Benjamin Sturgeon

CS-330

Project Two Reflection

08/18/2024

In this scene the objects that I recreated in my 3D space were the Clock, etch-a-sketch, book, hourglass, and the circular platter that the objects are resting on. I also recreated the table underneath and the carpet floor as a form of backdrop. I chose these objects because they represent collections of clearly defined shapes which I can relatively easily replicate. I wanted to make sure that none of the objects would require shapes that were exceedingly difficult to replicate. If I had chosen objects with many oddly shaped curved surfaces, I would not be able to replicate them easily with the shapes provided. These objects were fairly easy to replicate in a simpler form. In addition to this, I chose objects with materials that would be simple to find the correct lighting. My objects are wood, glass, plastic, gold, marble, and paper. I was able to reference the materials from previous assignments and the OpenGL Sample in order to have a base line, and I figured out that ambient color had the largest impact on the color that the material would appear. I was able to find a website that gave the rgb values for any color which made determining the lighting much easier. I had the most difficulty finding the correct textures to use because they would often clip or fail to load because of some unforeseen permission. Using the advanced search in google helped tremendously because I was also unable to use my own pictures. For a reason that I was unable to determine, the exe file never had appropriate permissions to use jpg files from images that I took myself, so I learned to work around that by using images from the internet with open licensing.

I was able to create a simple output in the command prompt that indicates the options the user has for changing the orientation of the scene. The WASD keys are used to “move” the scene by panning left or right or increasing or decreasing depth. I also added orthographic and perspective projection for the O and P keys. The Q and E keys are used for navigation up and down. The final options I have for the user are increasing/decreasing the scroll to increase/decrease movement speed and moving the mouse to change the direction the camera is “looking.” Implementing these was fairly straight forward in the view manager cpp and header files and I was able to use my work from the previous assignments and reference the OpenGL sample.

I decided to make my code more modular and organized by placing each object into its own method which was then called by the RenderScene method. This means that each object is fully modular and can be changed without affecting the code of the rest of the scene. The code also benefits from modularization in that each class performs a primary function including SceneManager determining scene objects, textures, lighting, and materials, and ViewManager determining the camera position and navigation functions. This follows the principles of object-oriented programming especially because the scene is generated as an object itself.

Ultimately, this assignment and class was a good opportunity to learn the basics and theory behind 3D graphics and how they work. I am aware of more streamlined experiences like that of blender which has greatly improved the methods of graphics generation dating back to the 90s, but I now have a much greater appreciation for how much better programs like blender are rather than creating everything from raw code. I look forward to my future work in graphics with a new understanding.