Unity Lab

Getting Started

- Download, install and launch Unity
- Setup your preferred script editor
- Create a new 3D project – call it "Lab7"

Setting up GameObjects in the Scene

- Create new cube and plane 3D GameObjects
- Place the cube over the plane. Run the game and visualise this.
- Return to the scene view and add Physics (i.e. a RigidBody component to the cube)
- To do this, click on the cube, view the GameObject inspector and add the component
- Play the "Game" again and view gravity's effect on the cube
- Next add a sphere to the scene and also add physics behaviour to the sphere
- Move the camera position so that it has a near view of all objects in the scene
- Add walls to the scene by creating cubes and /moving stretching them as described in: https://unity3d.com/learn/tutorials/projects/roll-ball-tutorial/setting-play-area?playlist=17141

Character Movement and Camera Controller Scripts

- In the assets panel, create a new folder called "Scripts".
- In that folder, create a new script called "SphereMovement"
    - Write the script so that the arrows move the sphere. See: https://docs.unity3d.com/ScriptReference/KeyCode.html and https://docs.unity3d.com/ScriptReference/Transform.Translate.html for details on how to implement this.
    - Attach the newly created script to the sphere GameObject by drag and drop
- Create a new script called CameraController
    - Have the camera follow the sphere as it moves. Use the following tutorial for reference: https://unity3d.com/learn/tutorials/projects/roll-ball-tutorial/moving-camera
    - Test this by adding your new script to the Main Camera GameObject (drag and drop). Also add the sphere as the "Player" – using the component inspector
    - The previous tutorial controls the position of the camera. Also allow the mouse to control the rotation of the camera – see: https://gamedev.stackexchange.com/questions/104693/how-to-use-input-getaxismouse-x-y-to-rotate-the-camera

Physics Materials

- Experiment with the game by adding Physics Materials:
    - https://docs.unity3d.com/Manual/class-PhysicMaterial.html

Materials and Assets:

- In your "Assets" folder, create a new Material folder. Create a new materials and apply them to the cube, sphere and plane – see: https://docs.unity3d.com/Manual/Materials.html
- Go to the Unity Asset Store.
- Search for, download and import the Supercyan character pack free sample into your project

- From the prefabs->Simple Movement->High Quality folder, import the MaleFreeSimpleMovement1 character into your game. View the different animations and interact with the character using WASD and the space bar keys.
- Change the camera so that it follows the human character rather than the sphere.

Importing Terrains

- Check out Nature Starter Kit 1 on the Asset Store
- Add the humanoid character to the example scene
- Move the character around
- Remove the camera animation and instead attach the camera controller from the previous section.
- Attach mesh colliders and physics materials to the objects in the scene so that items cannot pass through each other.
    - https://docs.unity3d.com/Manual/CollidersOverview.html

Advanced:

1. Rather than translating the sphere directly, have the arrow keys impart a force to the object and let the physics engine compute the result of the force applied – see: https://unity3d.com/learn/tutorials/projects/roll-ball-tutorial/moving-player?playlist=17141
2. Have the key 'c' go from one scene to another (i.e. plane to the nature scene):
    a. https://docs.unity3d.com/ScriptReference/SceneManagement.SceneManager.LoadScene.html
3. Modify the script so that another cube is instantiated in the scene when the Spacebar is pressed – see the "Instantiate" method.
4. Add code so that your main character can shoot projectiles - Hint use the Instantiate method from last week's lab.
5. Add code so that your main character can shoot projectiles - Hint use the Instantiate method