



# Greetings! @codeliberation

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# What is Code Liberation?

A little about us.



We are a community!

We are a non-profit

We are run for and by  
women, nonbinary, femme  
and girl-identifying people





Participants learn:

DIGITAL GAME  
DEVELOPMENT and  
CREATIVE TECHNOLOGIES



# Resources

## Unity UISystem Reference

<https://docs.unity3d.com/Manual/UISystem.html>

## Project Download

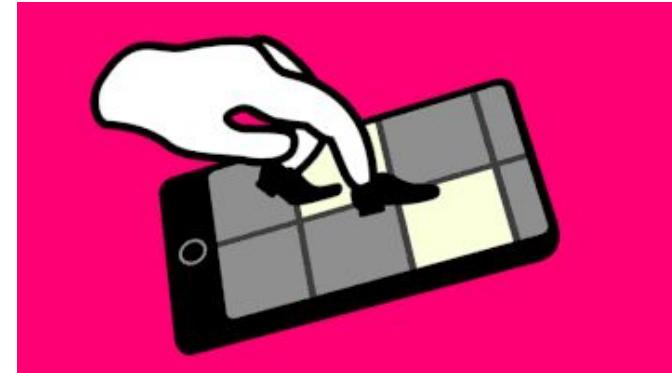
[https://github.com/CodeLiberation/CLF-slides/tree/master/Classes\\_and\\_Workshops/Unity\\_UI](https://github.com/CodeLiberation/CLF-slides/tree/master/Classes_and_Workshops/Unity_UI)



# User Interface

How a user interacts  
with a computer system  
or piece of software

Including, but not  
limited to buttons,  
menus, sliders, graphs  
etc!





# GUI vs CLI

# Graphical User Interface



# Command Line Interface

USER	PR	NI	VIRT	RES	SHR	S	%CPU	%MEM	TIME+/-	CPU
root	15	0	88828	13m	2612	S	3.0	0.3	0:00:09	cpsrvd-ss
root	10	-5	0	0	0	S	1.6	0.0	4:07:45	events/0
root	16	0	10252	640	540	S	1.0	0.0	18:19:12	halvd-addon-sto
root	15	0	105m	6868	1204	S	1.0	0.0	207:10:16	lvestats-serv
root	16	0	13164	1612	820	R	1.0	0.0	0:00:13	top
root	18	0	87784	11m	1508	S	0.7	0.3	0:35:50	cpsrvd-ssl
root	15	0	875m	373m	5256	S	0.7	9.4	755:30:52	mysqld
mysql	15	0	168m	81m	1836	S	0.7	2.1	0:00:53	httpd
nobody	15	0	0	0	0	Z	0.7	0.0	0:00:42	<defu
nobody	15	0	168m	81m	1824	S	0.7	2.1	0:00:20	httpd
nobody	15	0	119m	16m	1580	S	0.7	0.4	4:04:19	lfd
root	18	0	10368	616	516	S	0.0	0.0	0:19:15	init
root	15	0	0	0	0	S	0.0	0.0	0:38:69	migration
root	RT	-5	0	0	0	S	0.0	0.0	0:00:00	kssoftirq
root	39	19	0	0	0	S	0.0	0.0	0:10:26	migratio
root	0	0	0	0	0	S	0.0	0.0	0:00:00	kssoftiq
root	0	0	0	0	0	S	0.0	0.0	0:08:05	migrati
root	0	0	0	0	0	S	0.0	0.0	0:00:00	kssofti
root	0	0	0	0	0	S	0.0	0.0	0:08:46	migrat
root	0	0	0	0	0	S	0.0	0.0	0:00:00	kssoft



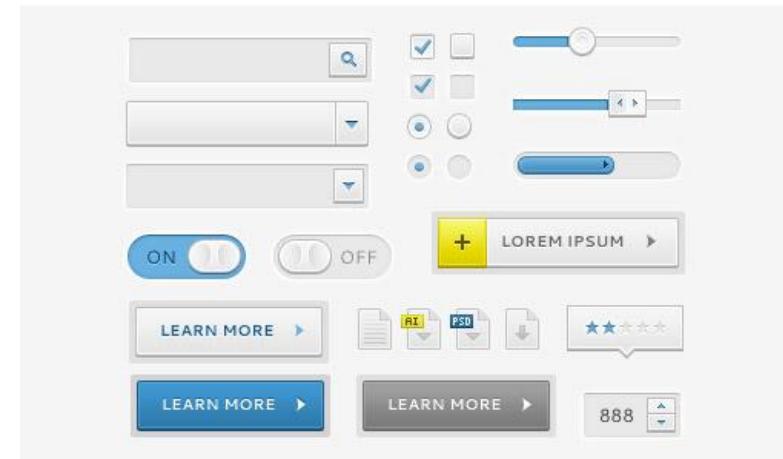
# UI Elements



# UI Elements

Buttons  
Text  
Menus  
Popups  
Sliders

Scroll views  
Overlays  
Toggles  
Progress bars  
Input Fields





# UI Elements Covered Today

Canvas - A container for other UI elements

Button - Can trigger an action with code

Text - Text that doesn't interact with the game

Image - Adjustable with code

Panel - Similar to Image but more flexible



# Discussion

Important UI Elements

How and why we use them

Context



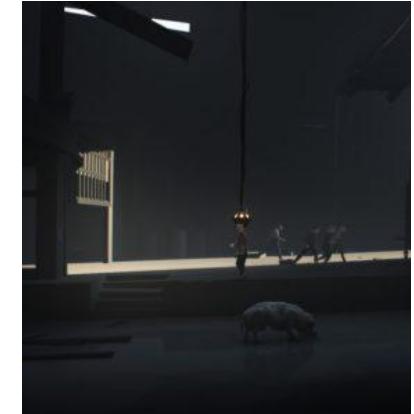


# Examples of Game UIs - Pocket Mortys





# Examples of Game UIs - Inside

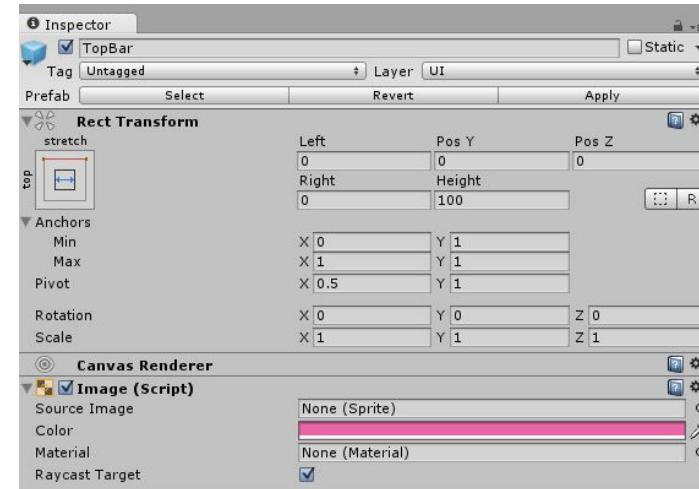




# Unity's UI Manager

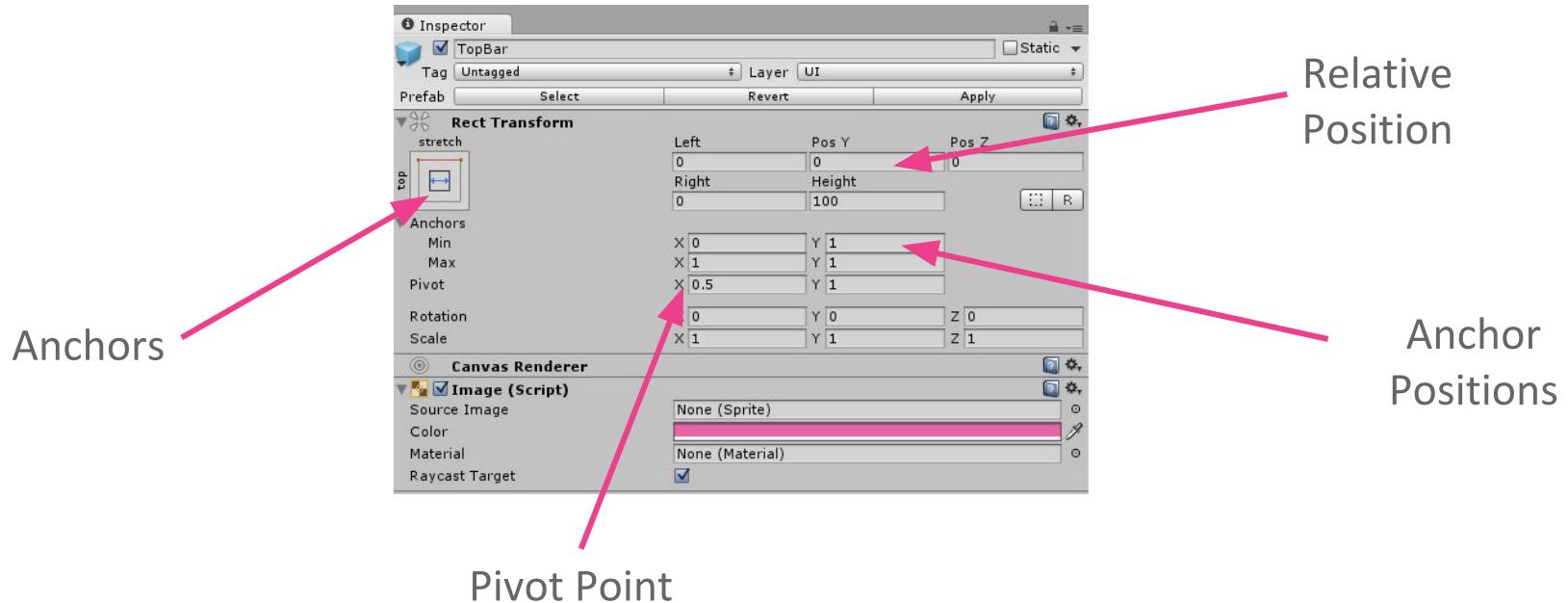
Unity has its own UI Manager!

Use it to manage all of your UI elements





# Overview of UI Manager





# On to the hard stuff

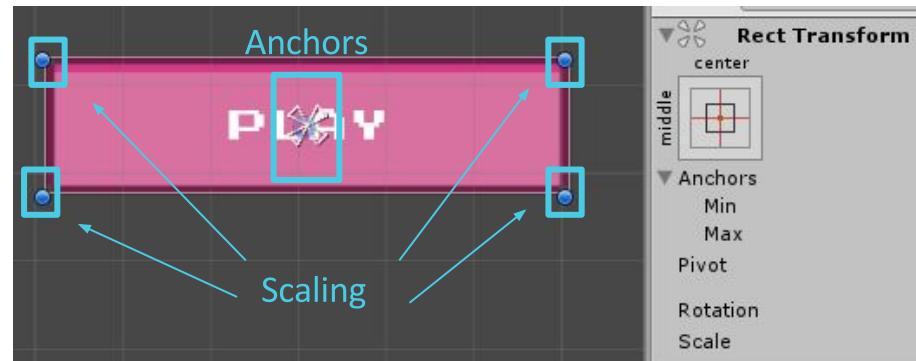
Anchors, Pivots, and  
Scaling





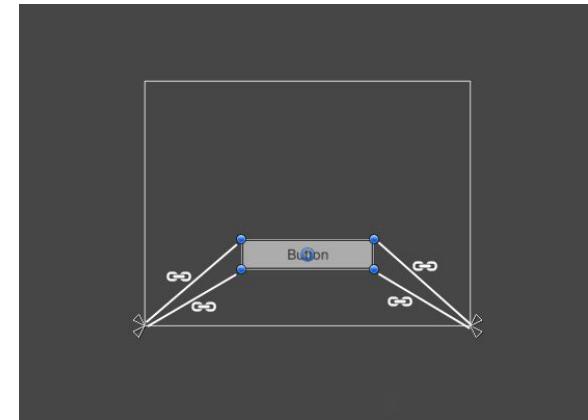
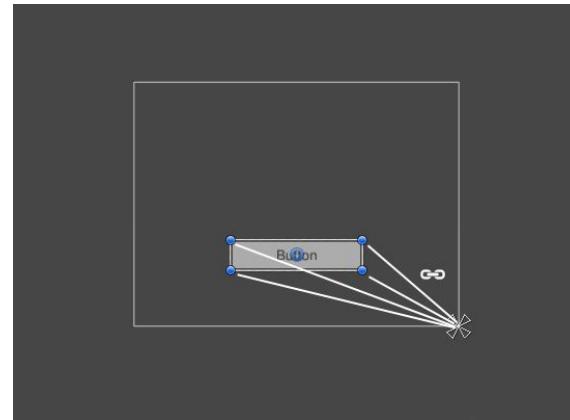
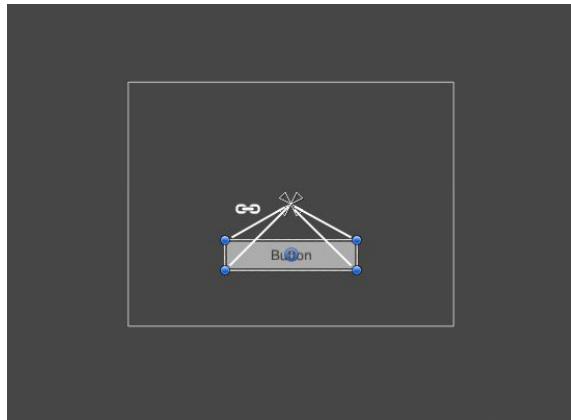
# Rect Layout

Every element in Unity's UI uses a rectangle as a point of reference.





# What Do Anchors Do?



Depending on where the element is attached to the canvas, it will act in different ways



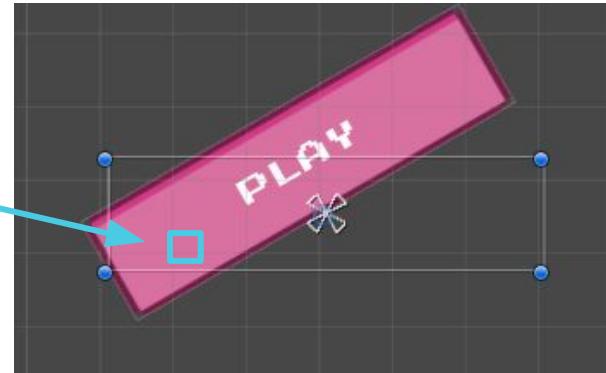
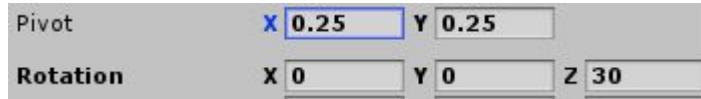
# Pivots

Rotations about  
a given point





Object rotates  
about point set in  
rectangle





# Scaling

Relative size of an object compared to its surroundings





Size of the  
object  
doesn't  
change

Only its scale!





# Onwards to the game!

Shall we actually like, build a project now?





# First thing's first

Lets add a start screen to our game!

File/New Scene creates an empty scene for us to play with



# What UI Element Element should start our game?





# But first...

## What is a canvas?

It holds the UI  
elements in Unity!



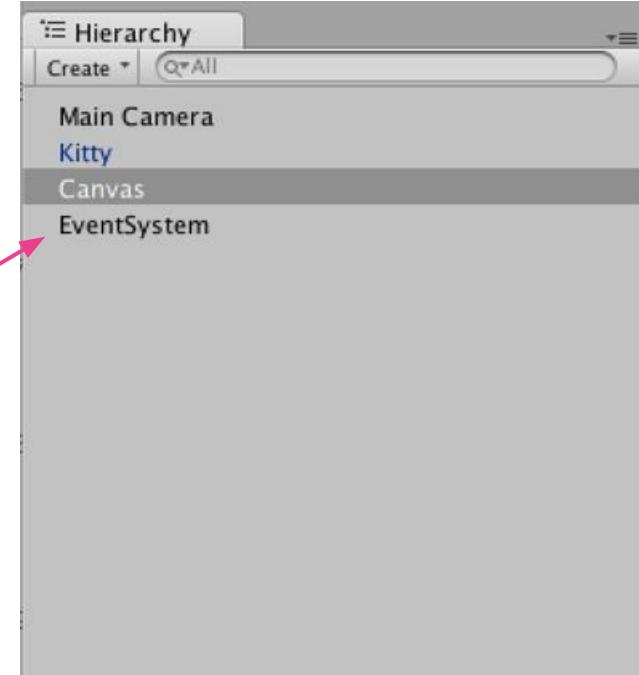
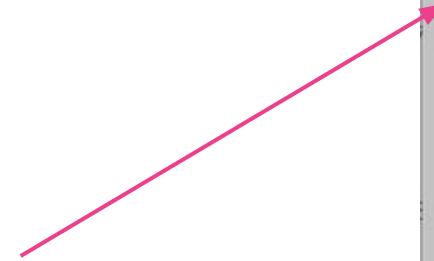


# Canvas showed up in the hierarchy.

But wait!!!

What's this

EventSystem????



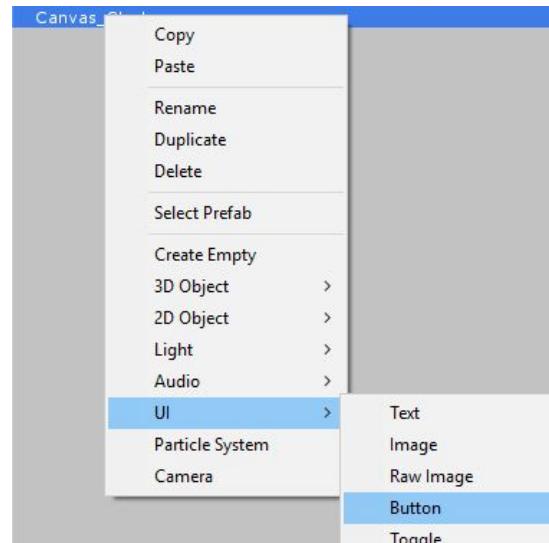
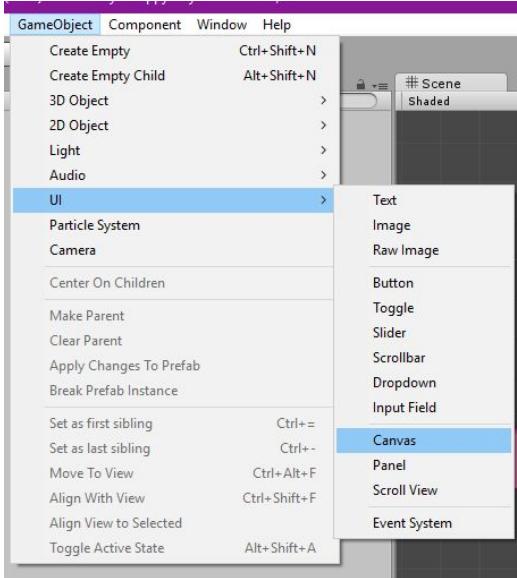


# EventSystems are responsible for interaction

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.



# Creating the canvas and button



Yay, a button! :D





# The buttons! They do nothing!

We have to tell it what to do with code

Create a new script in your assets folder, and delete the Start() and Update() functions.



# Lets write our own function!

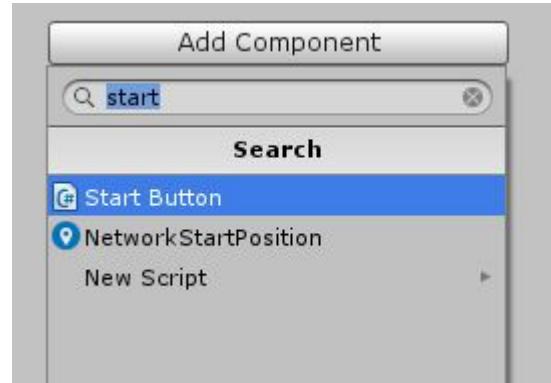
Add the following code to your new script

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



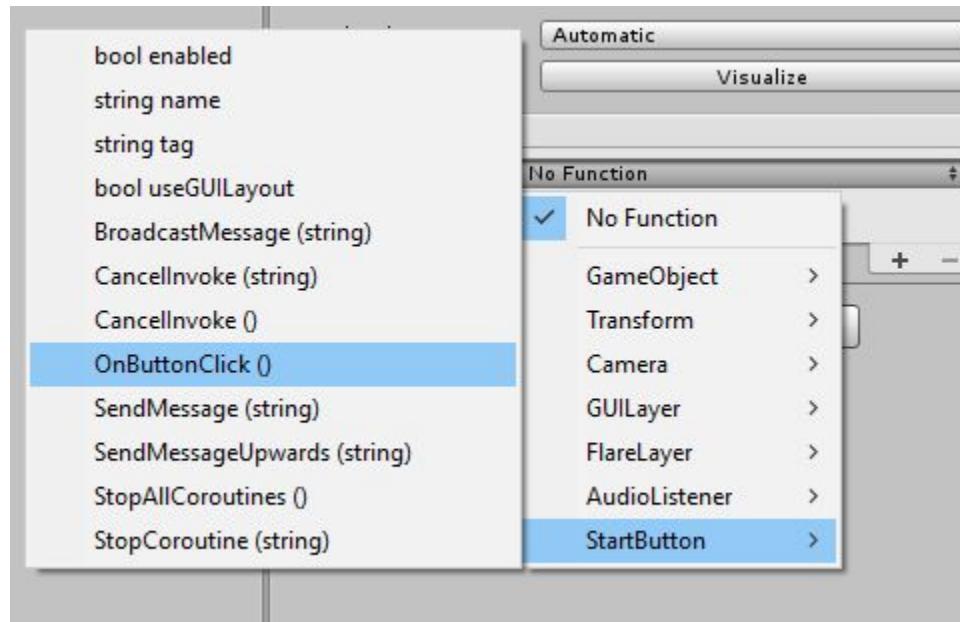
# Attach the script to an object

We want it to be globally available, so attach it to something global, the Main Camera.





# Let's activate the button

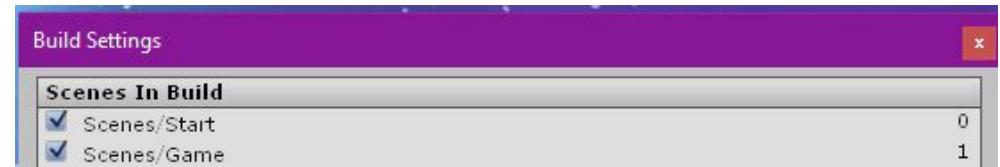




# Did it work?



# Don't worry, we can fix it!





Yay, now  
it works!





And now, the main event...



# UI Elements in “Happy Cat” Game

Score  
(Text)

Header (Image)

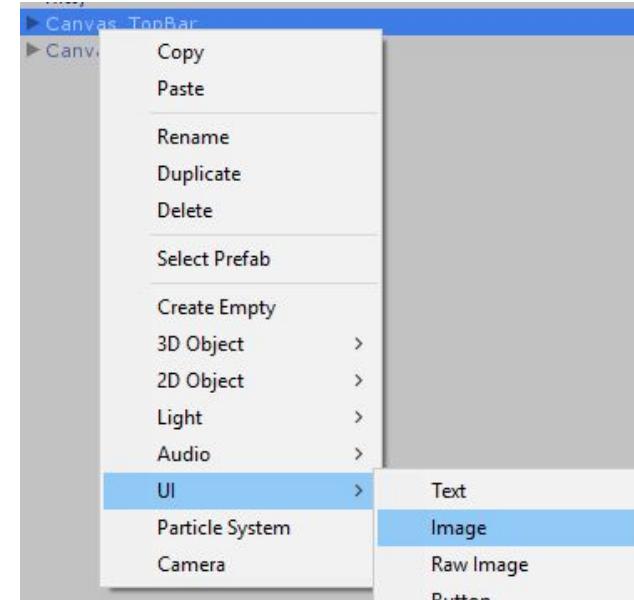


Timer Bar (Image)



# Top bar

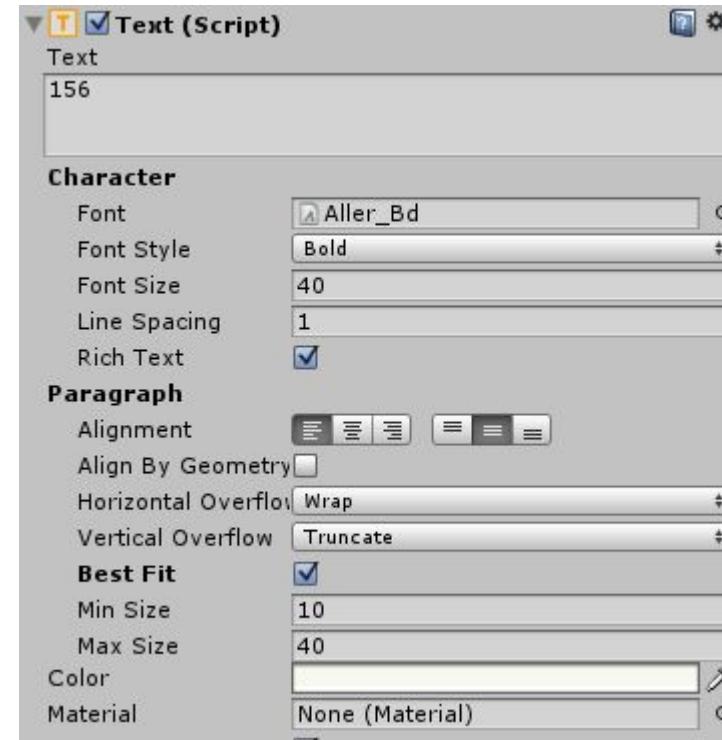
This one is easy.  
Let's create an  
image to go at the  
top of our screen





# Text parameters

Change what is written, the font, the size, etc! Best Fit is a good option for scaling





# Anchors?

Lets anchor that  
text to the top  
left of the top  
bar!





## Now, onto the timer...

Create a new image in the Top Bar canvas. Can you work it out yourself? We know you can!



## Set the image type to filled

This allows us to vary the amount the amount of the progress bar that can be seen





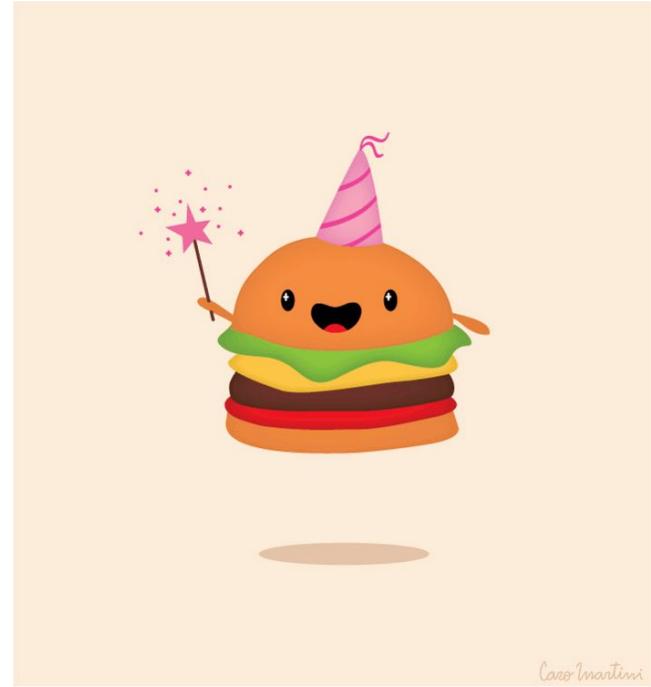
## Next, anchor the timer bar

Anchor the bar to the right of the screen like so





# Let's make some magic...





# Create a new script called “TopBar”

Now attach it to the object!



Add the Unity.UI  
namespace so that Unity  
knows to use UI elements

Declare the UI objects in  
the script

Find the Kitty!

Update the score and  
progress bar every frame

```
using UnityEngine;
using UnityEngine.UI;
using System.Collections;

public class TopBar : MonoBehaviour {

    public Text pointsText;
    public Image progressBar;

    Kitty kitty;

    // Use this for initialization
    void Start () {
        kitty = FindObjectOfType<Kitty> ();
    }

    // Update is called once per frame
    void Update () {
        pointsText.text = kitty.points.ToString();
        progressBar.fillAmount = kitty.timeLeft / kitty.maxTime;
    }
}
```



Congrats, you  
made a  
working game  
UI!





# Want an extra challenge?

Make a game over screen with a replay button, shown when the game timer runs out





## Helpful tips

Reset timeLeft and points on restart

Enable or disable objects like so:

```
gameObject.SetActive (true);  
gameObject.SetActive (false);
```



# Thank you for attending!

You did awesome things  
today

