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CS 330 Computer Graphic and Visualization

Project Reflection

When I started the design of this project, I wanted to utilize objects that I used on a regular occasion to ensure that I was able to represent them as best as I could. For the 3D scene I used a wood table that represents a computer table where I have my plane which is a computer leather mat. The shape of the white table is a box that I manipulated to look like the top piece of a table and added the texture of white wood with some imperfections to match my computer tabletop. The leather mat was my plane that utilized the plane shape from the meshes.cpp file and I utilized a brown leather texture. I then created a base for the cologne bottles that utilized 2 cylinder shapes and then I used a light pine wood texture. The left cologne bottle utilizes 2 sets of cylinders stacked on top of each other to represent the bottle and the cap. I then used black glass texture for the bottle body and used the cap from the actual bottle for the texture of the top. To represent the middle cologne bottle I used multiple shapes, first starting with the box to display the front of the bottle and used a clear glass for texture. The back utilizes a cylinder and is textured with a mesh fabric, as well as the two sections of the bottle cap which also use cylinders of 2 different shapes but use a chrome texture. The bottle on the right is created with a sphere for the body of the bottle and is textured with clear glass, as well as the top of the bottle that is also using a smaller sphere with glass texture. The middle part of the cap is 2 pyramids, with one being upside down that is textured in gold to display the j’adore bottle. On the right side of the scene we have a pair of headphones and a headphone stand. The headphone stand uses a cylinder for the base and boxes for the arms of the stand. The stand is textured in a metal texture. The headphones utilize 2 spheres for the ear speakers and a half torus for the headband. The headphones are textured in a gun metal brushed metal. I made the decision to use the mentioned shapes and textures after using the multiple shapes that were available to us in the course and noticed that to get the closest representation of my scene I had the use the above shapes. Once I figured out how to create the first couple shapes I was able to create my scene with only minor issues, which were mostly due to Apporto. After receiving feedback from the professor I took a different approach and changed the location of every shape to ensure accuracy by using glm::translate and making my adjustments on a per shape basis. For the numerous sizes I made adjustments to glm::scale.

In my scene a user could navigate using multiple controls. On the keyboard if the user uses the keys WASD, the user is able to move forward, backward, left and right. If the user uses Q or E the user could move upward or downward. To change the camera between perspective and orthographic the user could press O for orthographic and P for perspective view. If the user presses the Esc key the program closes. If the user presses the L key the lamp stops rotating or if they press the K key the light resumes orbiting around the 3D scene. I have two light sources in the scene, one being a spot light that is centered on the scene to show the front of the scene, if the user presses the V key the spot light turns off, if the user presses the B key the spot light changes color to a light blue hue. The key light is controlled to turn on or off by using the keys N for off and M to turn on. In the scene the user is also able to use the mouse cursor to change the orientation of the camera, and use the mouse scroll to adjust the speed of the movement the camera travels around the scene.

Most of the code within the program was provided by the professor or course material. From that code I made the changes that were necessary to produce my own personal scene. I made changes to the render function to utilize the camera movement that I wanted to display in my light, I also created all the shapes for the 3D scene inside of the render function. From here I was able to repeat the code for each shape only making changes to vertexarray, scale, rotation, translation and textures. That increased my productivity and made the code reusable. To add the custom controls I mentioned in the previous paragraph, I made changes to the processInput function. Inside this function I gave my scene the necessary navigational movement to meet the requirements for the project. I also had to make changes to the camera.h file to change the mouse scroll from zoom to movement speed. Overall the experience of creating the shapes and adding textures were made simple by reusing the code from within the functions.