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CS-330

Final Project

Reflection and Design Decisions

The purpose of this project was to create a 3D scene based off a 2D image that I chose. The image that I picked contained several objects sitting on a mousepad on my desk. These were: ChapStick, a poke ball, and a Rubik’s cube. These objects were all able to be made from the required primitive shapes. I used a cube, cylinder, plane, and sphere. These objects were chosen for no particular reason. I just grabbed random items that were lying around my room. They ended up being good design choices for the project because they were able to be coded fairly easily.

My 3D scene supports nuanced camera controls to view the different objects in the application. The camera is able to traverse the x, y, and z axes. The WASD keys are used to control forward, backward, and left and right motion. While, the QE keys are used to control the upward and downward movement. There is also perspective and orthographic display toggle in the world. This is implemented by holding down the P key. The mouse cursor and scroll are also used to change speed within the scene.

Functions were used throughout the program to make the code more modular and organized. Also, a lot of code was separated into different cpp files, and then was imported into the main file. An example is the ShapeGenerator cpp file that is used to help generate a cylinder. When implemented in main all you have to do is write a couple lines of code to get a cylinder to render on the screen.

The scene was slowly constructed throughout the entirety of the course. By the time the final project was to be completed, it was already mostly coded. Some certain sections of the scene took me longer than I had anticipated. The first part where I had issues was in module three, with the 3-5 milestone. It took me a long time to figure out how to get a 3D plane rendered. As this shape was different than the triangles, and pyramids that we were previously working with. The next part of the scene that gave me trouble was the 6-5 milestone, lighting complex objects. Applying light in openGL is far more complicated than the other things that we have been working on in the class. A lot of different possibilities need to be taken into account. An example of this is the texture used on the object. Also, to make the scene more realistic, you need to position the light source in the scene like it is positioned in the original image. The provided tutorials were a huge help in completing this section.

Overall, this was the most difficult project I have completed so far in my academic studies. That being said, I think this project was extremely rewarding and it taught me a lot. It made me comfortable looking at longer code and piecing everything together, and figuring out what is going on. There was also a lot of information packed into each assignment. It taught me how to go through the information and pick out what was relevant to the assignment. I hope you enjoy my 3D scene. It was difficult, but fun to create!