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CS-330

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Design Decisions

This project certainly proved to be challenging. I had to alter my development choices from the initial plans that I had laid to render my 3D scene. I had to scale my expectations down to meet my current abilities in rendering objects using OpenGL. As an example, I was unable to faithfully recreate the shape of the container. The container had a spherical base and triangular/diamond shapes comprising the lid. I struggled to create a sphere for this project, and certainly did not comprehend how to create one in tandem with other components of the container. The shapes that I have rendered are only rudimentary renditions of the 2D image that I chose for this project.

Apart from object design choices, as mentioned above, I also had to address my code structure in my development of this project. I was trying to use the same structure for each object’s creation. This worked well, but I had to abandon the mesh structure in the creation of the sphere. I tried many methods to create a mesh for the sphere but did not achieve success. Instead, I opted to imitate code that was previously given as a resource in this course. I included several headers and another .cpp file. I then nested the source code to render the sphere into a rendering function that was then called in main during program execution. Because the structure of the sphere was different from the structure of the other objects in the project, I was unable to successfully bind the texture. However, the object I was recreating was white, and I feel that it is still accurately represented in my scene.

I created and manipulated code to allow for user input using both a mouse and keyboard. The user will require both devices to properly navigate this 3D scene. I have included the controls in the table below.

The user can successfully navigate the 3D scene using the following controls:

|  |  |
| --- | --- |
| **Input** | **Action** |
| W | forward movement |
| A | left movement |
| S | backward movement |
| D | right movement |
| Q | upward movement |
| E | downward movement |
| P | hold to view orthographic projection |
| Mouse Cursor | control camera view (look around) |
| Mouse Scroll | control movement speed |

Throughout the development of this project, I found that separating each object into its own rendering function made it much easier for me to develop this scene in a modular way. I was more easily able to manipulate each object’s size and position in this way. This also allowed me to test individual objects and isolate/troubleshoot more effectively. I will continue to use this logic in other coding projects, as mistakes within individual functions were easily located.