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CS330 Final Project – 3D Scene

As a musician I really wanted to select a scene that would include something music related. I thought it would be fun to replicate music related objects in a 3D scene with polygonal shapes. It made the most sense to me to take a picture of my little “music space” in my house which includes my guitar amplifiers and floor lamp. I decided to add one guitar on a stand, my space heater, and a cat toy that was nearby to give a little more variety to the objects in the scene. The amplifiers and space heater were simple to make as they were just one shape, cubes and a cylinder respectively. I wanted to add the ball tower cat toy as I thought it would be cool to make by stacking tori. I knew the guitar and guitar stand were going to be the most challenging to create. Even though the guitar stand is just a collection of cylinders, making them proportionally accurate, along with placing them and orienting them correctly was quite a challenge. Setting the guitar in a way that looks like its actually resting on the stand was another time consuming task.

I decided to start with the floor lamp as it is a complex object but much simpler than the guitar and guitar stand. I think this was a good starting point because it helped me get used to moving objects around in OpenGL and it was a good landmark for the other objects in the scene. The lamp was easy enough to convert to the meshes as it is constructed of an almost flattened cylinder as a base, a tall skinny cylinder for its post, and an upside-down cone to create the lamp “shade”.

I’ll admit I’m not completely happy with how the guitar came out. I think the proportions are a little off in the guitar body shape, but I was having a hard time orienting it the correct way to have the right angle. When I got them in place, the two flattened cylinders that create the body were rotated in such a way that I could not easily shape them into a more oval-like shape as modifying the X and Z dimensions of the scale were stretching the cylinders diagonally. I think it looks good enough that anyone looking at it would know it’s a guitar.

A user is able to navigate through the scene using camera controls that have been implemented into the program. The program uses both the keyboard and mouse to navigate. The user can use the ‘WASD’ keys to move the camera around and the ‘QE’ keys to move the camera up and down. The program also captures the mouse cursor and uses the mouse to change the direction the camera is facing. The mouse wheel allows the user to increase or decrease the speed at which the camera moves.

I don’t believe that I created any custom functions, just functions that are necessary for the program to run efficiently. The way the program is set up to have lighting, camera movement, textures, and the meshes objects is set up in a way to create a different scene if desired. The use of the meshes to create the objects makes it easy to copy and paste code blocks and modify the numbers to get the desired objects created. I kept all the original meshes code blocks at the bottom of the program as a comment block so that if I or someone else were to recreate a different scene, the objects would be there for use.