Milestone Project Reflection

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Throughout this course, I learned the skills necessary to complete this milestone project: to create a 3D scene of four different objects of my choosing and be able to navigate the scene with camera controls. My chosen objects were a baseball cap, my headphones which I use for work, my dog’s favorite toy, and a videogame controller. I chose these objects because the assignment asked me to utilize several simple shapes to create a more detailed final scene. Objects like the baseball cap and dog toy took fewer shapes to create while the headphones and videogame controller needed more shapes and details to be as accurate as possible. This allowed me to have an inclusive understanding of how some objects require more work than others to create, but the completed objects can look just as realistic as the other. This also allowed me to gradually build my confidence in rendering 3D objects as I grew closer to the end of the project. The functions within the provided code rendered simple shapes that I was able to duplicate and manipulate to create my objects. Understanding how to create a simple triangle in the beginning of this course was paramount for me to understand how different meshes are created to cover different shapes.

When it came to providing camera controls to navigate the scene, it made the most sense to utilize a traditional keyboard navigation known as WASD. These keys on the keyboard are easily controlled with two to three fingers of my left hand and made it easy to navigate the 3D scene. Beyond this, up and down camera controls were bound to the Q and E keys since they are so close to WASD. Lastly, movement sensitivity was bound to the mouse scroll. This way all the camera controls could be manipulated at one time by both my left and right hands. The functions to bind these keys to the camera controls was simple to create, as a shell of the function was provided in the CS-330 master folder. These controls also made it easy to complete the final scene. I spent a lot of time focusing on small details in the videogame controller and headphones making sure that all the shapes were in the correct places to make them look like real objects. I was also able to check the back of all my objects to make sure that the chosen textures did not have any noticeable seems that would take away from the realism.

Outside of using good practice to write the code for this project, there are a handful of functions that optimized my program. The functions that bind the meshes had to be duplicated to create more of that specific shape. Rather than using the same base function to create more shapes, I used the closest similar shape to where I wanted to add a new shape. For example, the videogame controller has several buttons. Rather than duplicating the sphere from the far right side of the scene, I duplicated a sphere that I had already manipulated into the shape of a button. The coordinates only had to be adjusted slightly to position it in the right place and the scale and rotation did not have to be touched at all since they were already in the shape of a button. The functions that create light for the scene are also very modular and reusable. The type of light used requires the light sources to be place farther from the scene in order for it to be properly illuminated. These functions are also very easy to duplicate, and their position can be changes just as easily as changing the translation coordinates in the shapes functions. This made it more convenient for me to change the light exposure on the objects. This played to my advantage because I wanted the light to bring attention to the detail of some of the objects. There is enough light to see the textures on all of the objects in the scene, but I wanted to show the detail in the videogame controller as well as the textures that I used for all its’ parts.

Overall, it would not be hard to add more objects to the scene if I wanted to. I feel as though the code for this scene is modular and easy to use. I am certain that using more intricate shapes can yield more detail and realism to the scene, but the simple shapes that were used in this project can create a lot of different objects with enough creativity.