

HW2: VR Classroom

CSE165 - Discussion 4

Agenda

- Announcements
- Homework Overview
- Grouping
- Highlighting
- Copying
- Measuring
- Extra Credit



HackXR

February 23 - 25

CSE Building, UCSD (EDU3)

36 Hour VR / AR Hackathon

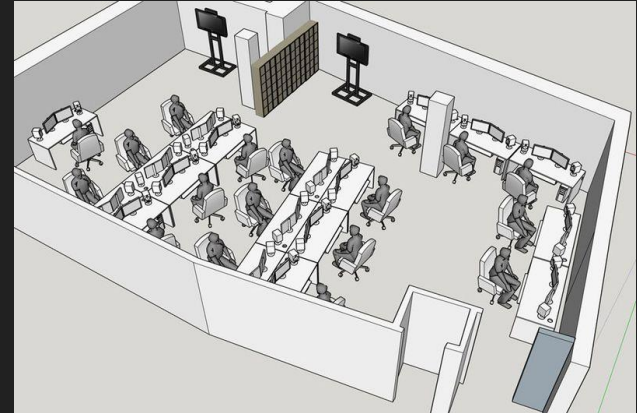
register at hackxr.io



presented by the Virtual Reality Club at UCSD

Homework 2: VR Classroom Design Tool

- Changes:
 - You don't need to construct the whole room live
 - No specific requirement for the number of furnitures
 - Points redistributed to the two interactions (10 more points for interaction)
- Due this Friday at 2PM!



Grouping

- The user should be able to group objects together and transform the group
- You will need to keep track of what objects you have selected
- There are lots of ways to group objects!
 - Have the objects share the same parent
 - Store a list of objects selected
 - Your own idea!
- Make sure you can also move and transform groups!
- Important question for this course: How do you enable group mode?
 - UI panels? Buttons? Other solutions?
 - Make sure it's not too complex!
 - Big challenge for this assignment: Lots of different actions with few buttons

Highlighting

- Must loop over every MeshRenderer in the object (and the children!)
 - <https://docs.unity3d.com/ScriptReference/Component.GetComponentsInChildren.html>
- Change the color/shader of each child material with a Renderer
 - Must create a new Material first, then change the color/shader of that material
 - Don't try to modify the existing material, since it may be shared with other objects
- Next, swap the material in the renderer with your new material
 - Be sure to save a reference to the original material so you can swap back!
- Helpful Resources:
 - Outline shader: http://wiki.unity3d.com/index.php?title=Silhouette-Outlined_Diffuse
 - <https://assetstore.unity.com/packages/vfx/shaders/fullscreen-camera-effects/outline-effect-78608>



Copying + Pasting



- Should be able to copy individual objects and groups
- Start by figuring out how to copy one object that's been saved
- For groups, it depends on how you grouped them previously
 - Shared parent: Instantiate the parent object
 - List of objects: Iterate through each object in the list
- Consider where the copies should show up!

Measuring

- Need to measure distance between two points
 - How will you set the first point? The second?
- Once the points are set: `Vector3.Distance`
- For a visible line/tape measure, might want to use a `LineRenderer`
- Display the distance in a sensible location, make sure it's visible
- Try to make your distance ~realistic to real life! Actual distance in VR lab





Extra Credit: Save and Load

- Can't use `EditorSceneManager.SaveScene`
 - This won't work in the built version or in applications!
- Can only save "Serializable" classes/objects
 - <https://docs.unity3d.com/ScriptReference/Serializable.html>
 - A serializable class can only contain primitive data types and other serializable objects
 - You can mark a class as Serializable using the `[System.Serializable]` attribute
- Only need to save relevant information, not everything!
 - Type of object, transform values, etc... only save what you need
- Save as text, binary, JSON... many different options
 - JSON is likely easiest: <https://docs.unity3d.com/Manual/JSONSerialization.html>
 - Binary: <https://unity3d.com/learn/tutorials/topics/scripting/persistence-saving-and-loading-data>
 - Text: You can write your own parser and save the information any way you want!

Questions?

Feel free to ask on Piazza!

(Making your questions public is helpful to everyone!)

