COS3712 Assessment 1 and Assessment 2

Assessment 1 and 2 is one project, that is submitted in two parts.

3D Solar System Simulation

Objective:

Develop a simplified 3D simulation of the solar system, showcasing the sun, planets, and their moons. The simulation will include basic animations to represent planetary rotations and orbits around the sun.

Assessment 1

Key Features to Implement:

3D Models for Planets and Moons:

Create or import simple 3D models representing the sun, planets, and significant moons. Spheres with different sizes and textures can effectively represent these celestial bodies.

Animations:

Implement rotational animations for planets and moons to simulate their spin on their axis.

Create orbital animations to simulate the movement of planets around the sun and moons around their respective planets.

Camera Controls:

Implement basic camera controls to allow users to navigate through the solar system, zoom in/out, and focus on different planets.

Deliverables:

Source code for the 3D solar system simulation.

A simple user interface to control the simulation, such as adjusting the speed of rotations and orbits or selecting a planet to focus on.

Documentation that describes the implemented features and how to interact with the simulation.

Tools and Technologies:

Programming Language: Preferably C++, Python or Javascript with a graphics library like OpenGL, WebGL and Three.js or a game engine like Unity or Unreal Engine that simplifies 3D graphics programming. You can choose how to do the project.

Learning Outcomes:

- Gain an understanding of basic 3D modeling and texturing.
- Learn how to implement simple animations in 3D space.
- Understand the basics of lighting in a 3D scene.
- Develop skills in using a 3D graphics API or game engine.

Assessment 2

Add the following to your Solar System Simulation

Texturing:

- Apply textures to the spheres to visually differentiate between the celestial bodies (e.g., Earth, Mars, Jupiter).
- Use images of planet surfaces for textures to increase realism.

Lighting:

- Simulate sunlight using a directional light source.
- Ensure that the sun illuminates the planets and moons, creating realistic day/night cycles.