Design Decisions

The design I was originally attempting transformed as I progressed through the project milestones. In the end I ended up with a scene that was more inspired by my two dimensional reference picture scene. The image my final project was based on was of a silver spoon, a white mug with a handle, a paper shopping bag, and a book. The final scene was a silver spoon, a black teacup, a green tea can, and a book. After a couple milestones, I quickly realized my original idea was going to take more time for me to execute all of the elements than I had to complete the milestones. I adjusted my plan to meet the criteria by selecting items that would make sense for the scene, that were made of only one of the basic shapes, and that I had with me to use as a reference.

The bag also became very complicated so instead I replaced it with the tea can. To simplify the tea can, I used texture to create the difference between the cap of the tin can and the body of it. The can is not a super shiny metal, but it also isn’t completely matte so the texture I selected and the shine for the can was selected to show less of a defined highlight from the point lights.

For the lighting, I have two point lights and directional lighting coming in from the left. In the reference picture, there is some lighting coming from the window around late afternoon. There are also two large, half sphere, overhead lights on either side of the counter. The light is not quite warm but still a little warmer than bright light so I added more red and green than blue to give the lighting a slightly yellowish hue.

My decision to change the mug to a small teacup was largely because creating the handle and positioning it correctly turned into a very time consuming challenge and the results were not very clean due to the slight color variations throughout the textures creating unsightly seams, obvious stretching and shrinking of parts of the texture and the appearance of shadows where none existed. The small teacup had an overall cleaner look which allowed for better display of the lighting effects I added.

My 3D scene can be navigated through using keyboard and mouse controls. To zoom in and out you can either use the scroll function on a mouse or you can zoom in with the W key and out with the S key. To navigate up, you can press the Q key and to go down you can press the E key. To go left you can press the A key and to go right you can press the D key. If you move your cursor around, the direction of the view will change with the cursor. Users can also change the perspective from a flat 2D perspective to a 3D perspective using the P key.

The code for my scene was designed with each shape having its own function to generate all the mesh data and a function to delete the mesh data. I also had a function for creating and destroying textures and shaders. This allowed for less redundancies when loading mesh, texture, and shader data since there are multiple of each with each having different data. I also had separate functions for things like input processing, flipping texture images and updating the view. This allows for the code to be less cluttered where these functions are called. Also, if I wanted to use those functions in future projects, they would be easy to copy and reuse.