# CS 330 Design Decision Paper

For my design, I have chosen to use the following objects as models to recreate in a 2D World: A tissue box shaped like a house, a football, hanging cylinder made from book pages and a small sculture that is a sort of elongated pyramid. I chose these objects because they involved using the four required shapes and would provide some good practice with getting used to Open GL especially for the items that are more unique in shape or that are harder to re-created. When learning Open GL, I had a very hard time understanding a lot of the material so I did get stuck in a few places but decided that I wanted to keep it very simple for myself and had used the most basic knowledge I can for re-creating the objects. For example, I spent a week trying to understand how cylinders are built in Open GL but seeing the complex functions that were created online by many others who are further along in their journeys in Open GL, there were no great resources where it was easier to learn. After dwelling on this for days and trying to understand it, I decided to go for a bit more of an older type of cylinder that may have been something more related to N64 graphics or older 3D graphics that had more of a octagonal shape that would still look more round than square which I was happy to see works pretty well. I used a similar shape for the football and it was nice to know that after other students have submitted theirs that some of them were also simplified as well.

The user can navigate my 3D world with the use of WASD key functions that are well known in many gaming and camera functions in multiple software. W allows you to move forward, A allows you to move left, S allows you to move backward, and D allows you to move right. E and Q keys have also been programmed to move the camera straight upward along the Y axis or downward depending on which way the user needs to go. The mouse itself can be used to aim the camera in the direction that the user wants it facing. In combination with the mouse and keys, the user should be able to move forward in any direction that the mouse is facing that is on the screen. The scroller on the mouse can also control how fast the camera moves, so the more the scroller is rolled up, the fast the movement and vice versa. A tricky part of that though is that if you scroll down too far, it will inverse the key functions to where they are all backwards so that needs to be watched. I had a harder time figuring out the orthogonal view vs perspective view. I understand the concept in idea but was unable to make it functional in the program.

This may be a lack of understanding in Open GL but I found it hard to create custom functions to help me re-create objects. I believe it’s the reason I found myself stuck on the cylinder problem for a long time because I wasn’t understanding how I can make it custom for myself and my uses. Instead, I kept it simple but that meant writing more code than was needed since I had to draw each shape pretty much line by line. I did realize that I could just re-use shapes in some cases by using translate, rotation, and scaling functions already provided by Open GL and re-drawing shapes I have already used so I wasn’t needing to have many repetitive lines of code. That is probably as complex as it got for me though. This course has been definitely the toughest course I have had so far and I believe I have some of the basics down but I believe there is much more I can learn in this space. I’m curious to see how much of this stuff I’ll need to know in the future going forward with my career in computer science.