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CS-330 Final Project Reflection

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For my final project I selected a pool scene. I choose this scene because it was colorful and contained challenging lighting. My scene was set during a sunny Arkansas summer day in the backyard of my humble dwelling. The object choices were colorful common pool items including a tube, noodle, ball, and a hat. The hat served well as my complex item. To build this complex item, I selected three primitives. A flattened cone was used as the brim and foundation of the object. I then stacked a cylinder on top of it to form the upper body of the hat. Finally, I added a torus to appear as a leather like band around the bottom of cylinder. This came together well. After adding a straw texture to the hat and a leather texture to the band, the hat looked very realistic. My other items provided some variation in material shininess with the noddle and tube both being very smooth and reflective plastic surfaces. This enabled me to highlight the graphical power of OpenGL in creating realistic spectral effects of the sunlight.

The navigation for my program was coded into my ViewManager.cpp file. The user can easily zoom in and out by using the W and S keys respectively. The A and D keys can be used to pan left and right. The Q and E keys provide the user with controls to move up and down within the scene. The user can change the viewing angle by moving the mouse around. The mouse scroll increases or decreases the movement speed of all the key commands. Finally, the P key brings the focus of the camera back to a good starting point with a perspective view. To view the scene in a front orthographical manner the user can press the O key. This creates a straightforward user experience that seems realistic as the user can walkthrough the scene with the use of only one hand apart from optional adjusting the speed with the mouse scroll device.

Although I followed the design criteria and recommendation in developing the solution for this project, I was able to build in some nice personal touches. For the complex object, it became cumbersome to move the primitive shapes individually when positioning the composite object within my scene. To facilitate easier adjustment, I created position offset variables to be used in the position coordinates for each of the primitives. This enabled me to adjust the offsets to move my composite complex object around the scene easily. I also chose to create individual methods in the scene manager for each object. Although this might have been overkill for the simple objects, it did provide some additional organization to my code. This provides for more adaptable code. Someone in the future could easily take my code and add complexity to my simple objects without the need to restructure the code.

In reflection, this project was very interesting. I learned a lot about 3D graphics and really enjoyed developing this solution. I would like to dive deeper into computer graphics and learn more about the code behind the provided meshes. I found it interesting how closely related this was to the application of linear algebra which seemed very abstract during my mathematical studies. Personally, I am very much a left brained, logical person. This project and class really pushed me to utilize both sides of my brain and I had to reach into my creative side as well. This is the biggest challenge of mastering computer graphics. People that can very affectively utilize both sides of their brain are rare. Mastering computer graphics really demands a logically programmer that is also a bit of a creative artist.