SNHU CS-330

Oct. 22, 2025

Project Reflection | Aiden Villanueva

Development Choices

Throughout development of this project, several hurdles presented, as well as unique solutions. Firstly, the nature of the chosen image required significant simplification. This meant analyzing the main shapes of the scene (the tree, the computer, the room and the scientists) and breaking them down into a set of primitive shapes. I wanted to keep the focus on the tree, so chose to represent the scientists as a cylinder ‘body’ labcoat and an oblate sphere for their heads. The computer was easy to break into a set of boxes, and the room was the same. The tree, composed of cylinders, tapered cylinders and spheroids also holds the scene’s lights within its branches to give the feel of the purple illumination in the image. Another challenge in this project was getting the lights to work, in which case I had to edit the fragment shader to expect the used amount (2) instead of the predefined (4).

Navigation

Users can navigate the scene by running the 7-1\_FinalProjectMilestones.exe file. Then, the ‘WASD’ keys can be used to move, while the mouse is used to look around. The mouse wheel adjusts movement speed and the ‘P’ and ‘O’ keys switch between perspective and orthographic projections, respectively. Use ‘esc’ to quit the app.

Custom Functions

Several custom functions were used to modularize the deployment of this scene. Specifically, the function which applies the various transformations before creating each mesh, SetTransformations(). We also used the following functions to help with our shader and texture creation and manipulation:

SetShaderMaterial("shiny");

SetShaderTexture("metal");

SetTextureUVScale(10.0f, 10.0f)

These functions, along with the modular nature of OpenGL, allowed me to create a complex scene with many polygons out of only a few primitive objects and some associated transformations and texture application with two simple light sources.