ICE-3702: Advanced Game Development
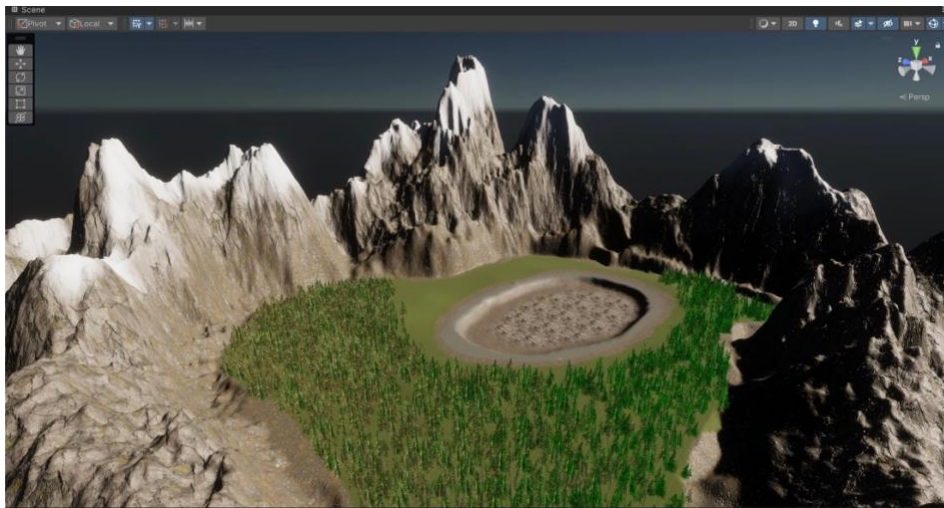
Assignment 1: Graphics Showcase
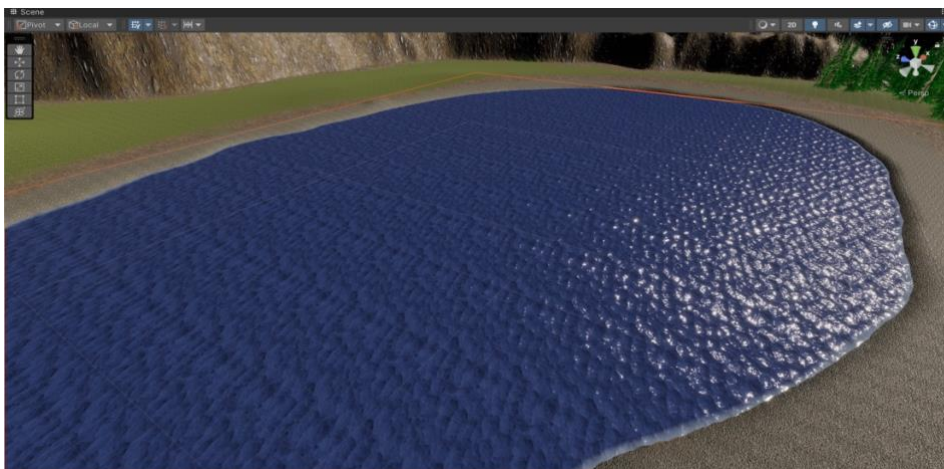
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Scene Overview

In my Unity Graphics Showcase I have created a basic terrain which I edited and textures using the Unity Terrain Tools and Terrain Sample Asset Pack.

I also created a lake using a plane object - I used an imported a water material asset to texture the water.

Virtual Environment

I created two types of trees using an imported asset and I made them into a forest beside the lake.

Materials

These terrain objects demonstrate a variety of different materials that behave differently when exposed to light.
Example materials included in the scene:
- Wood
- Grass
- Water
- Leaves
- Rock
- Gravel
- Snow

Animation

For an animated mesh, I imported some [bird models](#) that included animations and behaviours. The birds fly around the player and occasionally land on the ground.

Baked Lighting | Dynamic Lighting

For dynamic lighting I created a sun + moon system for my scene - both the sun and moon revolve around the scene to create dynamic lights and shadows, I did this by creating two directional lights, each with their own temperature and intensity and I textured them both to add realism, I then created a script which let me rotate both lights according to a public units input (inputting 1 would translate to 1 minute for a full rotation for example).
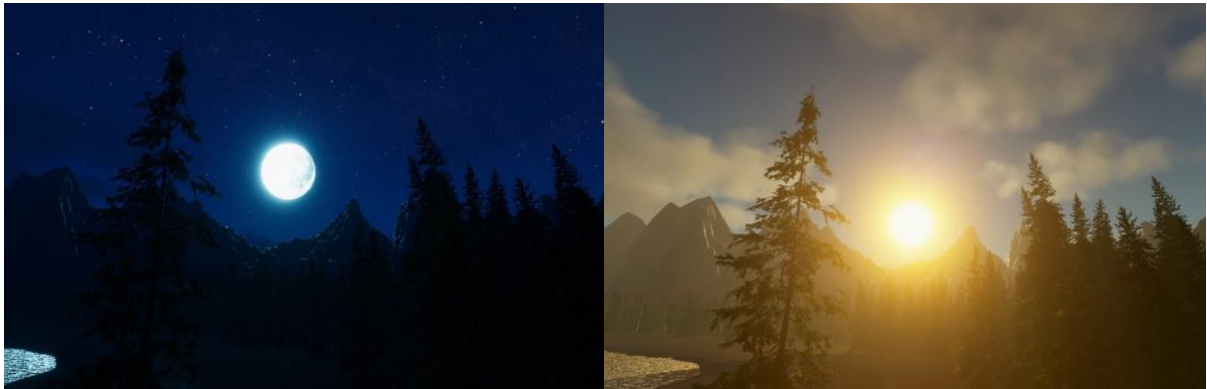
Another way I implemented dynamic lighting was by creating fireflies. I used the Unity Particle System to make randomly floating particles that give off a slight amount of light which can project onto nearby surfaces, the fireflies only spawn in a radius around the player. The fireflies are linked to the Day-Night cycle script so that they only spawn during the night.

Post-Processing

For post-processing I created a distant fog that partially occludes distant parts of the camera view, a lens flare using Unity's SRP Lens Flare tool and I tweaked the colour adjustments, exposure, and white balance.

I used a Global Volume to create volumetric clouds for my scene, the clouds can move, cast shadows, and block the sunlight.

I also implemented a night sky using a [NASA image](#) which also revolves around the scene but at a slower rate to the sun and moon.

References

https://assetstore.unity.com/packages/3d/vegetation/trees/conifers-botd-142076
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