# Tutorial Week 4

Created by Jordan Woo
Presented by Paul Armstrong

# Sign in and Announcement

Here is the link to the XR Club sign in form
https://ter.ps/XRSignIn4

**Announcement**
The MAVRIC (Mixed/Augmented/Virtual Reality Innovation Center) Conference is in need of student volunteers Please visit ter.ps/MAVRICVolunt to sign up.

**RealityHacks**: realityhacks.io/weekend-of-ar-vr/

# DOWNLOAD

1. Go to [ter.ps/XRWeek4](ter.ps/XRWeek4)
2. Download & unzip
3. Open up Tutorials/Proj4/Assets/Scenes/Scene1.unity

## If you know git:

1. Go to [github.com/umdxrclub/Tutorials](github.com/umdxrclub/Tutorials)
2. Git clone/pull
3. Open up Tutorials/Proj4/Assets/Scenes/Scene1.unity

# Adding our own image

- We can use the Image GameObject preset to add our own image to the canvas
    a. Download your favorite jpg/png image and put it in the Assets/UI directory of the Unity Project
    b. Click on it in Unity and change the texture type to sprite
    c. Create an Image GameObject in the Canvas
    d. Drag the downloaded image/sprite into the Image GameObject's sprite field

# Canvas

- GameObject  which facilitates graphical user interface
- User interface GameObjects like **buttons** and **images** are placed inside the Canvas
- User interface objects are drawn **flat** in two dimensions
- The Canvas object is shown in 3D space in the **Scene** window

# Rect Transform

Rect Transform is a component used to describe **position**, **rotation**, and **scale** of 2D objects

- Position
  - Offsets (Left, Top, Right, Bottom, Z)
  - **Pivot** - origin of ui item
  - **Anchor** - origin of coordinate system
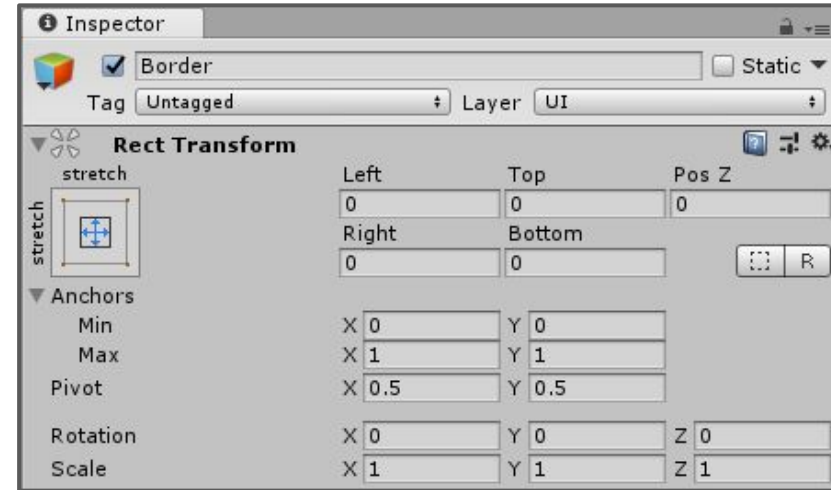
# Why to use Pivot/Anchor

- Dragging/Scaling manually is easier, but it has two downfalls
  - You get left with meaningless numbers for x/y
  - Changing the aspect ratio/size of the screen will change how your UI looks
- Pivot/anchor system guarantees that your UI will be scalable and understandable

# Button

- A GameObject preset which represents a clickable graphical user interface element
- Has a Button component which allows a function to be called on click
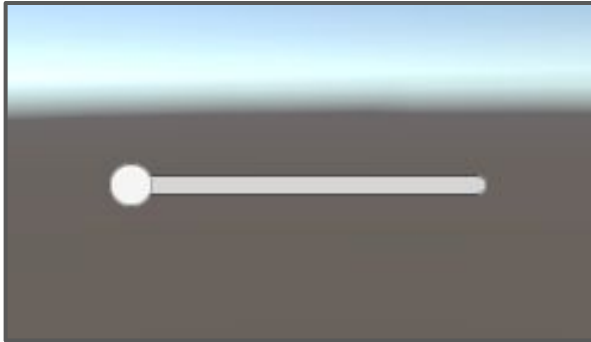


# Image

- A GameObject preset which represents an image
- Has an Image component which allows an image to be displayed

# Slider

- A GameObject preset which represents an analog input
- Has a Slider component which can call a function with a float

# Moving to Scene2

- Open up Scene2.unity
- Our goal is to create something that looks like Scene2Final.unity
- We are going to create
    - Buttons to change character
    - Buttons to change item
    - Slider to rotate player
    - Play button

# UI Events

- UI Events are a way to call functions from code by clicking buttons
- UI items like buttons and sliders can be set up to call certain functions when clicked or slid

# Creating a border

- We can also use the Image GameObject preset to create a border
    a. Create another Image GameObject preset in the Canvas
    b. Drag the Assets/UI/Border into the sprite field of the Image
    c. Change the Image's *Image Type* to slice

- When using slice, the Image component will recognize that border image is clear on the inside and filled on the outside, and will allow the border to scale non-uniformly