Procedural Content Generation Assessment Item 1 Report

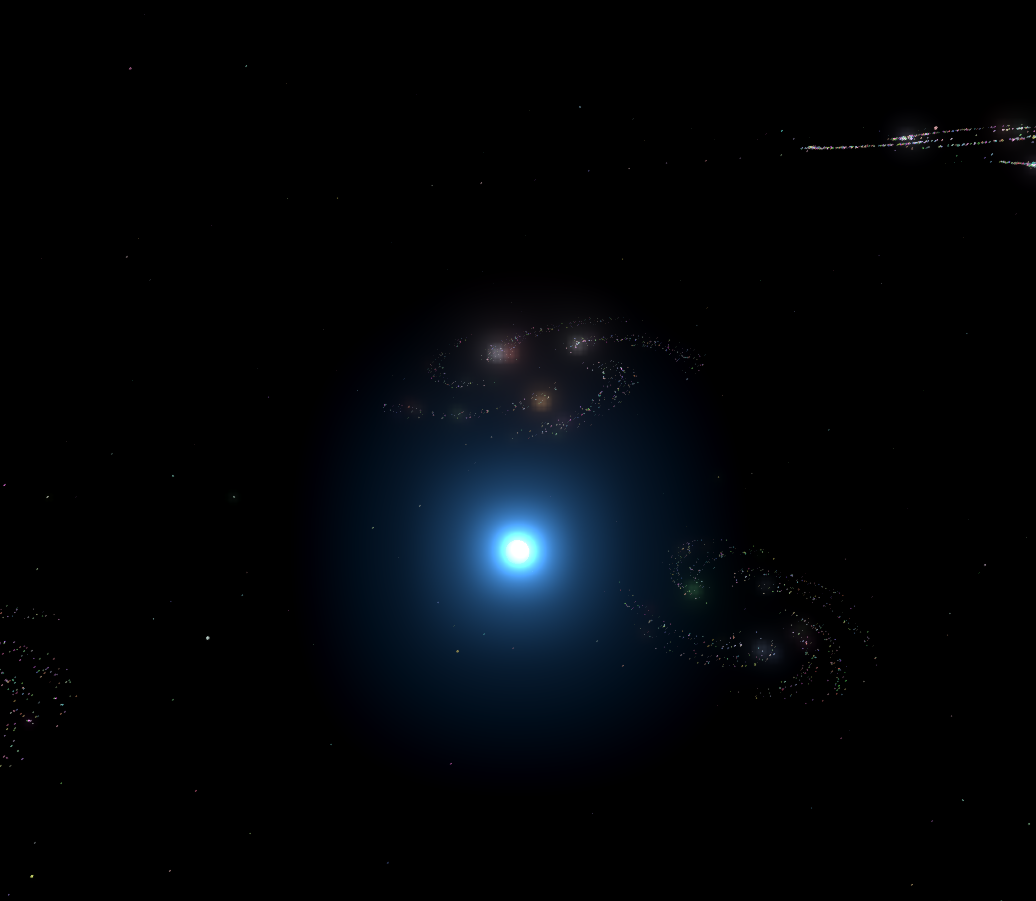
**Development Log**

The first part of the assignment I decided to tackle was the landscape elements, starting with creating the galaxies to fill the background of the diorama, which was simply black in colour. Following the workshop 8 tasks, I created a single galaxy for the background of the scene, I then added randomness to the constant variables of the equation to add variance to each distant galaxy generated. These galaxies are placed by randomly spawning them onto a large sphere collider that is situated in the middle of the game world. I then added an emissive material and applied random colour values to the galaxies, I also applied a rule that makes stars, closer to the centre of the galaxy more brighter (See Figure 1). This turned out to not be as effective as predicated due to bloom’s reliance on distance and the angle of the object.



*Figure 1: Procedural distant galaxies being spawned around the diorama.*

With the diorama now having a functional background, I moved onto the spawning of the solar system and its planets. The star was simply generated at the centre of the game world, which is given a random size attribute, the scale of the star determines what colour it will result in being. Past the scale threshold the star has a much higher chance to spawn with a warmer colour set, similar to red giant stars and being below the threshold results in the star using cooler colours (See Figure 2).



*Figure 2: A small star (with cooler colours) generated in the diorama.*

For the placement of planets in the solar system I used the polar coordinates system described in the lecture 8 slide materials. This works by placing one planet after the other with differing

For this I used the polar coordinates system described in the lecture 8 slide materials to randomly place them around the star.

Perlin cloud atmosphere based on distance, do multiple layers for thicker atmospheres, distance from star affects probability of size, terrain jaggedness, colour, moons. Galaxy stars brightness affected by how close they are from the centre of the galaxy.

Ships move along empty gameobject waypoints that transition them between planets and other items

Planets that are a certain distance away from the star will have a higher chance of getting asteroid rings

The first part of the assignment I decided to tackle was the generation of ships, I decided to start out with a small fighter using a blender model I have created as a base. A modular design was envisioned with multiple models of ship components such as weapons, wings, and engines being created in blender.

The fighter base is then created as a prefab with multiple empty game object “nodes” attached to it in predefined positions. These nodes make up all possible combinations of components that can be attached to the fighter base to make up the completed fighter. I did this because it greatly reduces the risk of erroneous results