

CSE 165

Discussion 8

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Topics

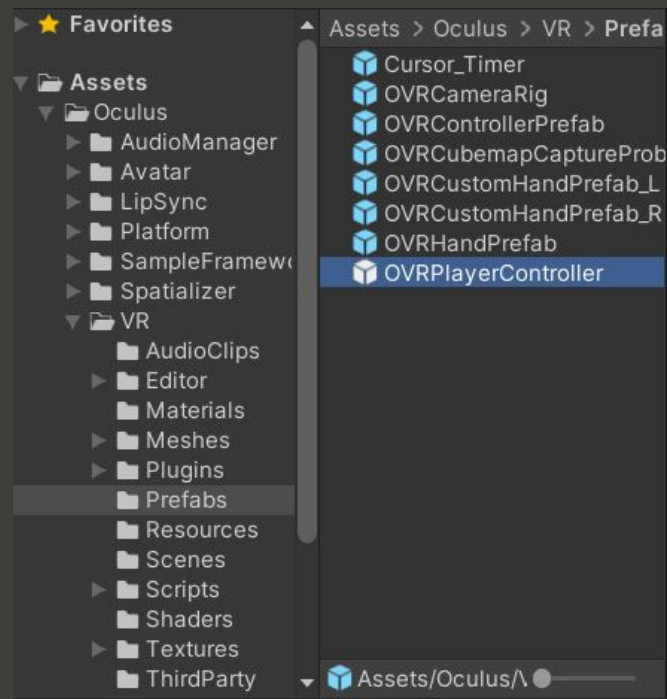
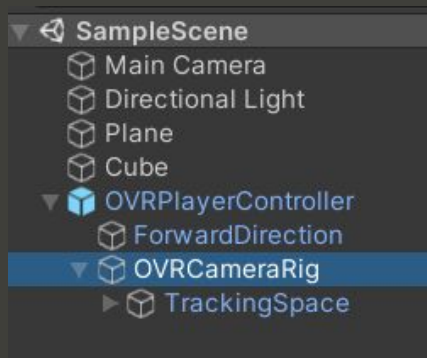
- Project 4
- VR Menus

Oculus Setup

- Oculus App on PC: <https://www.oculus.com/setup/>
- Import Oculus integration in Unity:
<https://assetstore.unity.com/packages/tools/integration/oculus-integration-82022>
- Download XR-plugins in Unity
- Tutorial video that might be helpful:
<https://www.youtube.com/watch?v=YwFXQeBmxZ4>

Oculus Setup

- Use OVPlayerController prefab for camera and player control
- OVRCameraRig is your VR camera



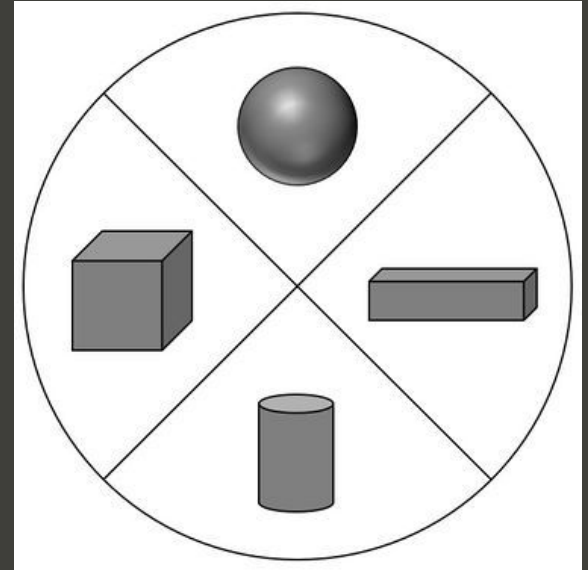
Oculus Setup

- Use LocalAvatar prefab for hand display and controllers
- Place it under the tracking space of OVRCameraRig



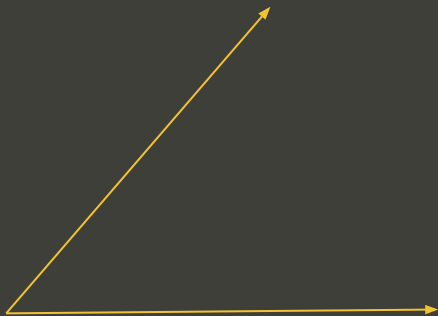
Radial menu

- Anchored to your non-dominant hand
- Shows up when the palm faces towards user
 - Ray-casting: shoot a ray from the palm and show menu if the ray hits the player
 - Check angle: check the angle difference between the normal vector on your palm and a preset direction; if the difference is less than a threshold then show the menu



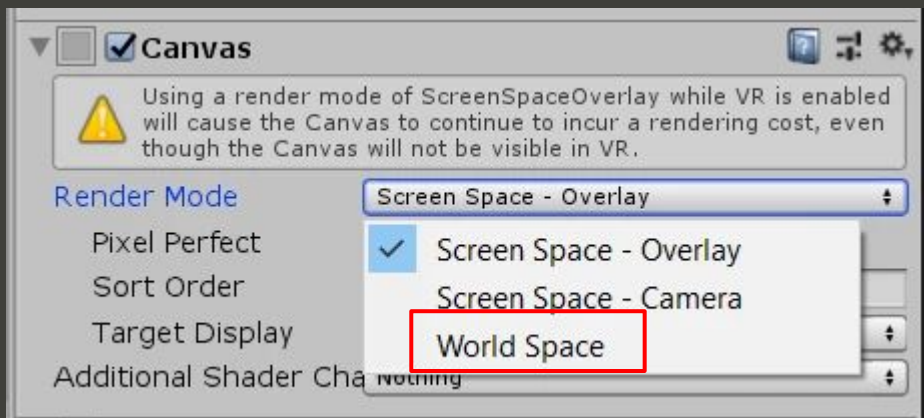
Angle between two vectors

- Useful function:
`public static float Angle(Vector3 from, Vector3 to);`
Returns the angle between *from* and *to* in degrees



VR Menu

- Useful tutorial on how to create VR menus:
<https://learn.unity.com/tutorial/creating-a-vr-menu-2019-2#>
- Create a canvas in World Space



VR Menu

- Attach colliders to your virtual hands and the menu components
- You can set the tags of different game objects:
<https://docs.unity3d.com/ScriptReference/GameObject-tag.html>
- Check collisions between hands and buttons
- For the colliders on menus, make them flat so they work like 2d buttons
- Highlight the components when selected

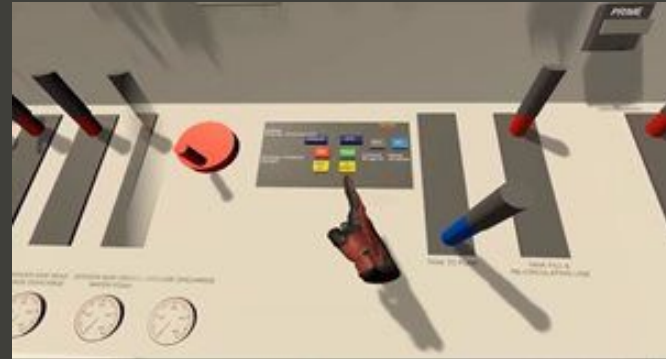
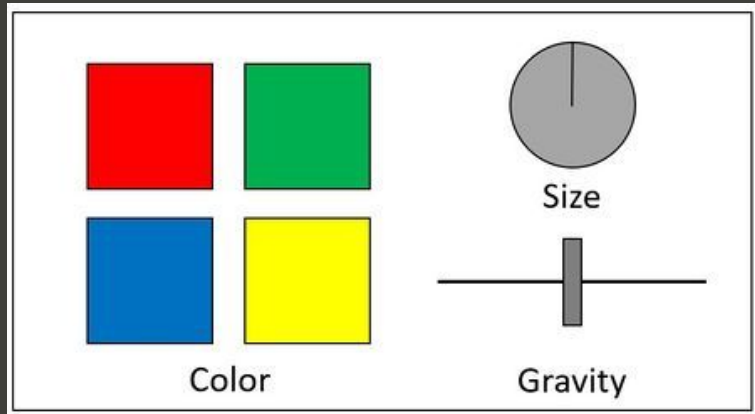
VR Menu

- Another approach is to shoot out a very short ray from your finger
- Check the collisions between the ray and colliders attached to the menu



Stationary menu

- A 3D menu that is always visible to the player
- All widgets on the menu should be 3D objects



Stationary menu

- Change color by getting the Renderer component and set the color of the material
 - Example:

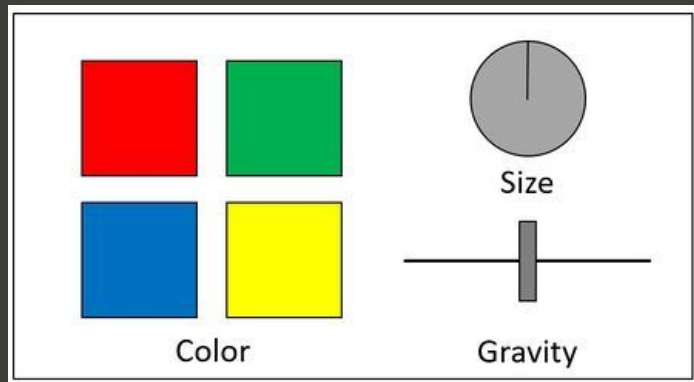
```
gameObject.GetComponent<Renderer>().material.color = Color.red;
```

- Resize game objects by changing the local scale
 - Example:

```
float scale = 1f;  
transform.localScale *= scale;
```

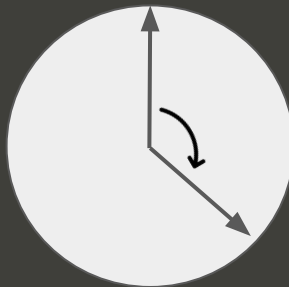
Stationary menu

- Change global gravity
<https://docs.unity3d.com/ScriptReference/Physics-gravity.html>
- You can scale the gravity by multiplying `Physics.gravity` with a scale



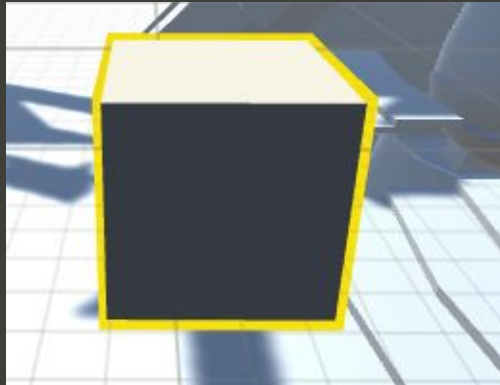
Stationary menu

- Similar to Radial menu, but the buttons are cubes or cylinders
- Attach colliders to the widgets and check for collisions
- For resize dial, record the initial vector at the moment of collision, and scale the object based on the rotation of hand around an axis perpendicular to the surface



Stationary menu

- You should be able to grab an object and highlight it similar to what you did in project 3
- The most recently selected object should be highlighted even after you drop it
- You can modify the highlighted object with the stationary panel



Questions
