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6/20/2024

CS330 – Computational Graphics and Visualization – Final Project Review

This project has been quite the ride and overall, I think that I am pleased with what I came up with. For my scene, I had put together a cheese platter that consisted of a glass of whiskey, pepperoni slices, cheese cubes, an apple, and some blackberries. There were 2 lighting sources, one from the kitchen ceiling light and the other from a wax melter that is plugged into an outlet nearby. The scene is quite bright, with few shadows outside of where my body was placed when taking the picture. All of this was placed on a cutting board, which I rendered in my scene using a box mesh instead of a plane mesh as my base.

The whiskey glass is made up of 3 parts, the base of the glass (made using a half sphere), the body of the glass (made using a cylinder) and the whiskey within the glass (made using a cylinder). I believe that this came out very well and looks very much like the real-life object it derives from. From here I did take some creative liberties from the original photo. In the original photo, the pepperoni is kind of placed in a pile with the cheese. In my scene I chose to separate the objects and create a pyramid of cheese and a line of overlapping pepperoni. The cheese was made using some for loops and if statements while the pepperoni was made using a single for loop. This saved a bit of repeat code from having to be written. Next to that was the apple and the black berries. The apple is a textured sphere with a thin rectangular box coming out of the top of it, to imitate a stem. The blackberries are oblong spheres that are textured using a picture of a real black berry and while I do think if I had more time, I would have liked to make a grouping of spheres to imitate the drupelets of the blackberry, but I ran out of time trying to figure out the math of how to accomplish this. Overall, I am not terribly proud of the apple or blackberries, but I think they are recognizable as those items. Finally, my background is a tiled wall with one outlet on the righthand side. I created a plug for the outlet using a white box with a textured cylinder coming off the top to imitate the wax melter. I placed a light right above it to imitate the light emanating from the wax melter and I think it came out well. Overall, while my scene is not a faithful recreation, I am happy with it though I do recognize it could be better.

To move about the scene, I have set up the scene with a few key binds to get around and get a few different projections. They are as follows: W (forward), A (left), S (backward), D (right), Q (up), E (down), O (orthographic perspective), and P (perspective projection). Alongside this, the mouse can be used to change viewing angles and look around the scene. All of this allowed me to ensure that my objects were not floating and where properly placed within the scene. The orthographic projection was crucial in ensuring that the objects were placed correctly and look realistic within the space.

To further assist in the realism of the scene, the lighting helps in adding realistic reflections. I am particularly proud of how the light turned out for the wax melter. The color of the light is very accurate to what was in the scene and the kitchen light helps to illuminate everything. I set the ambient light to being near black and very dim as without the wax melter and kitchen light, it would be near pitch black in my kitchen at the time of night I took the picture. The only thing that would make my scene more realistic is adding a fake version of myself to imitate the shadow cast from me standing in front of the kitchen light. Lighting was easily the most challenging part of the class for me and took many hours for me to get a grasp on what I needed to do.

My scene has multiple of the same object throughout, so to allow for easier replication of objects, I created individual functions for each object. I also added parameters to some of the functions such as the cheese, pepperoni, and the whiskey glass so that I can move individual pieces around or for the whiskey glasses sake, move it around in unison with all its parts. I think that adding the parameters to the functions cut a lot of my time down when creating the scene because it made it easier to shift and alter individual objects while running the scene in between each change made. To further shorten the code, I put the cheese and pepperoni in for loops to create many of each object. I think that I could have done better on the logic for the cheese pyramid that I created but for my scene, the code does work. I am happy with the pepperoni logic.

This project was a whole lot of fun to create and all I want to do is continue to play around with OpenGL and see what I can do with it. I know of a few tutorials on game engine creation using OpenGL and after this class I think that I am going to take some of my spare time and follow through one of them to learn even more about OpenGL.

Bibliography

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