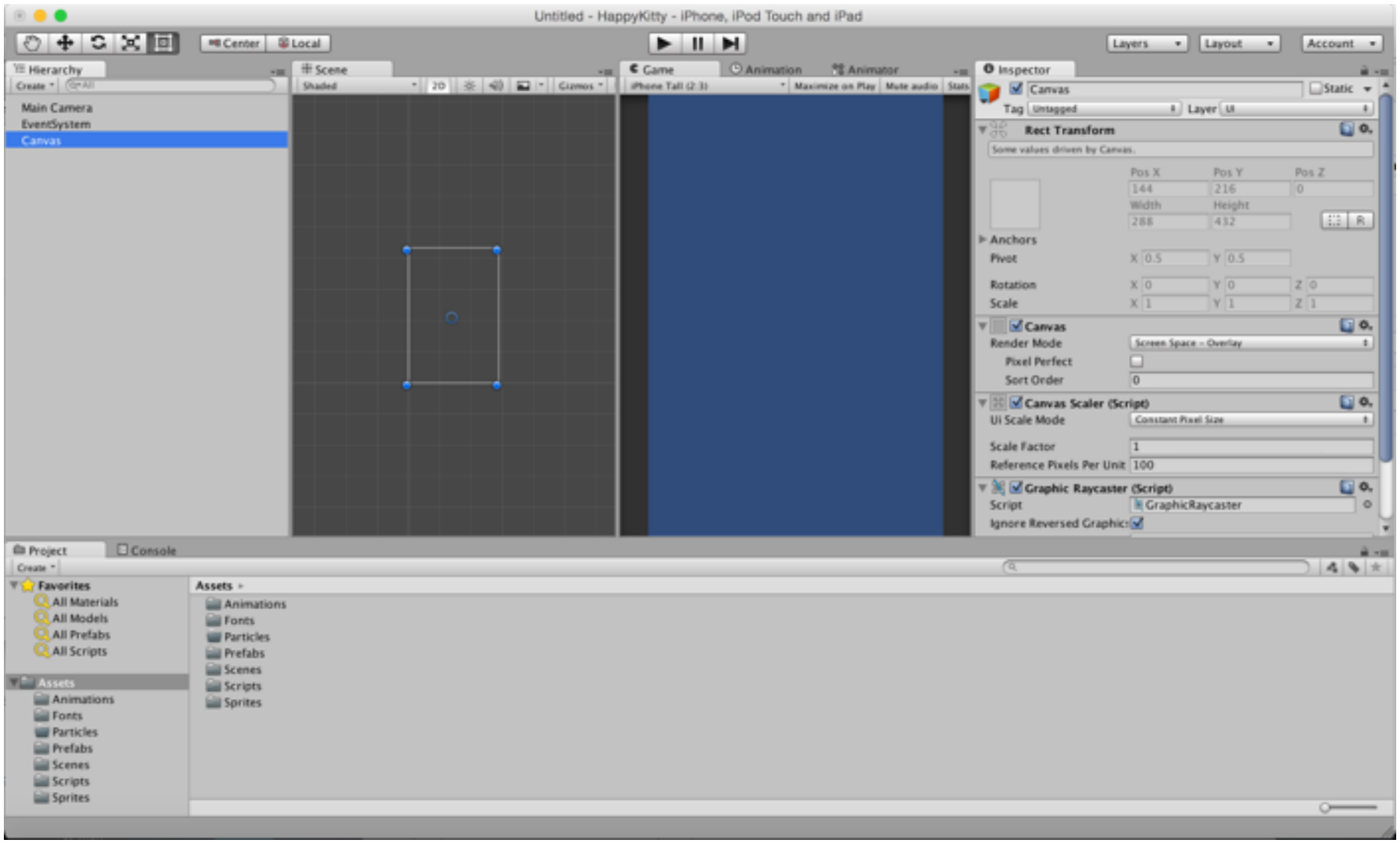
the
CODE LIBERATION FOUNDATION

Implementing User Interfaces in Unity with C#

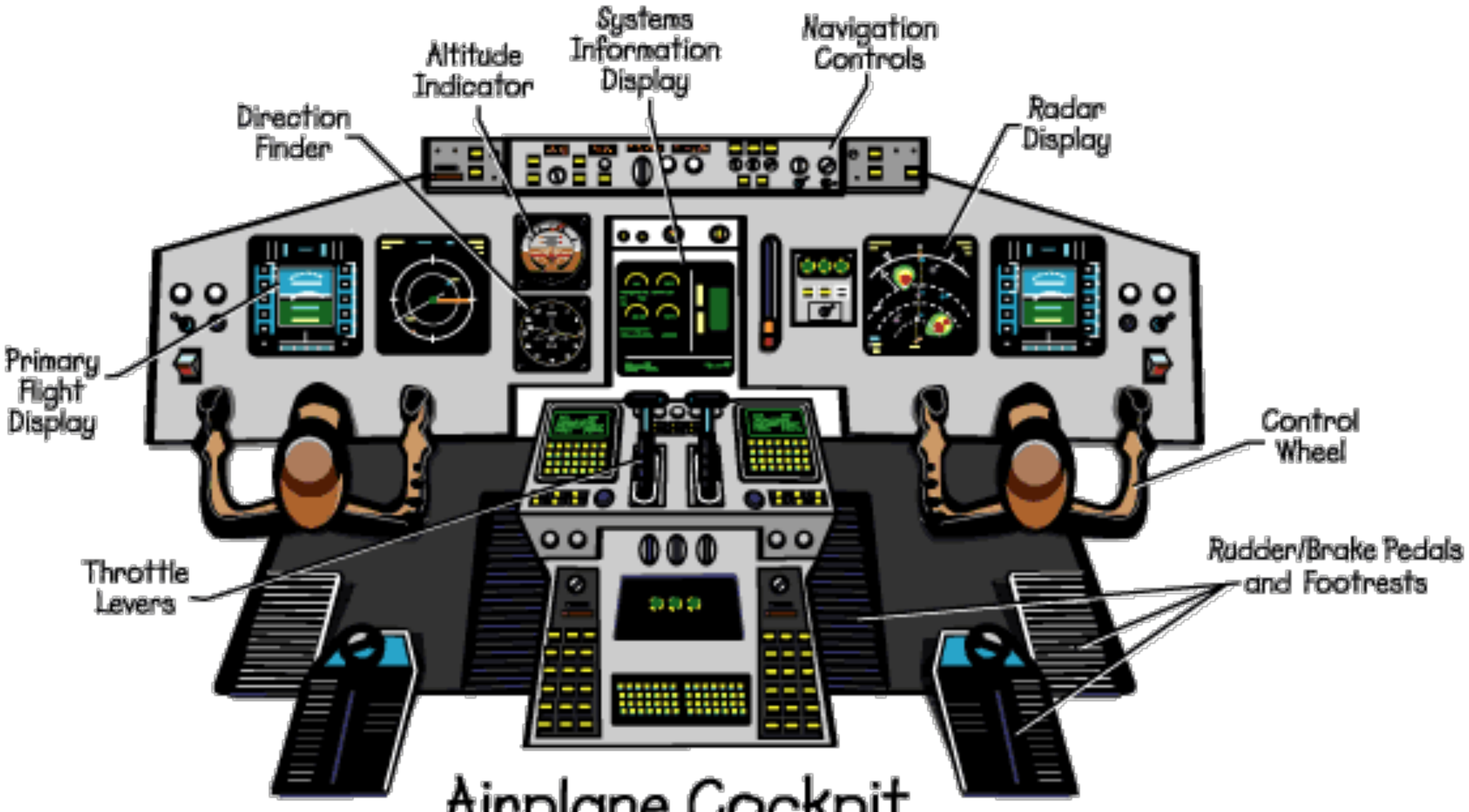
WHAT IS ... unity ?

- Cross platform game engine
- Games can be made in 2D or 3D
- Suitable for creating AR and VR content
- Good for asset editing but not creating
- Can be programmed in C# or Javascript
- Free if you don’t make more than $100,000
- Pro license $75 a month or $1,500 p/a

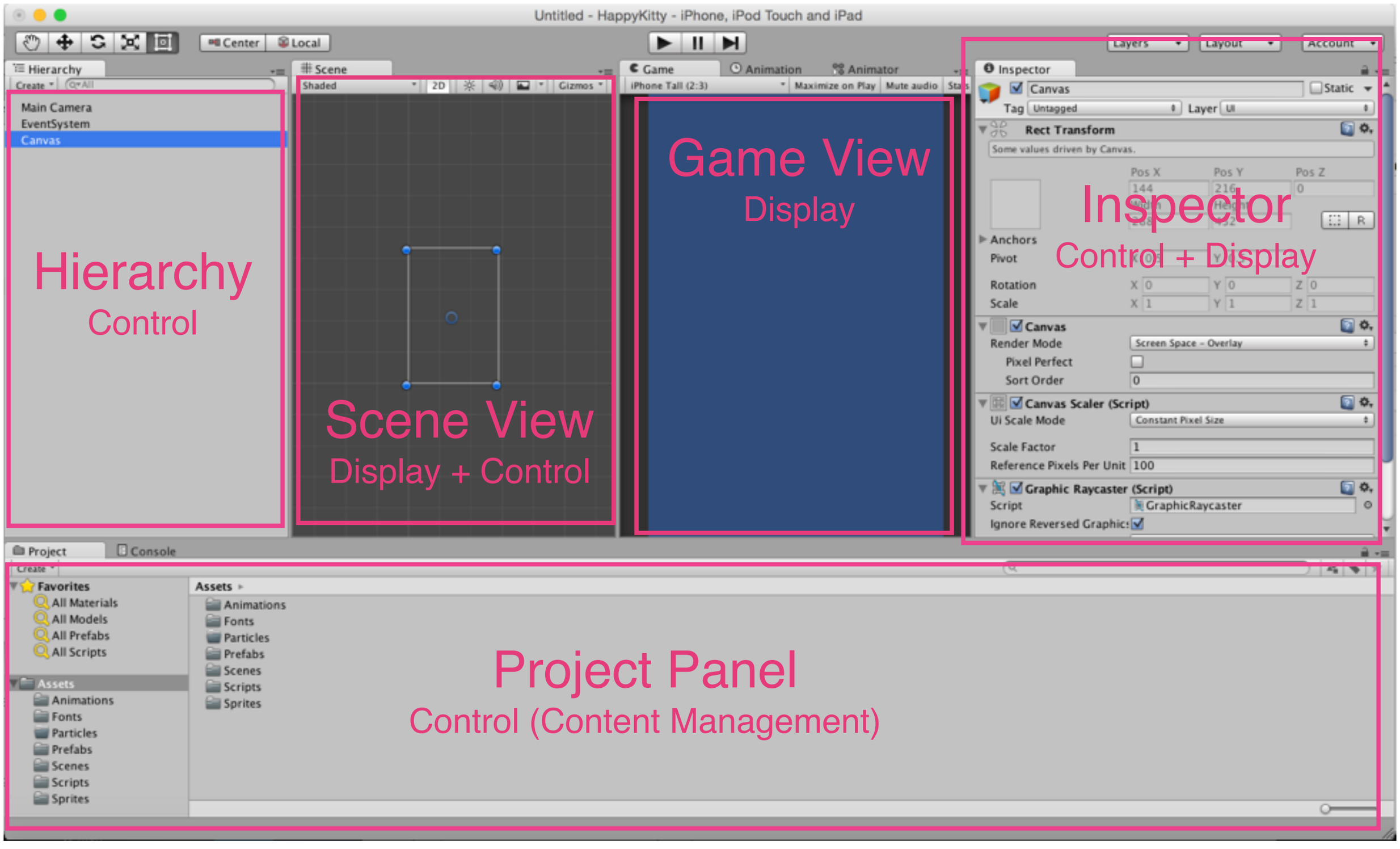
The Unity Interface consists of control and display panels...



Kind of like an engine cockpit

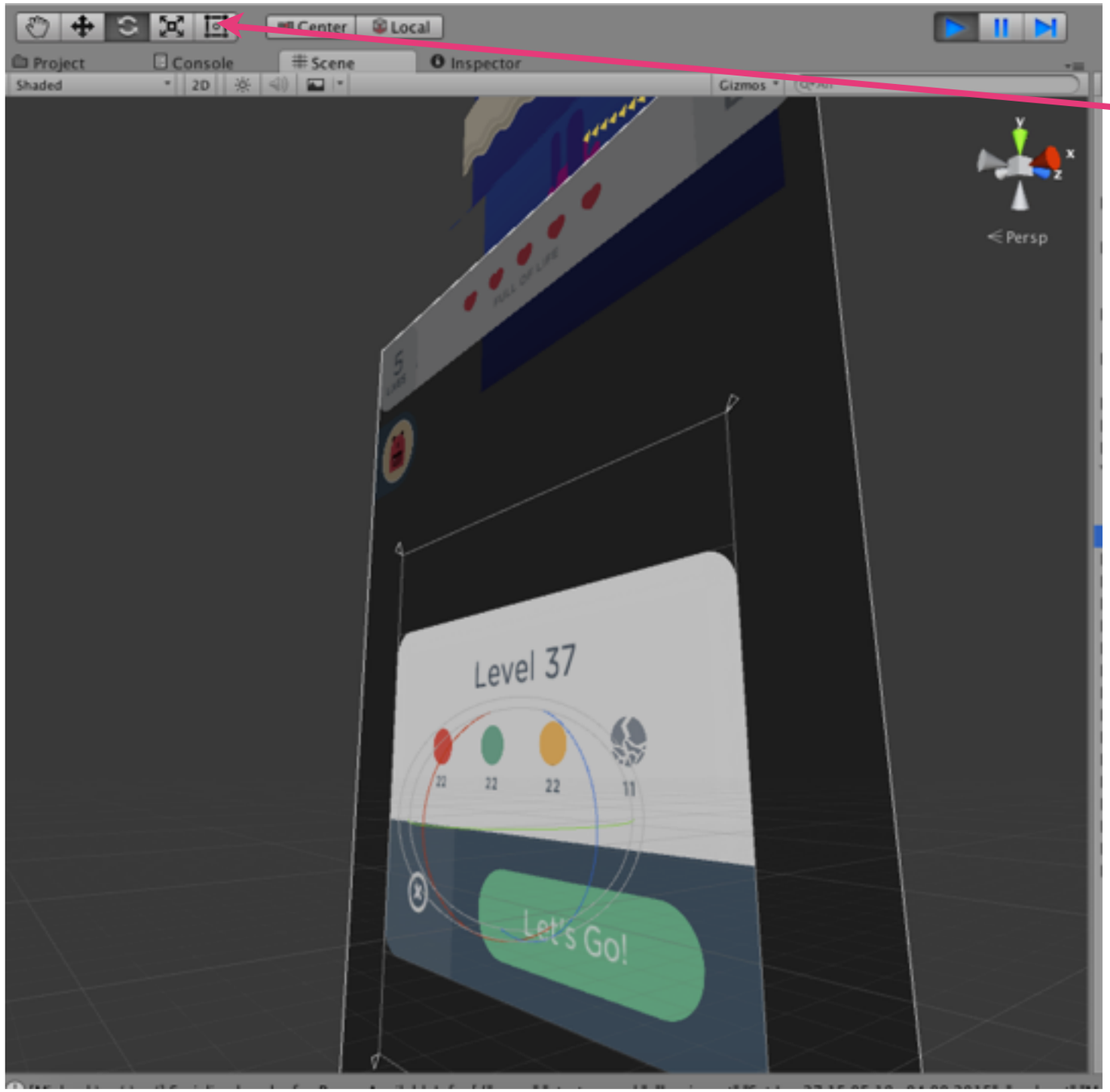


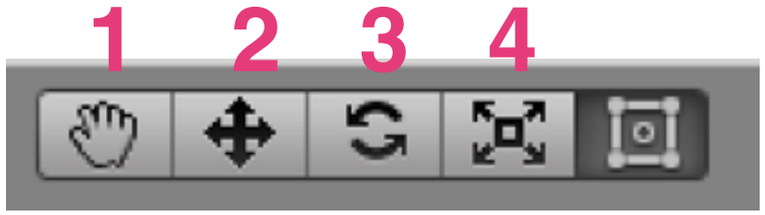
Airplane Cockpit



Let's take a closer look at each panel

First thing is to learn how to navigate the Scene View





1. Move in the view
2. Move an object
3. Rotate an object
4. Scale an object

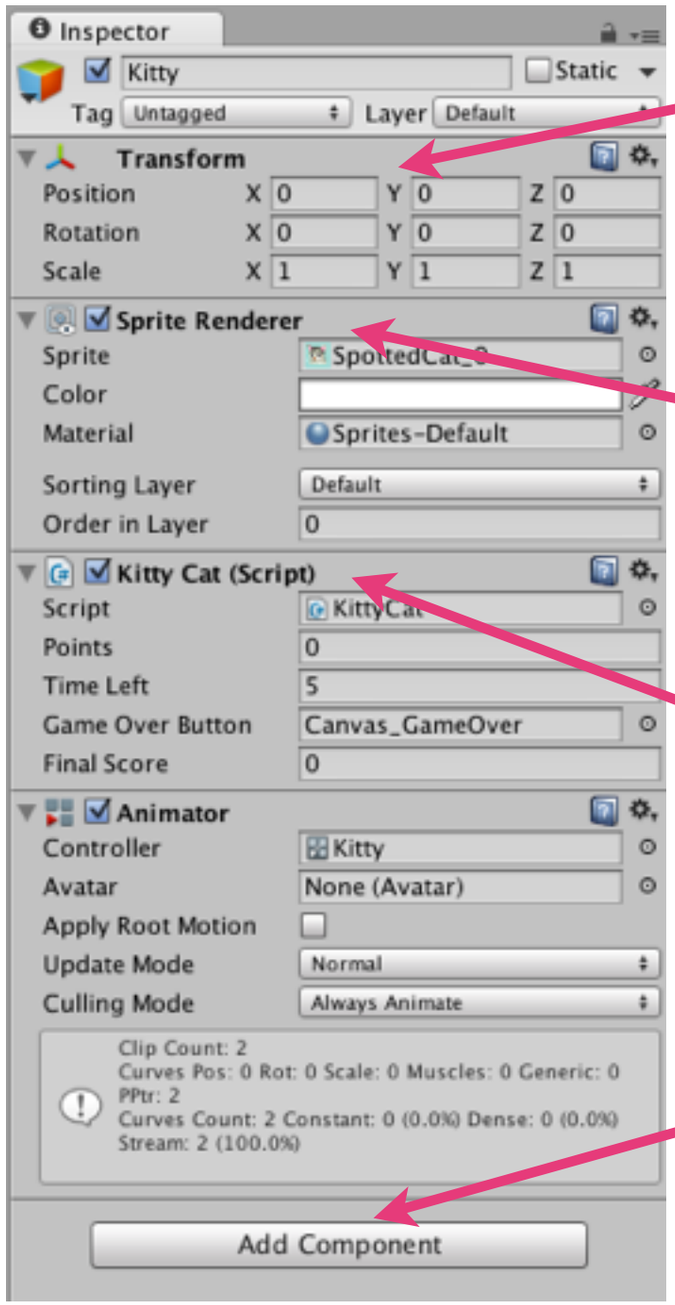
if Game = a full meal;

The inspector is where you prepare a dish (gameObjects)

E.g. In a salad...

- Some ingredients are pre-prepared
- Some ingredients you pre-prepare yourself
- You can choose the serving size of the dish, when you want to add ingredients and how much

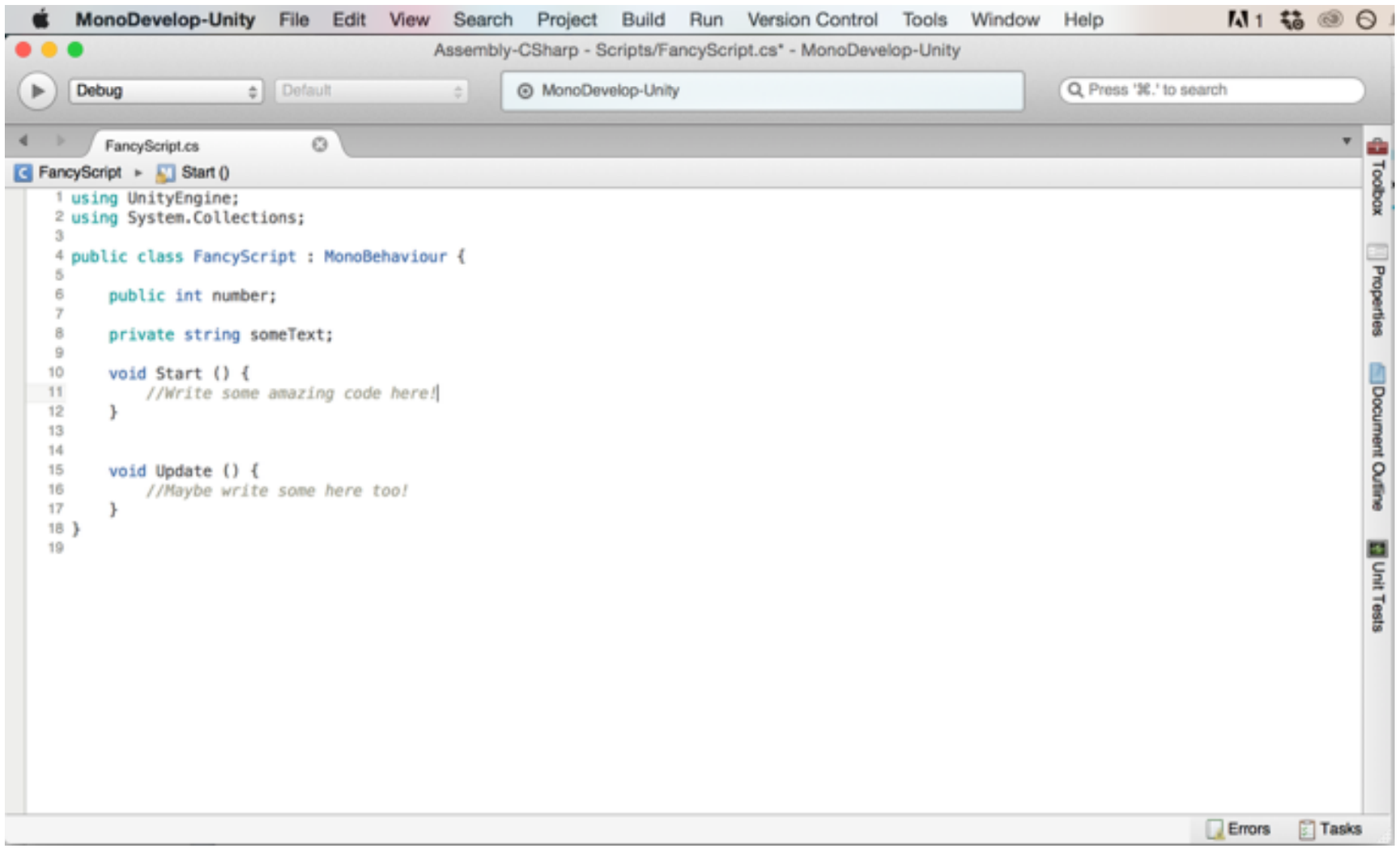
As with the salad...
In the Inspector



- You can control the starting point, rotation and size of the gameObject
- Some components of the gameObject are pre-prepared by Unity
- Some components you pre-make yourself (through coding)
- Use the Add Component or specify in script button to add them

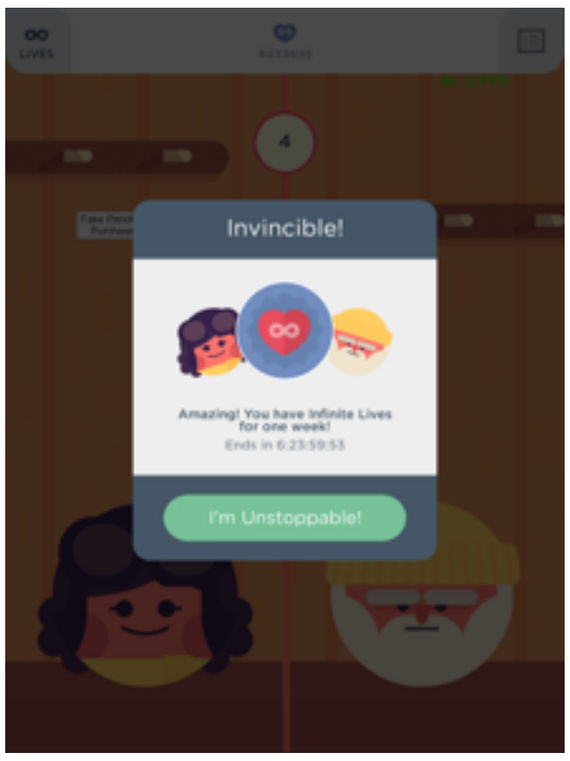
Where do we code?

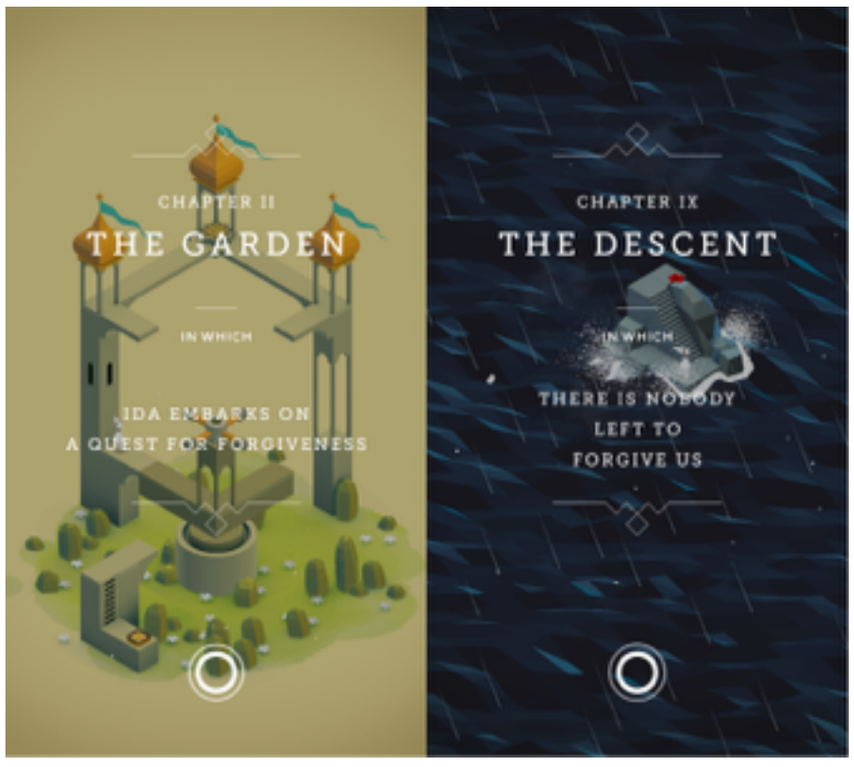
In a separate application called MonoDevelop

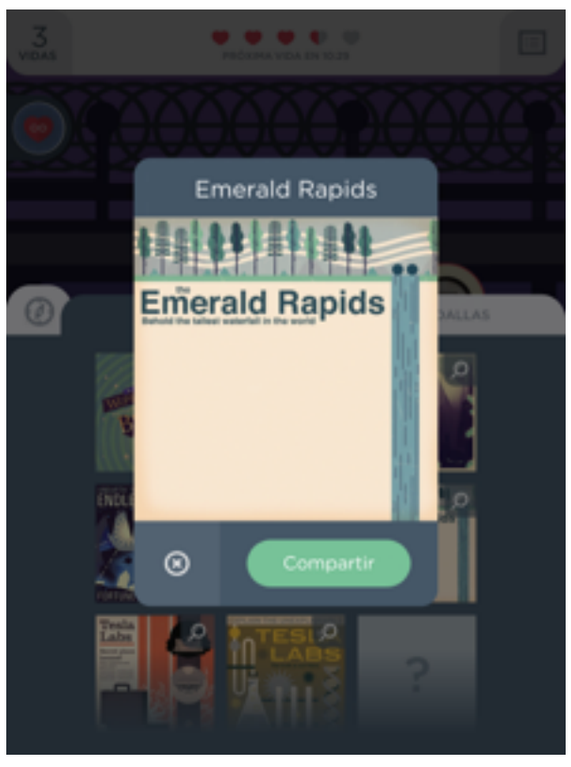


MonoDevelop is a default Unity editor.
Can be replaced with editor of your choice.

Time for some UI!







There are ton of different UI elements out there!

input fields

menus

progress bars

popups

overlays

text

toggles

scroll views

buttons

sliders

Today we gonna make:

input fields

progress bars

menus

overlays

popups

text

toggles

scroll views

buttons

sliders

What can make learning more fun?

What can make learning more fun?

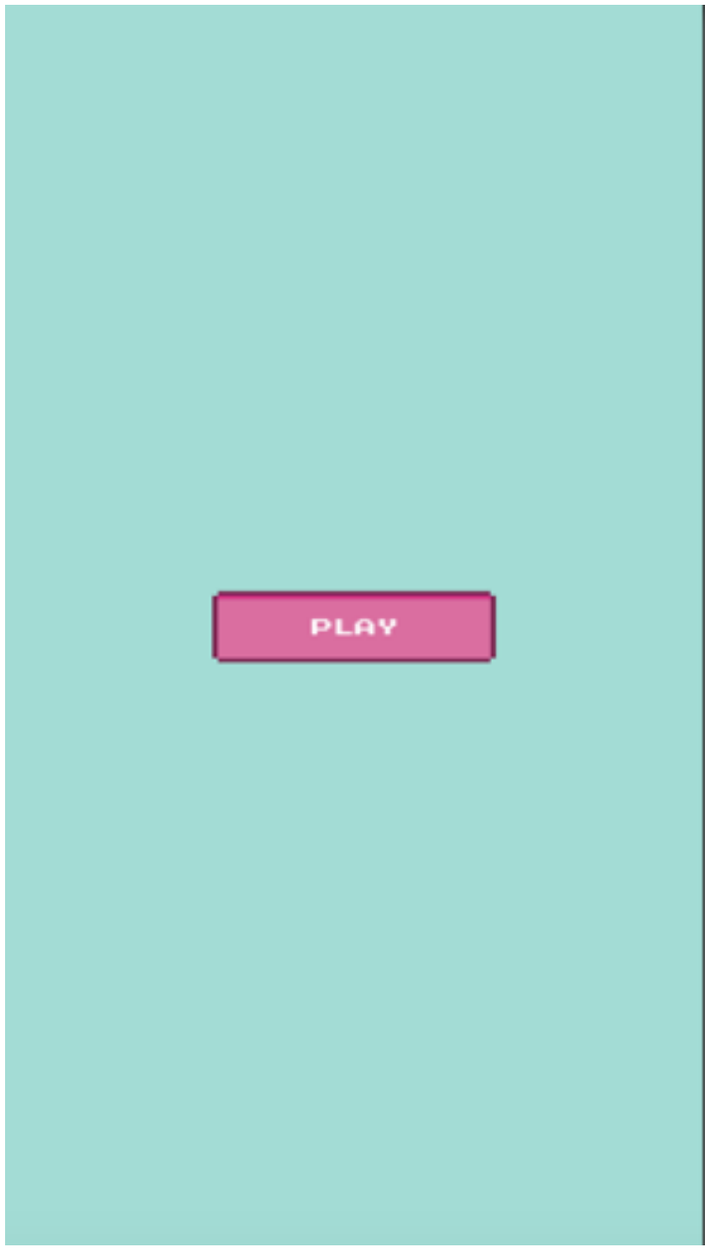
KITTENS!

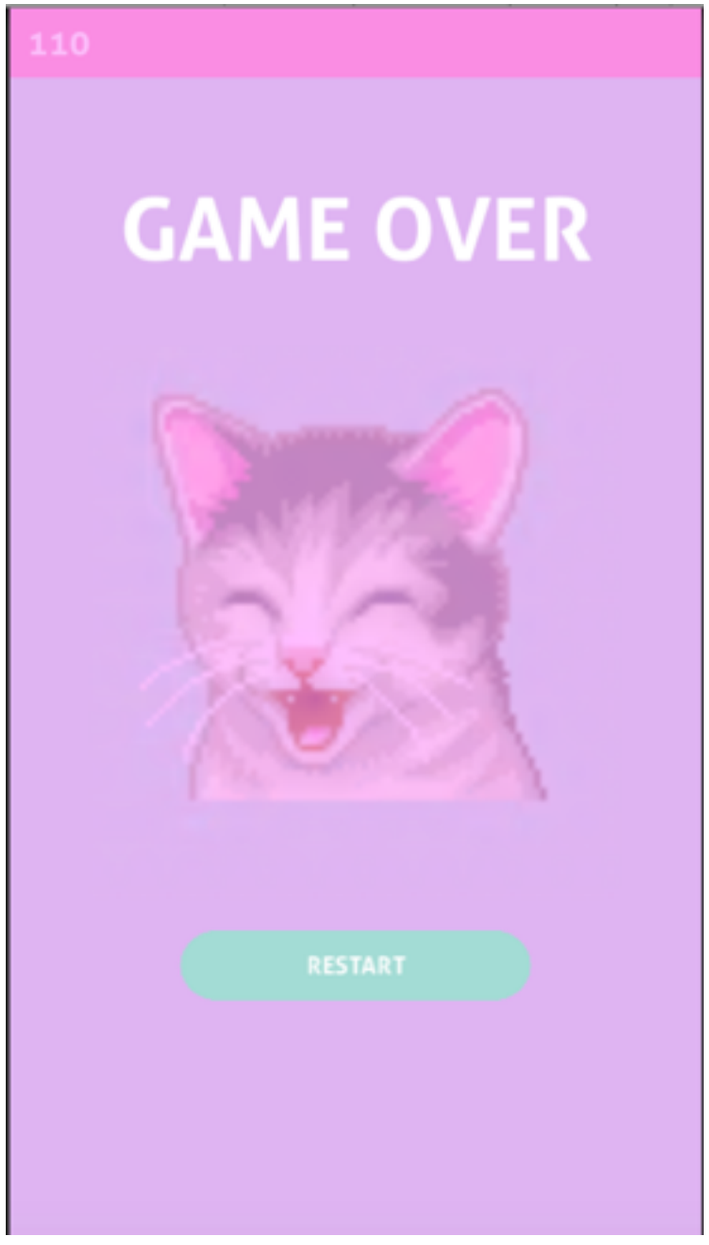
Go to folder Assets/Scenes inside the HappyKitten folder.
Double click Game.unity file.
You just opened a Game scene.

Kitten is sad, until you pet it.
When you pet it, it gets happy.
Faster you pet it happier it gets.

Wait what?
I don’t understand what’s going on.
We need some UI to make it clearer!

Lets add some UI flow.



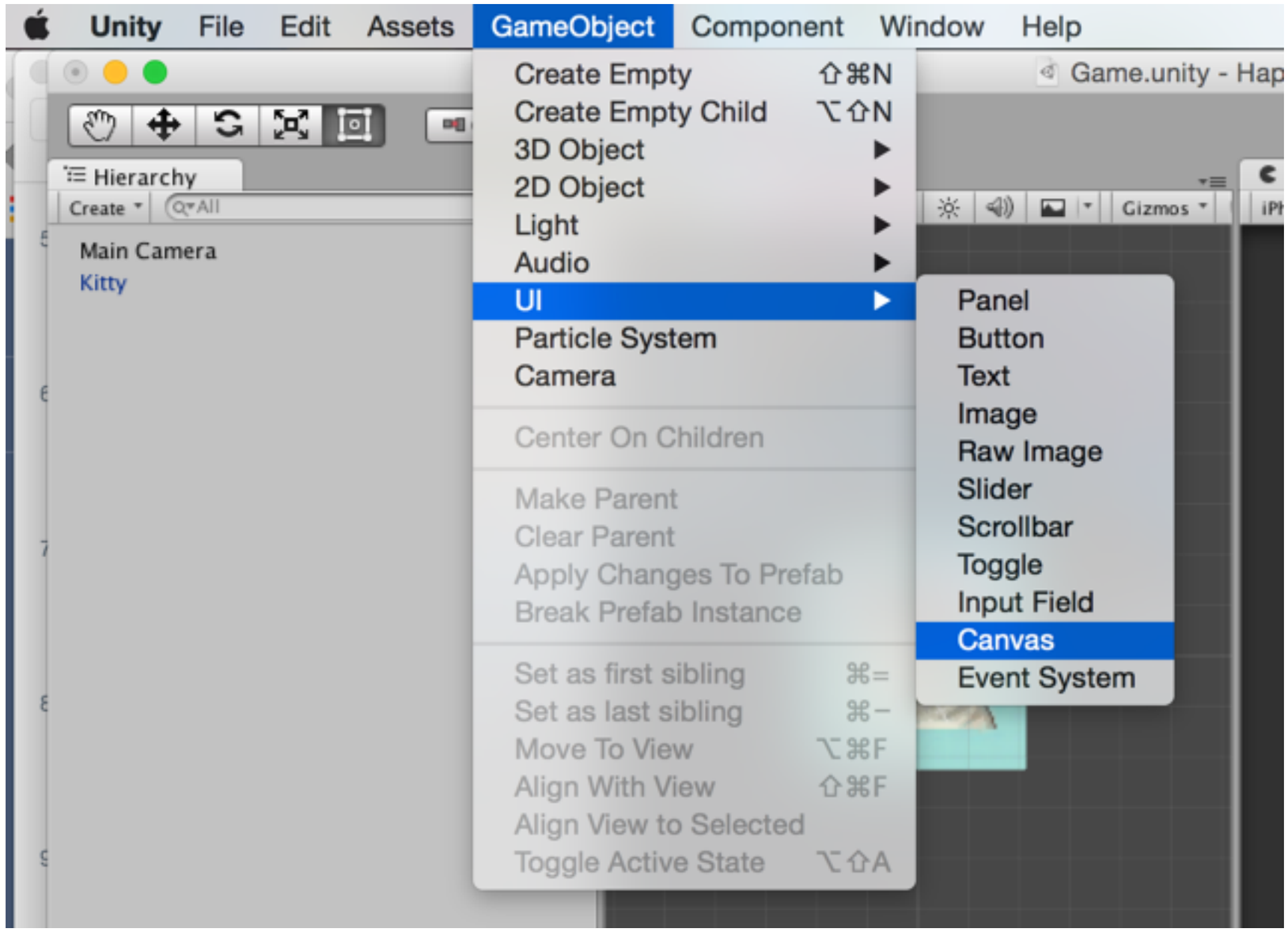


File/New Scene to create a new scene.

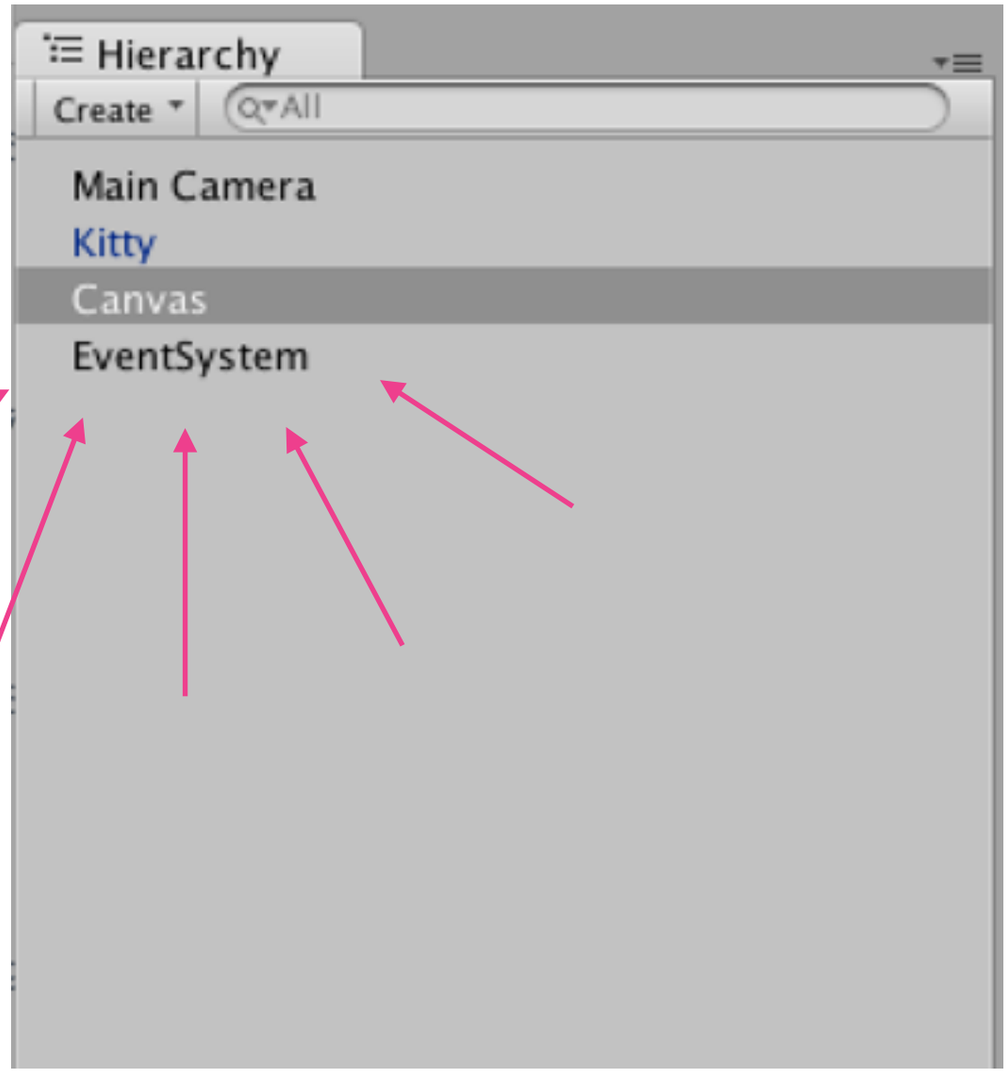
That’s going to be our start page.

All Unity UI elements live on Canvases.

Create one by selecting GameObject/UI/Canvas

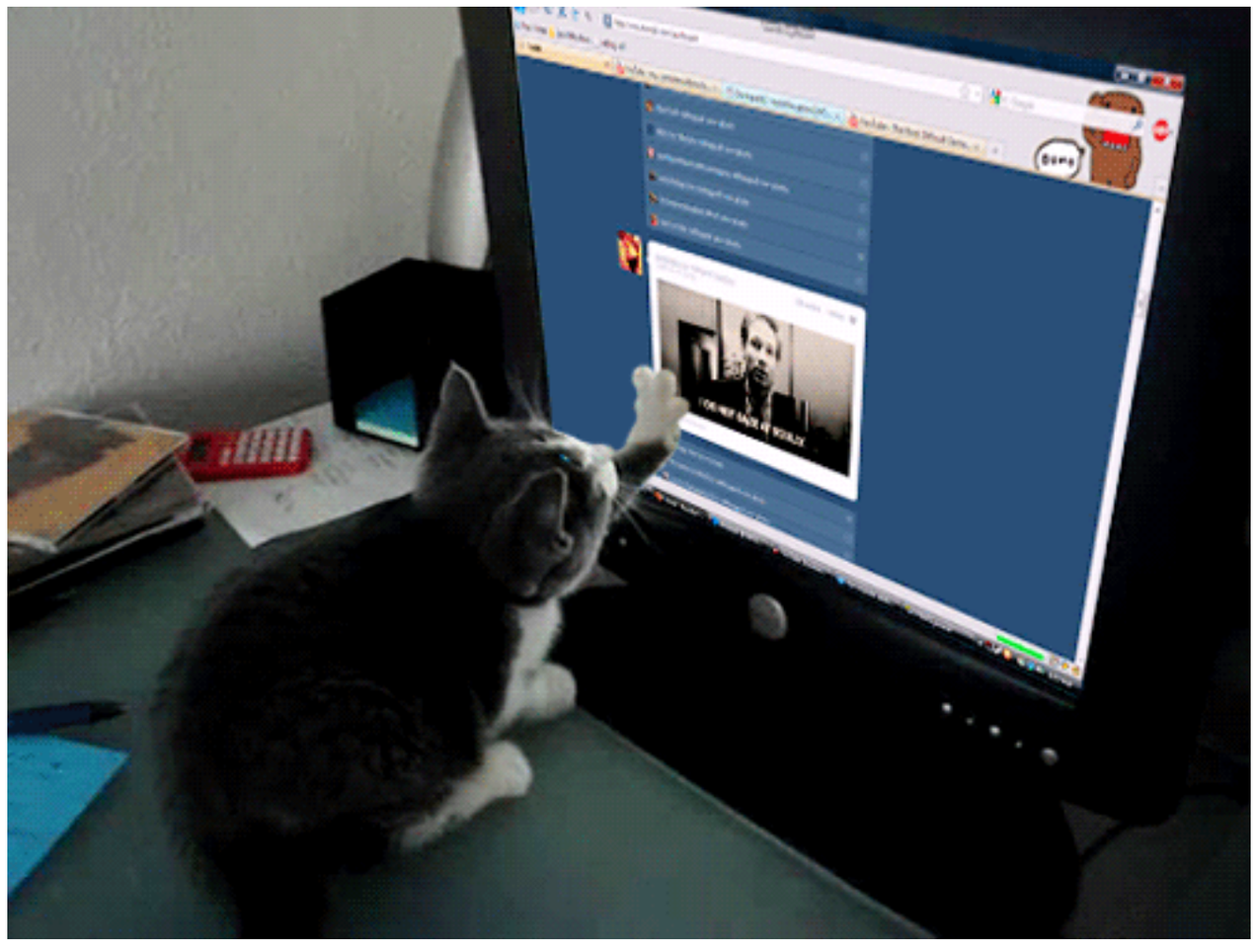


Canvas showed up in the hierarchy.
But wait!!!



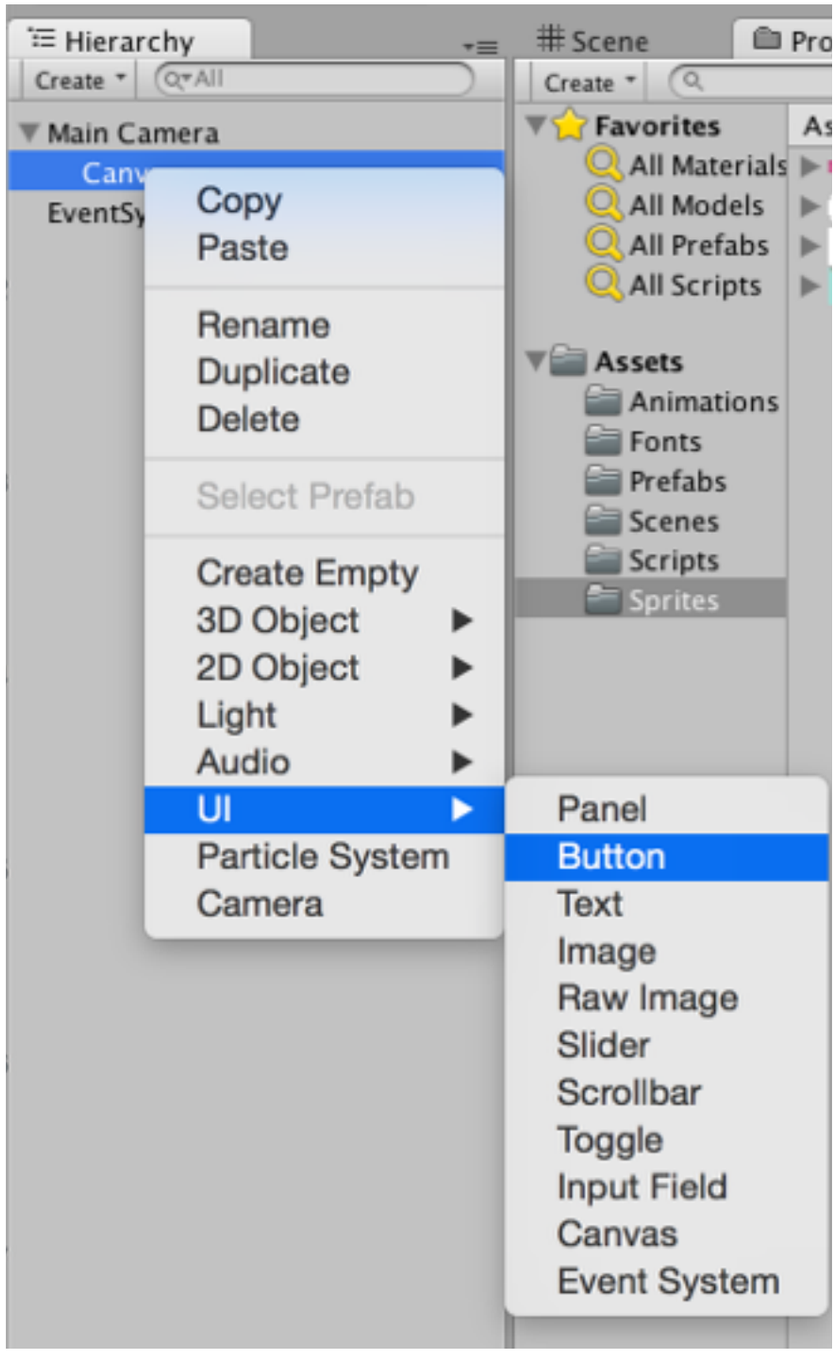
What's this EventSystem????

EventSystems are responsible for interaction.
If you want a button to click, a scroll view to scroll,
you need to have one EventSystems Object
in the hierarchy of your scene.

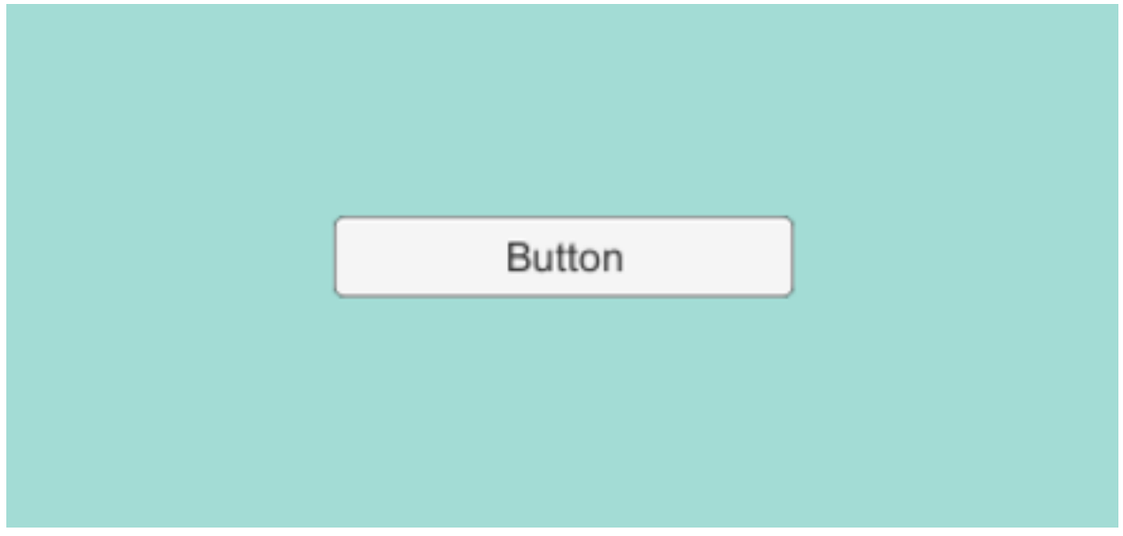


Making a button!

Right click on a Canvas in the hierarchy.
Select UI/Button.



We have a button!
It’s that easy.



Interactable - sets if user can tap the button or not

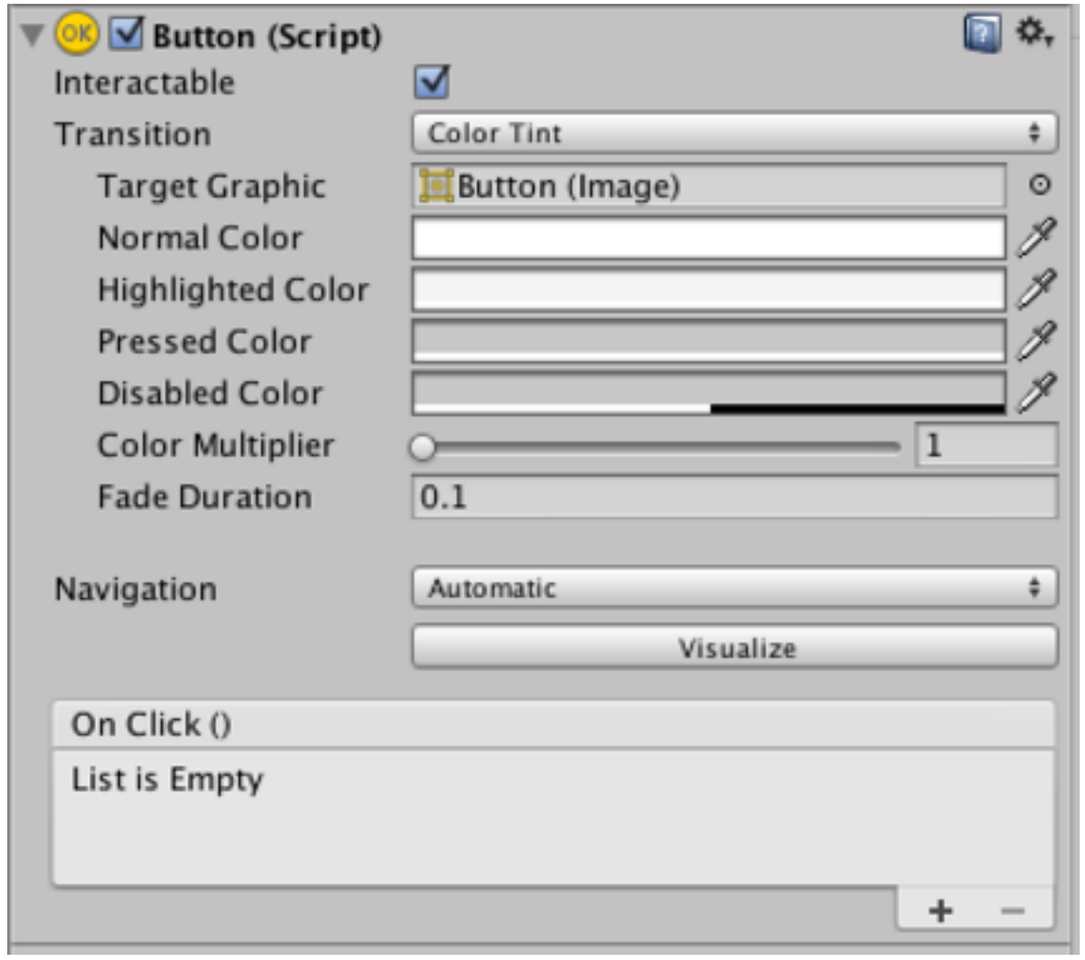
Target Graphic - Image object of the button

Transition (Color Tint, Sprite Swap, Animation)
- how the button reacts visualy when user interacts with it

Normal/Highlighted/Pressed/Disabled Colors(Color Tint Transition) - color tints for each state of the Button

Navigation (For PC games only) - how to navigate between buttons when keyboard keys are used.

On Click() - Events that will be triggered when you click the button



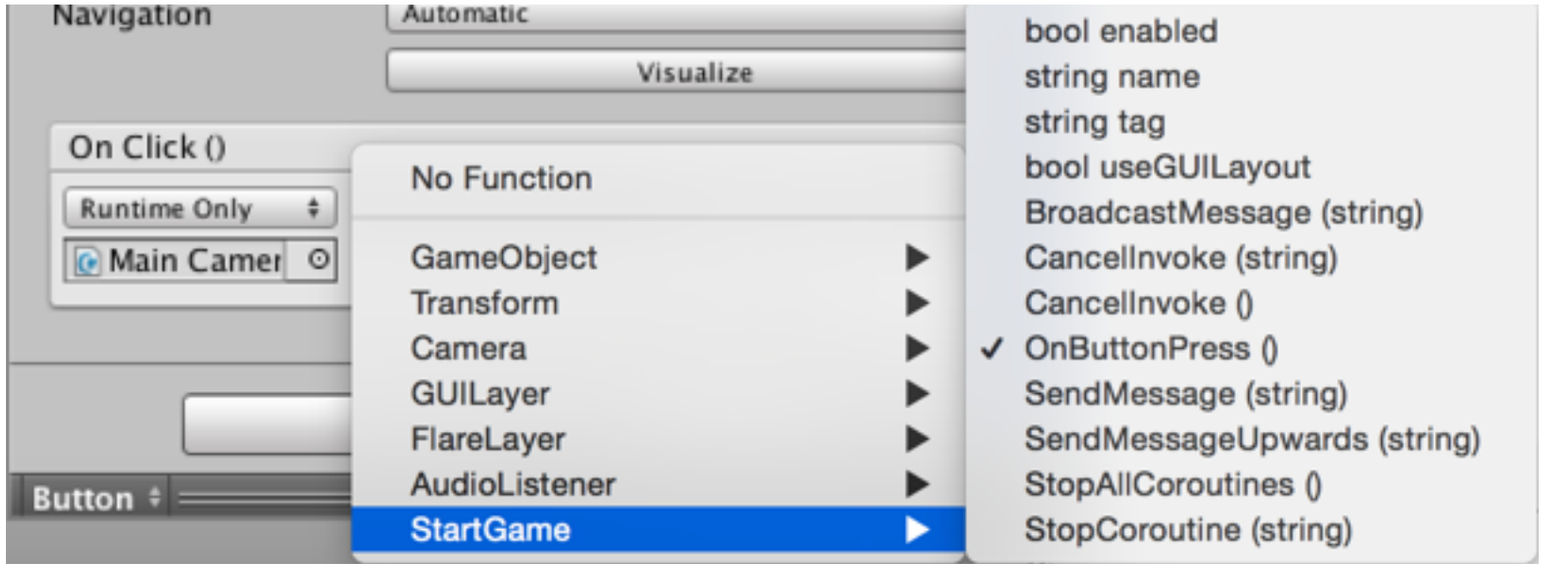
Time for some scripts

- Create a new script called StartGame in Scripts folder
- Double Click on it to open MonoDevelop
- Delete Start and Update methods
- Create a new method:

```
public void OnButtonPress() {
      Application.LoadLevel ("Game");
   }
```

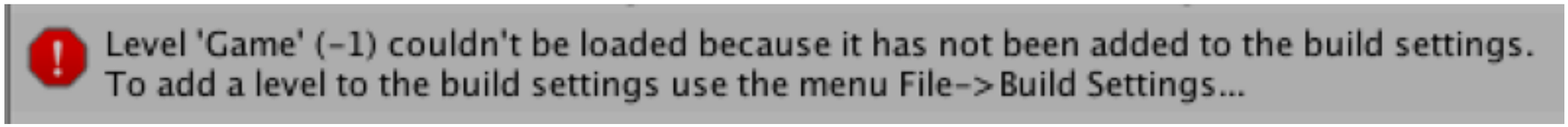
Back to the button!

- Press + on the bottom right of the On Click() window.
- Drag the Main Camera into a field in the On Click () window.
- All scripts attached to the camera object appeared in the “No Function” dropdown.
- Find StartGame/OnButtonPress () in dropdown.

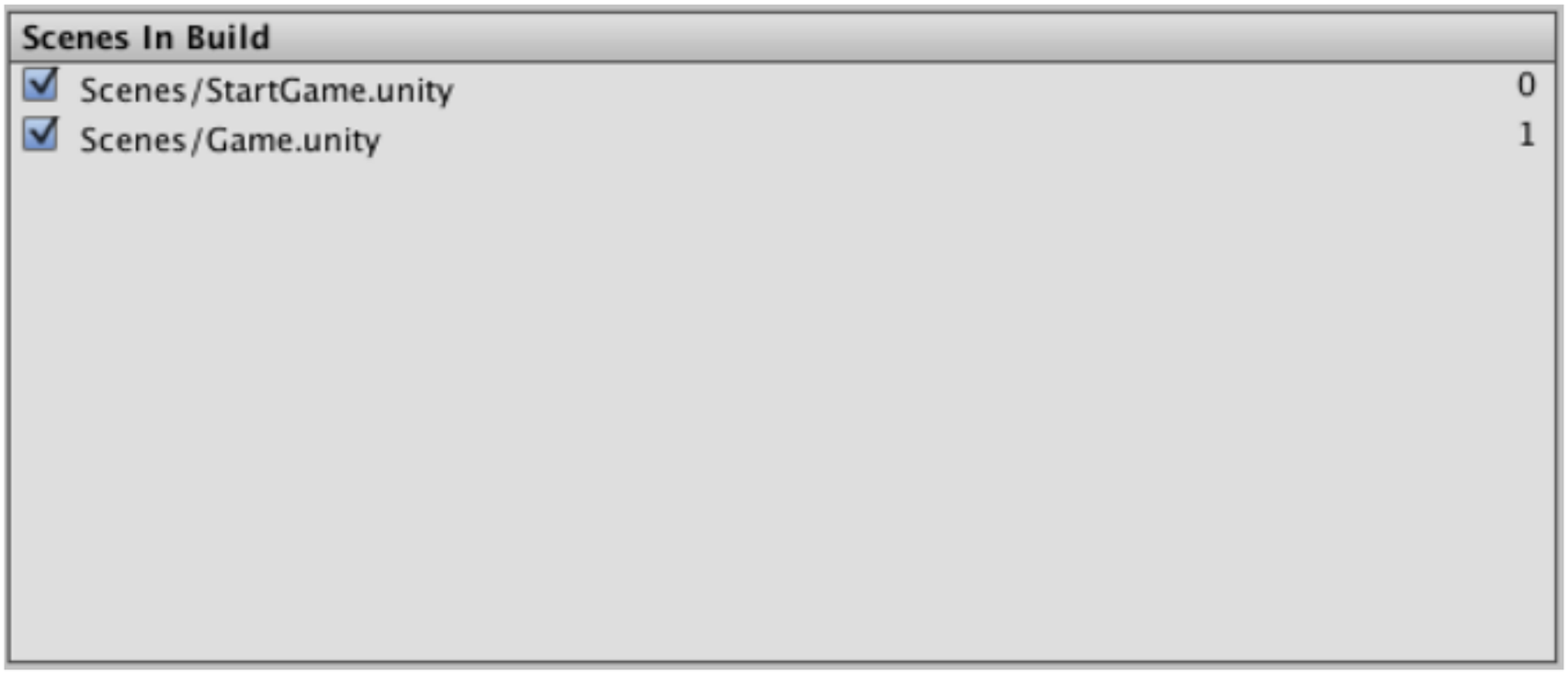


You can trigger any public method of a script on any object in hierarchy of the scene.

OH NO!

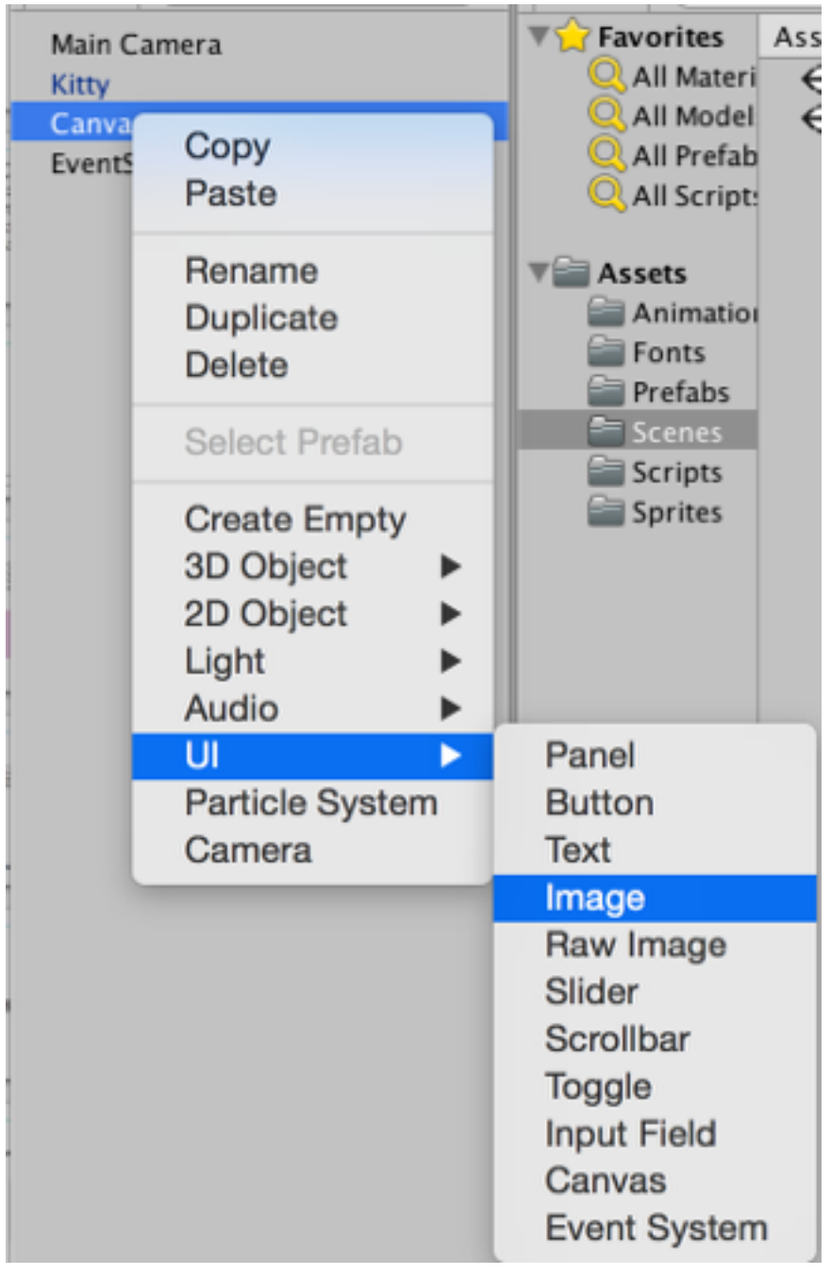

Level 'Game' (-1) couldn't be loaded because it has not been added to the build settings.
To add a level to the build settings use the menu File->Build Settings...

Make sure your scenes are added to Build Settings

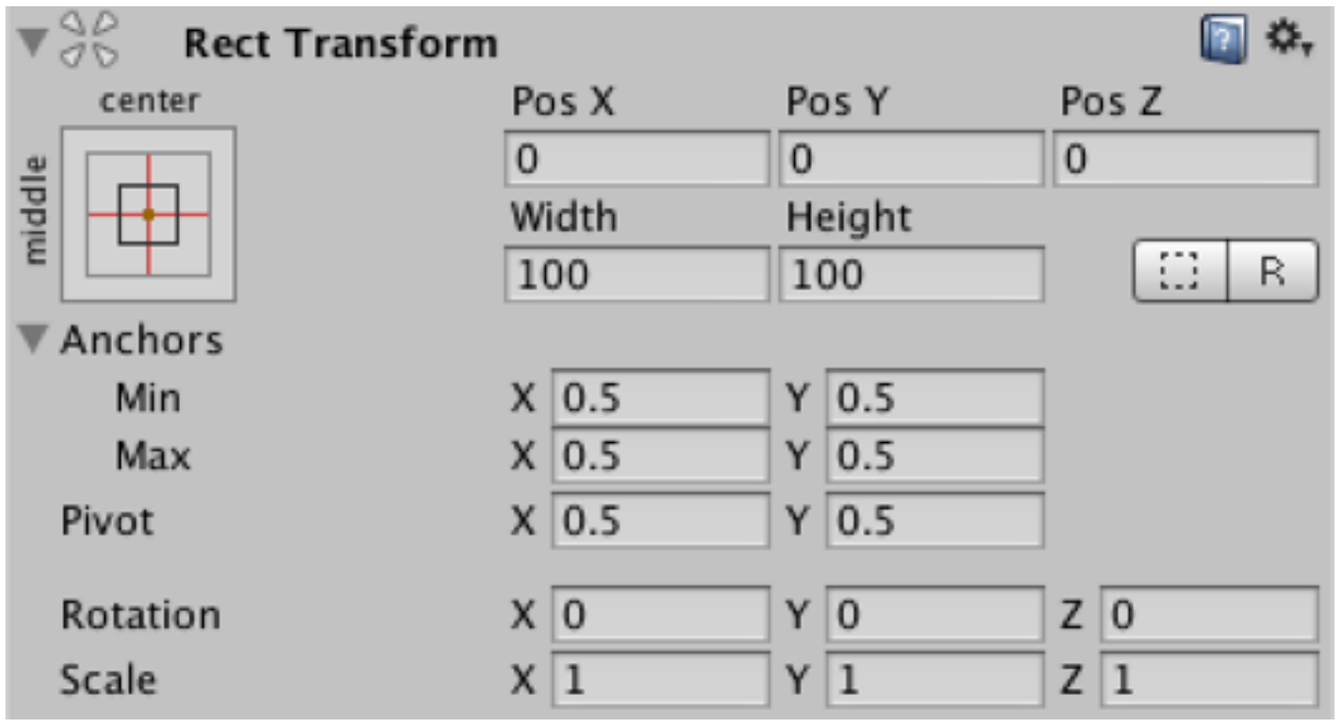


In-Game Top Bar!

Lets make an Image inside of a canvas.
Just like you did with a button.

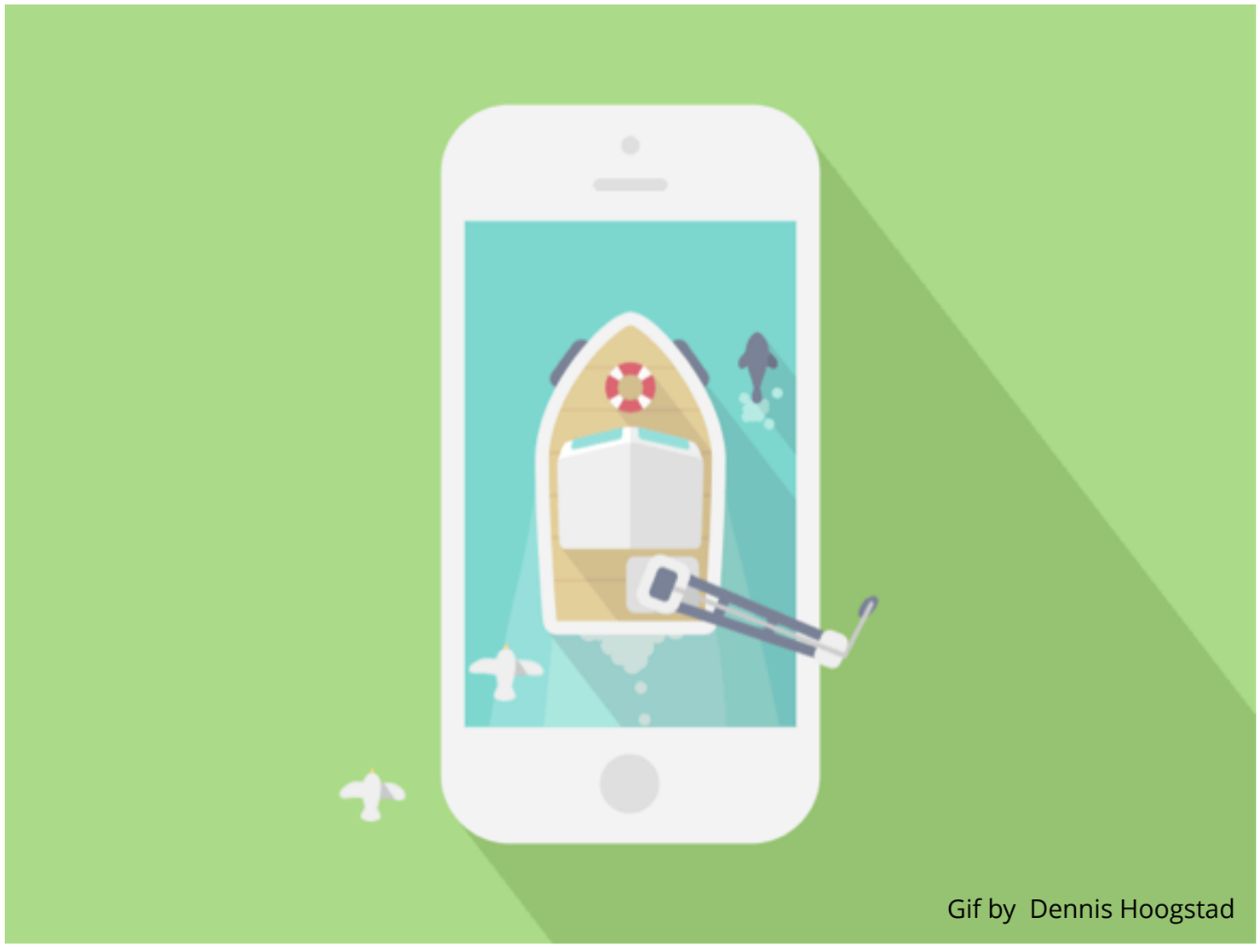


All UI Elements have Rect Transforms.
They are responsible for position and size of an object.

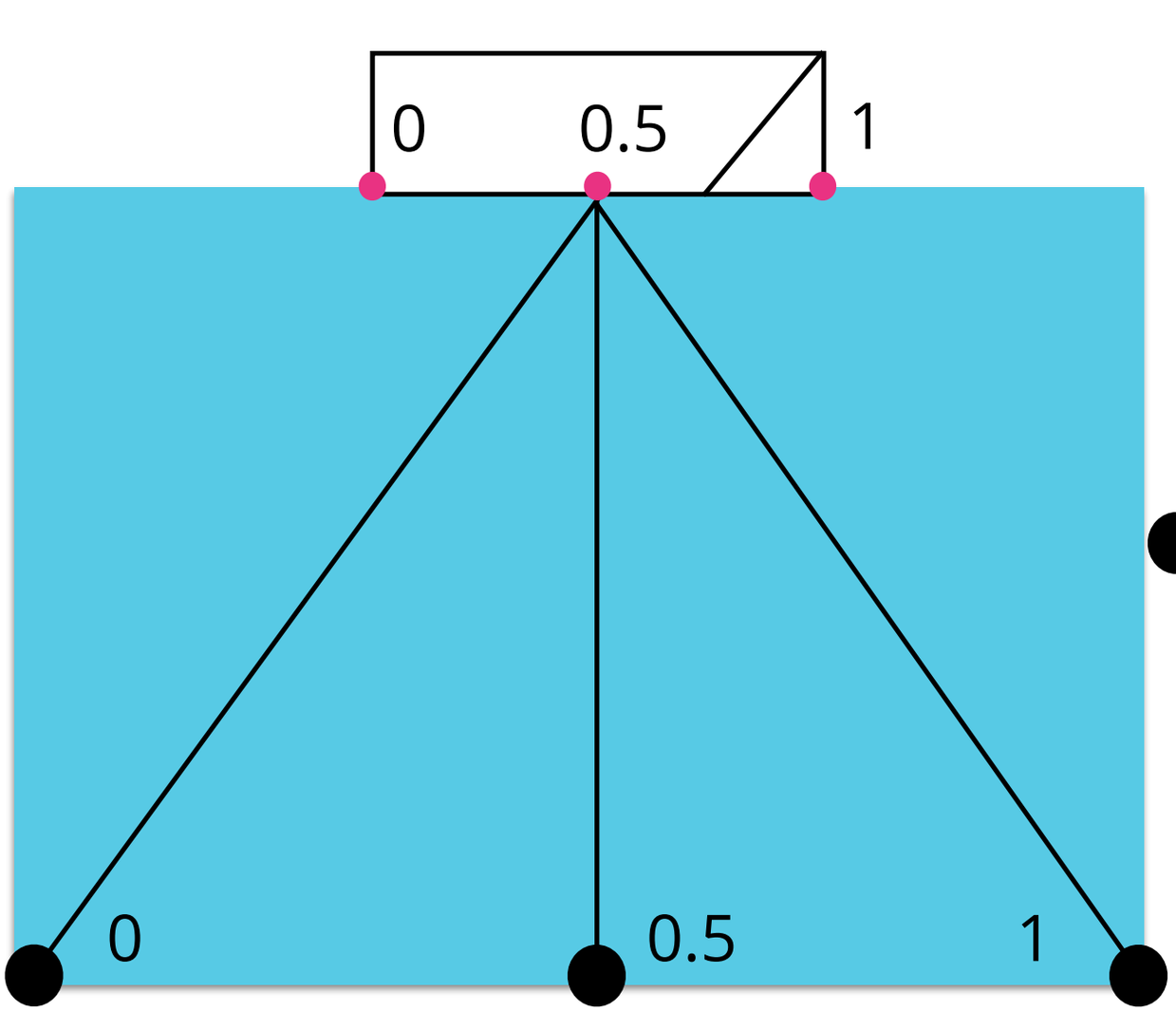


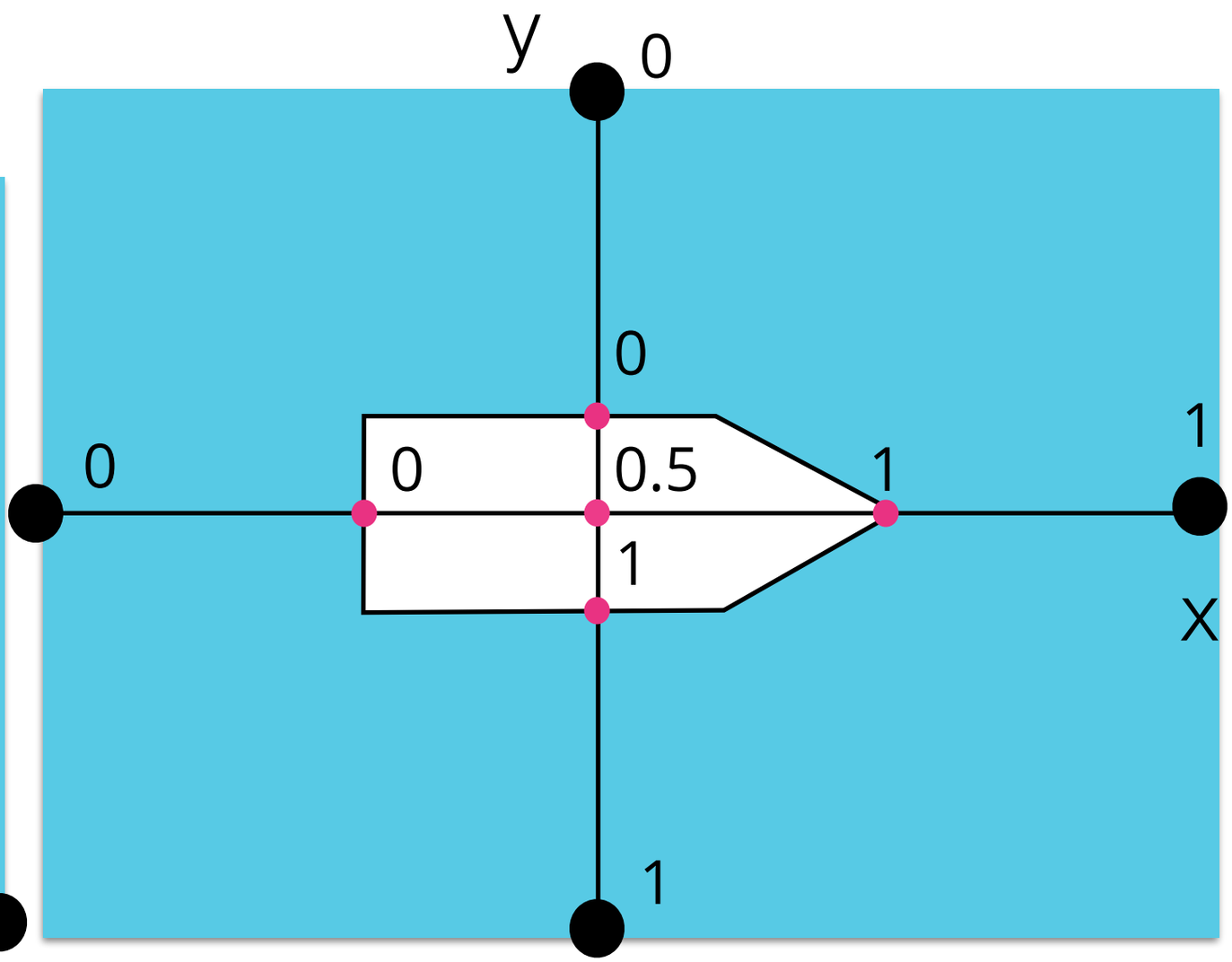
They are kinda scary and kinda not.

Anchors and Pivot Points



Boats have anchors too!





Pivot Point

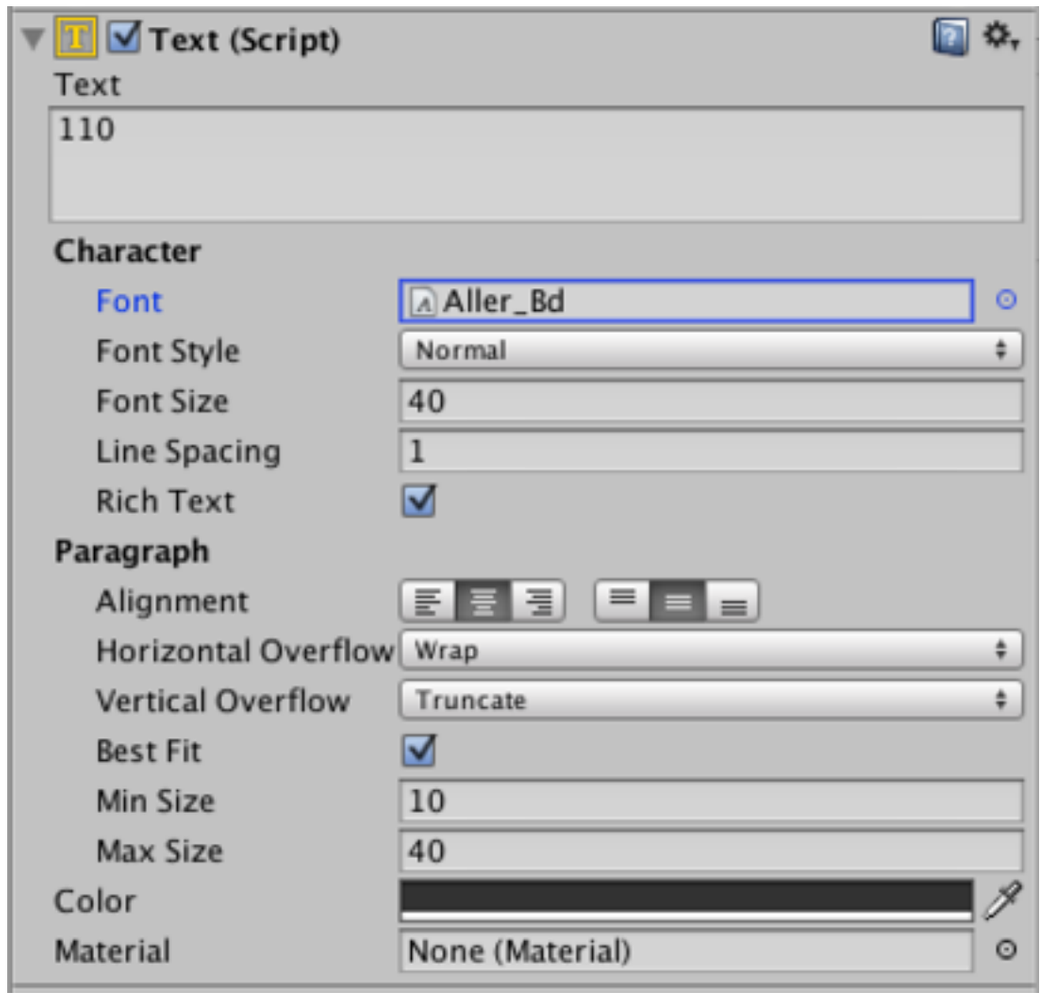
Anchor

Score!

Make a Text inside of the top Bar Image Object.

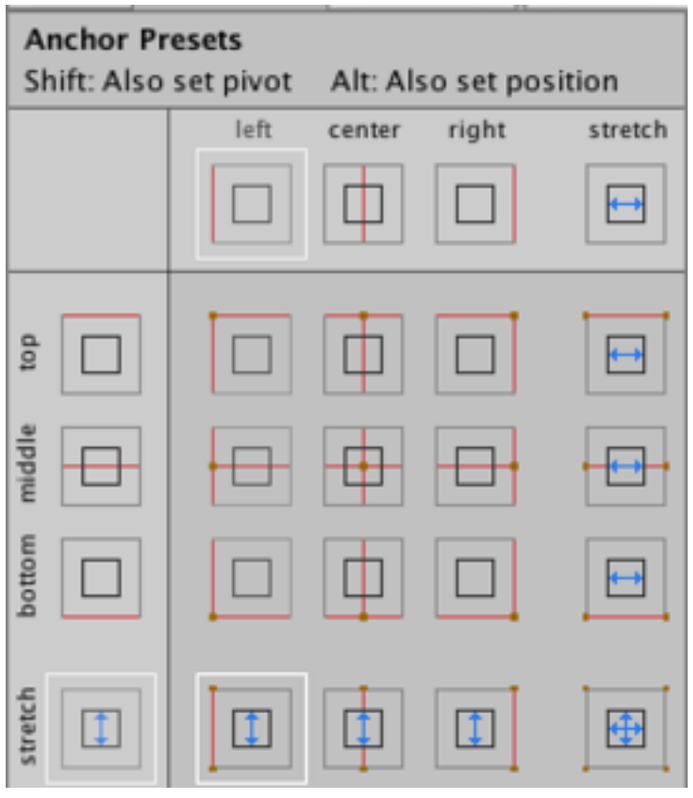
You can use any ttf or otf font files.

Best Fit - is a great tool for scalable UI



Sets score text's anchor and pivot point so that it is anchored to the left and has stretchable height.

Set font and width to fit well.

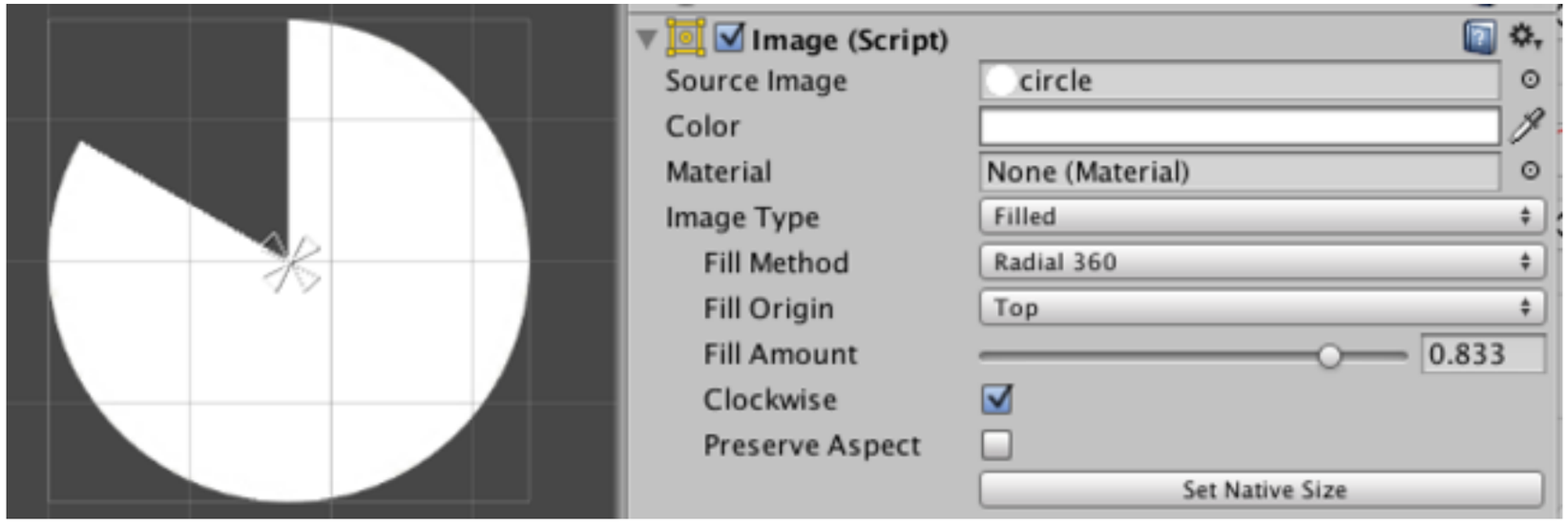


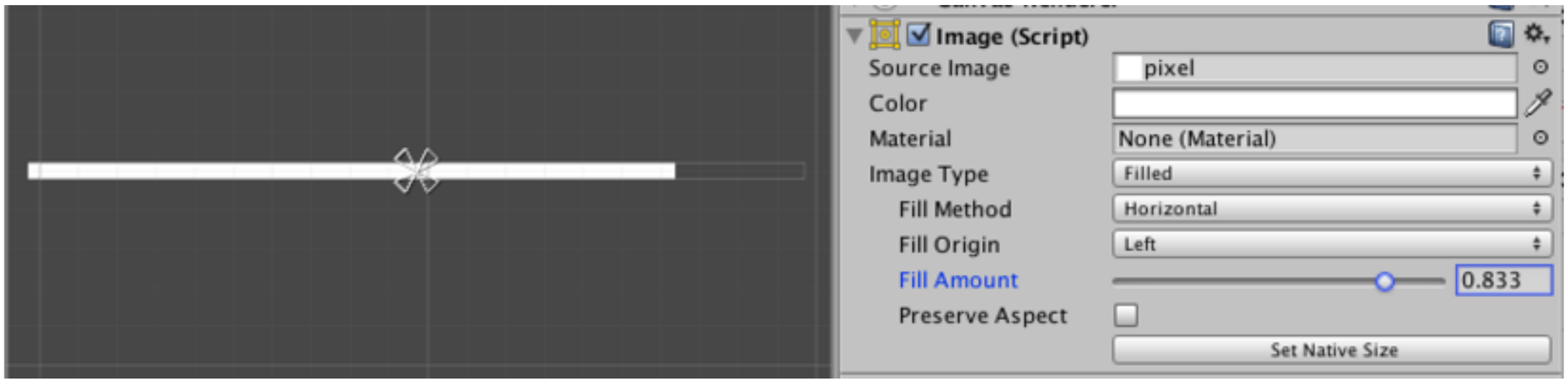
Progress Bar!

Create an Image inside of the Top Bar Image.

You know how to do it now!

Set Image Type to Filled and you will have great visual effect for progression. Just by changing Fill Amount between 0 and 1 you can fill in the image Radially, Horizontally or Vertically.





Sets progress bar anchor and pivot point so that it is anchored to the right and has height of 4px.

Lets make things work.

Make a script called TopBar and attach it to the object of the TopBar.

```
using UnityEngine;
using UnityEngine.UI;

public class TopBar : MonoBehaviour {

    Kitty kitty;

    public Text pointsText;
    public Image progressBar;

    void Start () {
        kitty = FindObjectOfType<Kitty> ();
    }

    void Update () {
        if (kitty != null) {
            pointsText.text = kitty.points.ToString();
            //Get 0 to 1 number for the fill Amount based on time left
            progressBar.fillAmount = kitty.timeLeft/kitty.maxTime;
        }
    }
}
```

1. Add UnityEngine.UI namespace. Without it you not going to have access to Text and Image in this script. so unity knows you're also dealing with UI-related stuff in this code.

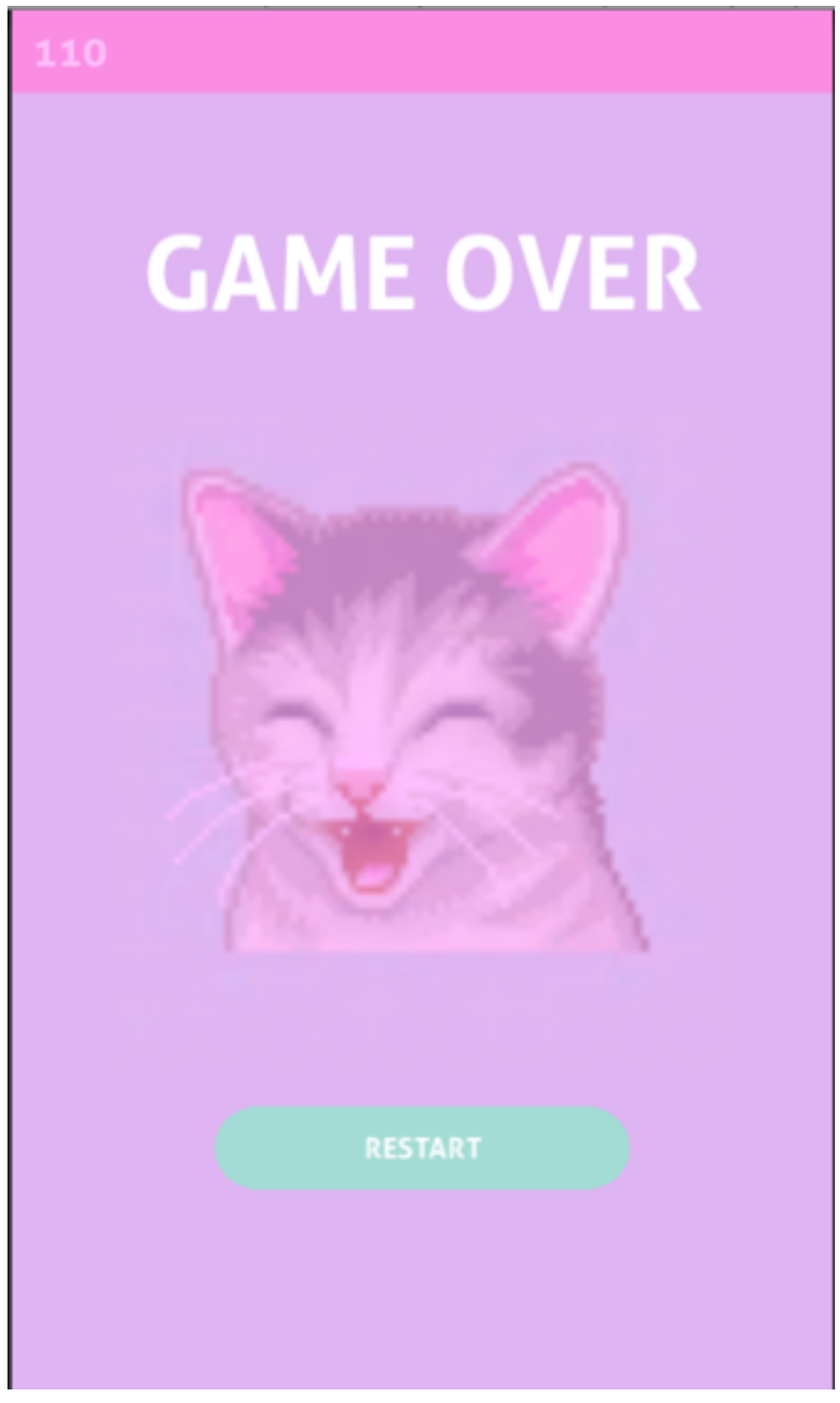
2. Declare variables for points Text Object and progressBar Image object. Set them as public to see them in Inspector.

3. Find Kitty object. Method "FindObjectOfType" finds object of that type (in this case, Kitty) in the current scene.

4. Every frame, update text of pointsText object and fillAmount of progressBar image with values from the Kitty.

Ready to make something on your own?

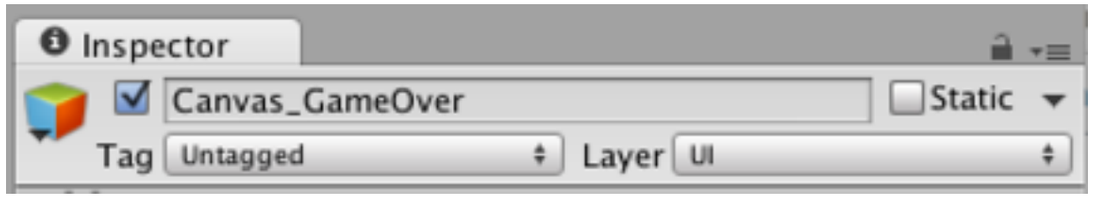
Make a “Game Over” overlay with a restart Button.
Show it when run out of time.



Tips:

To Enable / Disable Object by code use
gameObject.SetActive (true); / gameObject.SetActive (false);

In Inspector by Selecting a checkbox on the top left corner.



When restarting timeLeft and points needs to be reset.

Where to look for help:

Documentation: http://docs.unity3d.com/Manual/UISystem.html

Tutorials: https://unity3d.com/learn/tutorials/topics/user-interface-ui

This slides: https://github.com/Kseniya/UnityUIClassSlides

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