Raycasting Homework (Due 10/06)

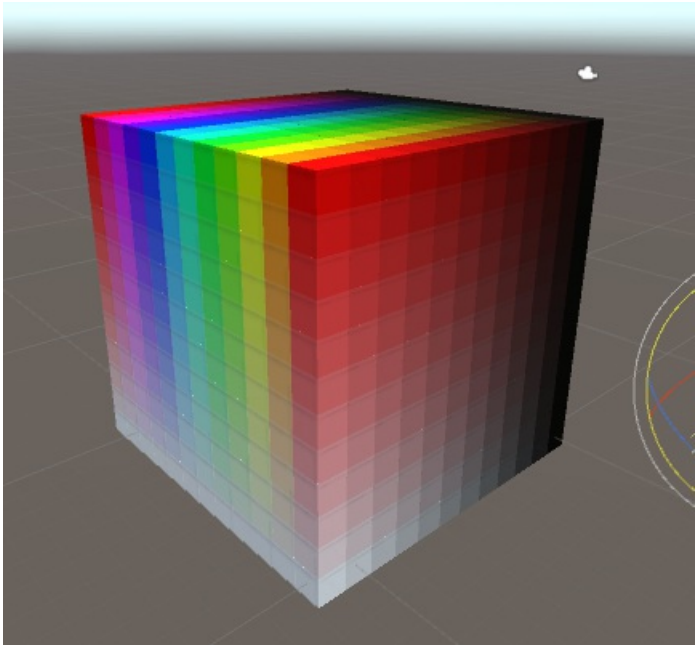
In this assignment, you are going to get some extra practice with raycasting, arrays and loops.

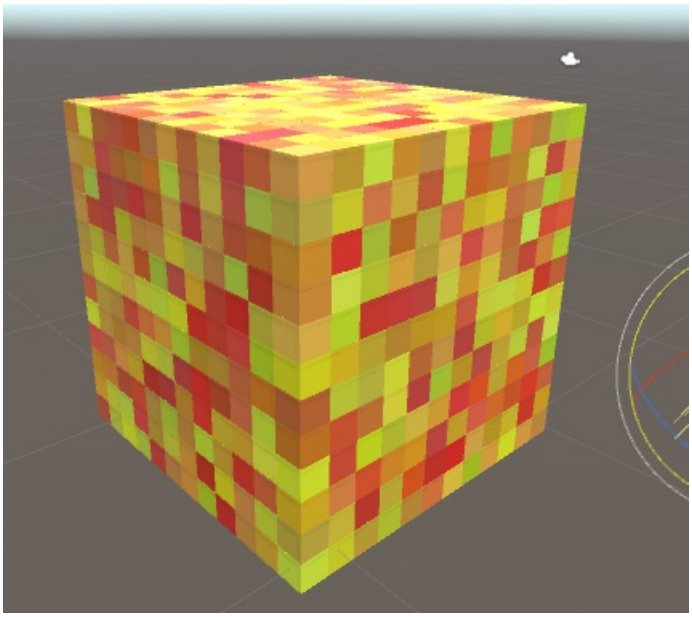
Scene Setup

Create a new scene.

Part 1: Creating a Cube of Cubes

1. Create an empty game object.
2. Attach a new script (GenerateGrid.cs) to it.
3. Use the script to spawn a 3D grid of cubes. Hints:
    - You'll need a prefab for this.
    - Remember that we could create a 2D grid by nesting one loop (for the x position) inside of another (for the y position)? You'll need three loops here - one for x, one for y and one for z.
4. Randomize the color of the cubes, or use your loop variables to control the color of the cubes. It could look something like either of the following:





Part 2: Raycast Digging

1. Bring in the RigidBodyFPSController from the "Characters" Unity package. Position your character on top of the cube grid you are generating.
2. Create a new script (RaycastDig.cs) and attach it to the player.
3. Write the script so that when the player left clicks, a ray is cast from the player and any cubes along that ray are destroyed:
    - You will need `Physics.RaycastAll(...)` for this. This is like `Physics.Raycast(...)` except that it will give you ALL collisions along the ray's path.
    - To destroy a cube, you will need to use `Destroy(...)`. You need to pass it a `GameObject` instance, which you can get from a `RaycastHit` object.
4. (Bonus) Try using `Physics.SphereCastAll(...)` instead of RaycastAll. This will allow you to cut a wider hole through the grid. (You will have to think about how to avoid destroying the player - remember tags?)
5. (Bonus) Turn off the lights in the scene. When the player right clicks, place a "torch" only if there is nothing in front of the player.
    - You'll need to `Physics.Raycast` here.
    - A torch could simply be a point light prefab, or it could be something more complicated like the "light bulbs" from the popping lights exercise.

In the end, it will look something like HomeworkSolution.gif or HomeworkBonus.gif.

Submitting the Assignment

Before the start of class on 10/06:

1. Zip up your project folder.
2. Direct message me the zipped folder in Slack.