MAS/COMP111 Unity Assignment

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Unity features used in this assignment:

Effect	**Marks**	**Check if used**
An **outdoor** section built using the Terrain editor or GAIA)	25%	✅
An **indoor** section built using Unity primitives (cubes, spheres, etc) and/or ProBuilder (25%)	25%	✅
A **First-Person controller** with which the player can navigate the scene.	-	✅
Appropriate textures on the indoor section	5%	✅
Textures with normal maps	5%	✅
A simple single-state animation clips	5%	❌
A multi-state animation that responds to trigger or mouse events	5%	✅
Direct light sources beyond the default Directional Light	5%	✅
Baked indirect lighting in the Indoor section	5%	✅
Use of light-probes for dynamic indirect lighting	5%	✅
Use of reflection-probes and reflective surfaces	5%	✅
Appropriately chosen post-processing effects	5%	✅
Use of multiple cameras (e.g. overlaid cameras or rendering to a texture)	10%	✅
Particle systems	10%	✅
Objects controlled by physics	5%	✅
Using joints	5%	✅
Appropriate 3D spatialised audio sources	5%	✅
Using reverb zones, effects and filters	5%	❌
TOTAL:	**125%**	

Note: Totals greater than 100% will be rounded down.

On the following pages you should indicate where each of the above features appear in your game, using screenshots to direct the marker. You will not get marks for a feature if your marker cannot easily locate it within your world.

1. Terrain

Features used:

- An **outdoor** section built using the Terrain editor or GAIA
- Textures with normal maps

Where in Hierarchy

- /Terrain

Description:

The terrain consists of a valley surrounded by mountains on one side and rolling hills on the other. The bottom of the valley is filled with water. There is a small island in the water where the cabin is situated. All textures have normal maps. The tops of the mountains are covered in snow. The ground level is covered with trees and detailed using billboarded grass, weeds and pink flowers.

Screenshot:

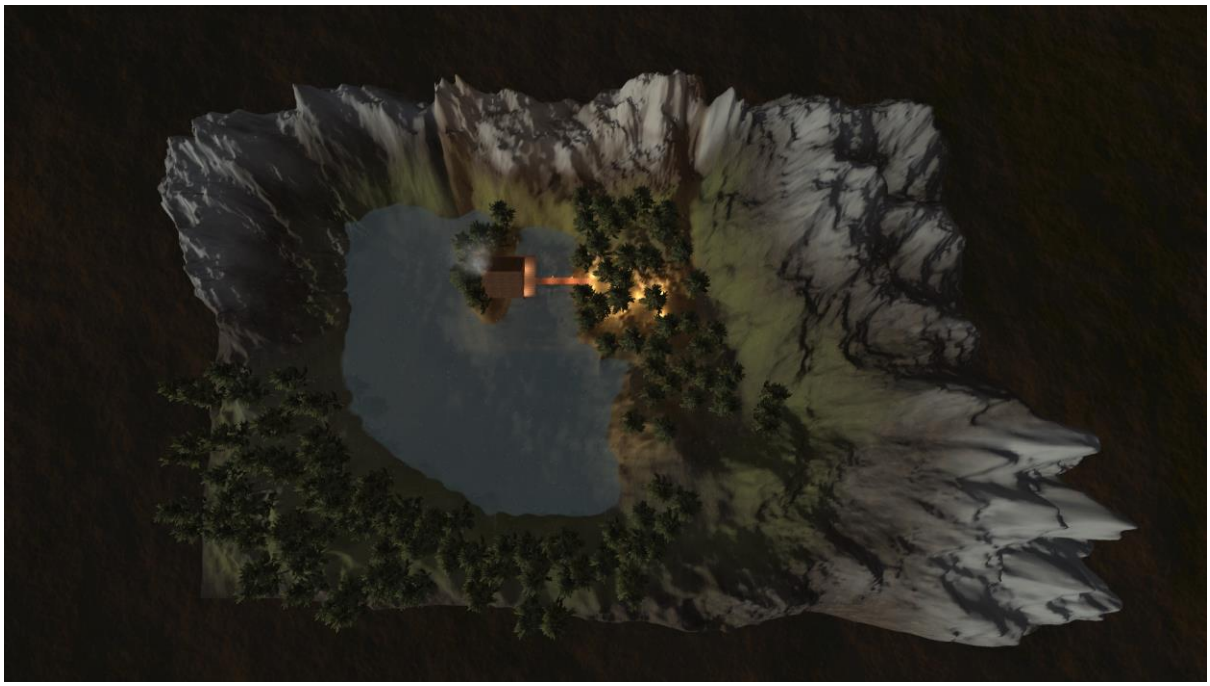

Figure 1 – Terrain (Top-down View)

2. Environment

Features used:

- Textures with normal maps
- Direct light sources beyond the default Directional Light
- Appropriately chosen post-processing effects
- Particle systems

Where in Hierarchy

- /WoodenBridge
- /ForestLighting
- /MainPostProcessor
- /SnowParticleSystem
- /Sun
- /WindZone

Description:

A wooden bridge made with ProBuilder cubes joins the cabin to the main island. The bridge uses a wood texture with normal maps. Along the bridge and throughout the forest area there are standing lights, that use a tree bark texture (inc. normal maps) and a point light.

As part of the environment, there is a particle system covering the terrain to simulate snowfall. The snow particles fade away as they approach the ground and are destroyed on collision with the world.

The main post-processor adds colour grading, ambient occlusion, bloom and a minor motion blur.

The sun has a flare attached to it and does not move. It is situated low in the sky to produce a sun rising effect in-line with the skybox.

There is a WindZone used to make the trees move, this also affects the snow particle system.

Screenshot:

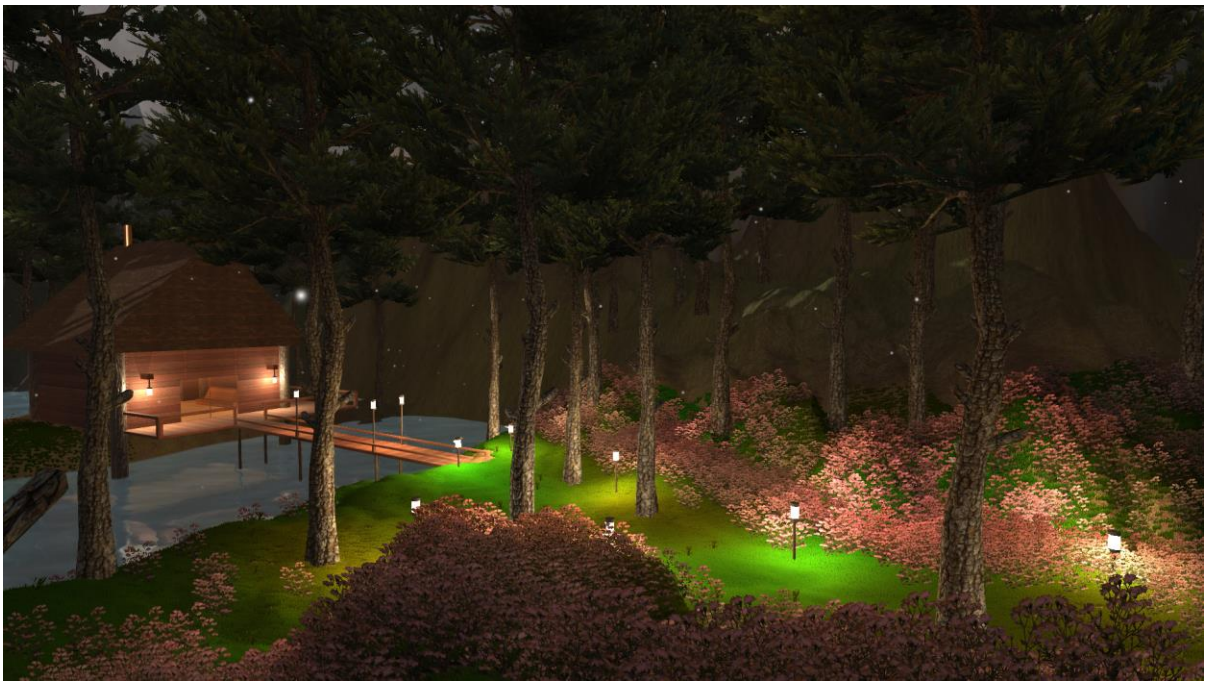

Figure 2 – Forest and Bridge with Snow and Post Processing Effects

3. Cabin – Exterior

Features used:

- Textures with normal maps
- Use of reflection-probes and reflective surfaces

- Particle systems

- Direct light sources beyond the default Directional Light
- Objects controlled by physics
- Using joints

Where in Hierarchy

- /CabinExterior

Description:

The exterior of the cabin uses four different wood textures with normal maps for the walls, roof and floor. On the four corners of the cabin are large log columns using a bark texture that extends into the ground for support.

There is a chimney protruding through the roof, this uses a particle system to create smoke.

At the rear of the house, there is a reflective glass window, with a reflection probe in the centre.

The front of the house has two hanging lights on each side of the door. They have rigid bodies and are free to rotate around a hinge. The light bulbs use a fixed joint to connect to the shafts of the light which has a hinge joint connecting it to the house.

Screenshots:

Figure 3 – Front of House (with smoke)

Figure 4 – Rear of House

Figure 5 – Hanging Light (Stationary)

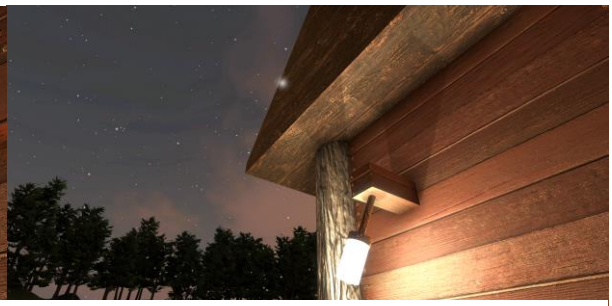

Figure 6 – Hanging Light (Swinging)

4. Door

Features used:

- A multi-state animation that responds to trigger or mouse events
- Use of reflection-probes and reflective surfaces

Where in Hierarchy

- /CabinExterior/Door

Description:

The door to enter the cabin is a sliding door, made of two reflective glass panels with a reflection probe in the centre of the two. It opens by clicking on either of the panels while the player is within a specified range of the door. This uses both the ClickToAnim and TriggerToAnim scripts provided.

Screenshot:

Figure 7 – Cabin Door with Reflection (Open)

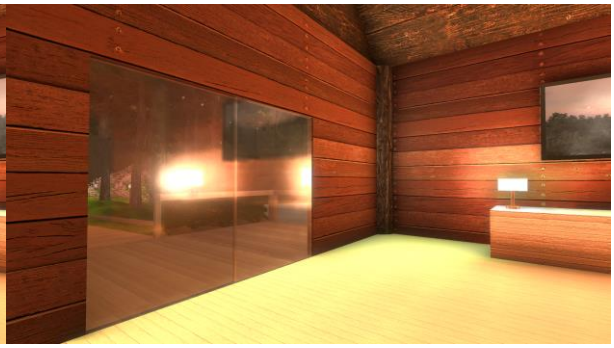

Figure 8 – Cabin Door with Reflection (Closed)

5. Cabin – Interior

Features used:

- An **indoor** section built using Unity primitives (cubes, spheres, etc) and/or ProBuilder
- Appropriate textures on the indoor section
- Textures with normal maps

- Use of reflection-probes and reflective surfaces
- Direct light sources beyond the default Directional Light
- Baked indirect lighting in the Indoor section

- Objects controlled by physics
- Use of light-probes for dynamic indirect lighting

- Particle systems
- Appropriate 3D spatialised audio sources

- Use of multiple cameras (e.g. overlaid cameras or rendering to a texture)

Where in Hierarchy

- /CabinInterior

Description:

The indoor section uses the same textures with normal maps that were used on the exterior of the cabin.

The interior has a fireplace which uses a stone brick texture (inc. normal maps) and has been placed against the rear window. The fireplace has a reflective glass window and reflection probe at the front. Above the fireplace is a chimney that has a reflective metal texture and extends up and through the roof. Inside the fireplace are wooden logs, a particle system to emulate a fire, and a baked in point light creating the orange glow of the fire. The fire also has a spatialized audio source.

In front of the fireplace are a set of toy blocks, these are dynamic objects with rigid bodies that can move around. The player can move the blocks by walking into them and pushing them using their body. These are lit dynamically using light probes around the room.

On the left wall is a TV and TV cabinet. On top of the TV cabinet are two lamps, these lamps have a reflective metal texture for their base and a reflection probe. The light bulb uses an emissive texture and point light.

The TV has a matt black texture for its body and a render texture for its screen. The TV displays a live view from another camera in the scene.

On the roof (interior) there are two downlights providing extra lighting to the room.

Screenshots:

Figure 9 – Fireplace, Toy Blocks, Reflections, TV

Figure 10 – Low Angle View Showing Downlights and Internal Roof Structure

Figure 11 – TV with Render Texture and Lamps on TV Cabinet

6: Underwater

Features used:

- Appropriately chosen post-processing effects
- A multi-state animation that responds to trigger or mouse events

Where in Hierarchy

- /Underwater

Description:

When the player goes beneath the water, they will enter a trigger collider that enables a post-processing effect to make it appear as if they are underwater. This includes adding blur, a blue tint, reducing exposure, etc. They will also trigger an animation that enables an underwater soundtrack and disables the fireplace sound. The sound and visual effect will return to normal when exiting the water.

Screenshot:

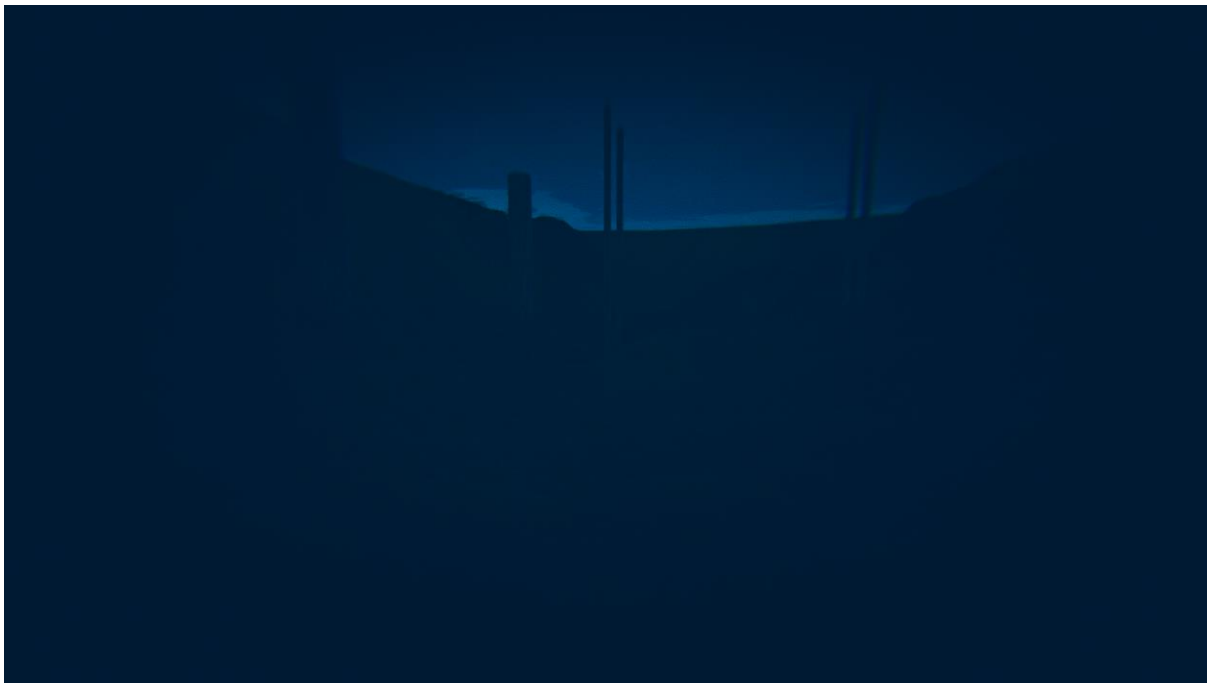

Figure 12 – Underwater Post Processing Effect

Assets Used

Textures

- **Moss, Rock, Snow** – Terrain Tools Sample Asset Pack, by *Unity Technologies* (from Asset Store)
- **Grass, Rock** – Textures by Nobiax (nobiax.deviantart.com)
- **BroadleafBark** – Standard Assets (Environment), by *Unity Technologies* (from Asset Store)
- **Planks 1c, 2a, 4c, 4a** – Plank Textures PBR, by *a dog's life software* (from Asset Store)
- **wall01** – 18 High Resolution Wall Textures, by *a dog's life software* (from Asset Store)
- **ParticleFirecloud** – Standard Assets (ParticleSystems), by *Unity Technologies* (from Asset Store)
- **ParticleCloudWhite** – Standard Assets (ParticleSystems), by *Unity Technologies* (from Asset Store)
- **Flare50mm** – Standard Assets (LightFlares), by *Unity Technologies* (from Asset Store)
- **FlareStar** – Standard Assets (LightFlares), by *Unity Technologies* (from Asset Store)
- **sky,startday** – Skybox, by *Clod* (from Asset Store)

Details

- **Grass** Billboard – Standard Assets (Environment), by *Unity Technologies* (from Asset Store)
- **Weed, WhiteFlowers** Billboard – Terrain Assets, by *Unity Technologies* (from Asset Store)

Models

- **Conifer trees** – Standard Assets (Environment), by *Unity Technologies* (from Asset Store)
- **Water4Simple** – Standard Assets (Environment), by *Unity Technologies* (from Asset Store)
- **Train** – Freight Train, by *Maker Games Studios* (from Asset Store)

Audio

- **Fireplace**, by *ezwa* (soundbible.com/1543-Fireplace.html)
- **Underwater Pool**, by *Mike Koenig* (soundbible.com/1660-Underwater-Pool.html)

Tools

- **Terrain Tools**, by *Unity Technologies* (from Package Manager)
- **ProBuilder**, by *Unity Technologies* (from Package Manager)
- **Post Processing**, by *Unity Technologies* (from Package Manager)