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CS 330

Assignment 7-1 Design Decisions

The four objects in my project are separated in my code into two categories. My round objects, each created with one or more calls to drawCylinder or drawTorus. These are as follows:

Light Blue Fidget Spinner: I made this object out of three tori connected to a central fourth torus surrounding a middle cylinder. The center of this spinner is one of the shapes I have chosen to apply a texture to, taken from a picture of the object in real life. Another set of three tori form the interior of each loop. I chose the fidget spinner because it was the simplest object I could find that was made up of more than one type of shape, unlike the others which were clearly designable with a single shape type.

Black Collapsed Lantern: This is a large cylinder. This is the second object I have applied a texture to. The texture on the lantern is actually an image of my table without any of the objects on it. This gives the normally featureless, black lantern more contrast to stand out, and is a more convenient object to apply a texture to.

After those classes, the remaining rectangular objects in my code are created within the “mesh” and are listed below.

Pink Clay Pyramid: This object is a simple pyramid made of two colors: Black starting at the topmost vertex, and pink starting at each bottom vertex, with the two colors meeting in the middle.

Green Alien: This object is a simple cube made of a single color.

All four objects are placed upon a black surface that consists of a single plane, also represented as a large square within the “mesh” of vertexes.

Most of the camera functionality for my scene is copied directly from our course tutorials. This consists of using W, A, S, and D to move forward, back, left, and right, as well as the mouse to aim your camera within the scene. In addition to the copied key handling code, I have added lines to add “UP” and “DOWN” functionality to the camera to facilitate movement in the “z” direction when “Q” or “E” are pressed respectively. However, this does require editing the camera.h file that handles the camera functions outside of the project’s main CPP code file.

For that reason, those camera functions are less reusable for copying than the rest of the code I wrote for this project. Each of the code for the objects I created can be used to make more such objects simply by either creating another “draw(shape)” function or adding more vertex locations in the mesh. A second light source was produced simply by copying the Phong lighting, slightly changing the values and to prevent conflict between duplicates, and then creating new calls to the second light source with the name “key” added to things like light position or light intensity.

Code for cycling between views can also be taken largely from the tutorial code. Specifically, the tutorial on textures (tutorial 5) that adds a function to the number keys (1, 2, 3, and 4) to change the texture borders, though for this project only two switches are needed to switch between 3D and 2D views.