CS-330 Final Project Design Decisions

**Justify development choices for your 3D scene**.

I chose my objects due to their simplicity and complexity. I knew the Zumba fitness stick would be difficult and knew I had to add it to challenge myself in some way. My scene contained a plane, two cubes with different sizes, three spheres, and a cylinder. Another reason I chose to photograph my own image rather than re-create one from the internet was due to the fact I could get pictures at different angles to determine relative size and textures. I am glad I took this approach as finding an image for the Zumba stick that was copyright free was impossible, so I made my own with a picture of the actual object and brought it into procreate on my iPad to make it as accurate as I could.

**Explain how a user can navigate your 3D scene**.

I decided to go with a standard control scheme with a mouse and keyboard for this project. The keyboard controls movement while the mouse controls the camera’s movement. I did add a few custom movements as well since I am used to these movements in modern day games. I added functionality to the space bar, allowing the user to move up within the virtual space like jumping in a game. I also added functionality to shift where the user can hold down shift to double the movement speed to mimic sprinting within a game. The only other functionality that I attempted to add, but was unsuccessful, was the ability to keep the mouse cursor within the window only and make it disappear so that it would not be distracting.

**Explain the custom functions in your program that you are using to make your code more modular and organized**.

I did quite a few things to make my program more modular/organized. The biggest change that I included, versus coding habits in previous courses, was abstraction. I can take these

individual pieces such as the camera, shaders, and main application code and re-use them in other openGL projects that I may start in the future. I was never really taught in previous courses to abstract as much info as possible to keep my code more modular. I was only ever taught to keep as much stuff out of main () as possible and I have kept that up to this day. Abstracting out as much as possible has helped a lot in identifying errors and stopping my code from looking like spaghetti. I would like to, in the future, abstract my lighting as I did not have time to do that in the previous week as well as tidy up how I handled textures for my objects that had different textures on each face. I found the easiest way to apply different textures was to just make each side its own object so I could apply textures separately such as the book in my scene and the Mac. This caused quite a lot of additional lines of code as I had to generate each shape separately. I started on a way to implement this without making each piece its own object, but it was affecting my other objects and I did not have enough time to debug the issue. I have learned more in this class than all my other classes combined and even though it was quite difficult with a ton of hours invested, it was worth it.