Project Design Decisions

Creating a 3D scene was one of the most interesting things that I have done. It was a lot harder than I was expecting and I feel if I had more than 7 weeks, I could make a better scene. That being said, there was a few areas I struggled in and some I figured out pretty easily.

When I initially took the photo for my scene, I had no idea what I was getting myself into. My scene composed of some easier shapes and some harder shapes. The easy one to tackle was the goldfish box. At first, I made the box all one shape. This made texturing a lot harder than it should have been. To fix this I separated the base from the top. I created a rectangle to rotate 90 degrees around to create the box. After that, I created the top of the box separately and placed it on top of the box I just created. This allowed me to texture the place easier and get all four sides to show up.

The next object I tackled was the jar. At first, this was hard for me to understand but once I figured it out, I replicated the process for some other objects. When creating the jar, it would render the triangles incorrectly. They would come out facing the wrong direction and looked like a balled-up piece of paper. To make things simple, I broke the shape down and started with the triangle. Once I got that into place, I added the points on top and connected the dots. From there I was able to rotate the prism around until I got my jar.

From there, I replicated this process for the holder and spoon. I used the vertices of the jar for the holder base and spoon head. I created the holder bottom and spoon handle separately and translated them to look like my objects. The spoon handle was a little more complicated trying to get the elongated look but still have it look connected to the head.

Finally, that brings me to the snowman. This was by far the hardest object I worked on. I tried so many different ways to render a sphere but couldn’t. After two days of trying various methods, I decided to create the snowman out of cylinders. This worked surprisingly well, and the biggest key was getting them to all line up. The snowman consists of two cylinders for the body and one for the lid. This was a decision based on time and not fully understanding how to create a sphere.

Another area I struggled in was finding textures that worked for each item. For the most part, I was able to take pictures with my phone but some of them I couldn’t get a picture that would work. When I went and looked, I couldn’t find much that matched the items perfectly, so I chose the best option. For the snowman, I chose a frosted glass to represent “snow”. The holder, I chose to use a white texture rather than trying to get the words on it because I was struggling to figure out the texture coordinates for something like that.

One thing that was hard for me to understand but eventually got was the camera.

Understanding the orientation and how the model is fixated on the axis was an interesting trial and error process. At one point, I had the objects moving with the camera. Eventually, I was able to fix this and create a navigation system to allow you to move up, down, left, right, in and out. Also, you are able to use the mouse to change where you’re looking. This is all encapsulated into the camera class and extends into the keyboard and mouse callback functions. Now you’re able to move all over the scene and not have any issues of the direction messing up. Also, if you feel you aren’t going fast enough, you can scroll and move faster or slower.

All of these functions can be pulled out and used in any code. There may need to be some global variables declared, but other than that they can be used anywhere. The functions that are taking the keyboard and mouse inputs can easily be taken to use in another program. My code may seem messy since it is all on one file, but it is blocked together for what goes together.

Overall, this was an interesting assignment and I enjoyed seeing the behind the scenes to creating a scene. I also wished I had a little more time to try and create a little bit more realistic scene. This class was definitely difficult especially juggling a full-time job and 2 kids with 1 on the way.