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Comp Graphic and Visualization

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Reflection

This graphics project included 4 shapes from my selected image made from a cylinder, a cube, a pyramid and a plane. I changed the sphere in my original image to a cube as it would be much easier to program it within a matrix as well as think about its dynamic in a 3D Dynamic environment. Additionally, I made sure that two objects within the scene were textured in a decorative pattern. As for being able to program for the required functionality, I was able to program it by following the given CS 330 tutorials in addition to using the OpenGL textbook. Both of these resources helped tremendously in both function creation and code structuring. For the reason I used those specific objects within my 3D scene, I used 2 cylinders for both a bottle with a bottle cap. This would be my first object created. The second object I decided to create was a cube in order for it to represent a gauze packaging box when replacing the sphere in my original image. As for a more complex image, I used a large cylinder and a smaller cylinder to represent a spray bottle. This was followed along with represented planes connecting all the items together.

Navigating my 3D scene, a user can use both their mouse or keyboard if the need arises. The mouse is used within the 3D scene to look around the environment. It also allows the user to look in any direction. The scroll wheel has the added function of changing the movement speed of the camera. The other way a user is able to orientate themselves and move throughout the 3D scene is by using WSAD on their keyboard. W is used for moving forward, S is used for moving backwards, A is used for moving to the left and D is used for moving to the right. Additionally since this is a 3D environment, I added the function of moving up or down by pressing either the Q or E key respectfully.

There were some custom functions created for the project to use, but for the most part, many of these functions were from the tutorials. The tutorials ranged from module 2 all the way to module 6 in which I was able to see code creation of 2D shapes spliced into a 3D object. The major custom function that was used for the program was the code for the lighting that was shining on the objects within the 3D environment. Furthermore, one of the more custom functions added to the program involved the camera movement as this one was one of the more tricky ones to get working. In the end most of the code functions were structured similarly to the tutorial example code.

When it comes to formatting and code structure, I tried to keep it as organized and uninformed as possible. I used consistent spacing as well as indentations with each added function/layer of the project. Additionally, I used a lot of functions and callbacks within the program to keep it modular and reduce the redundant amount of code within. This saves both space and time when calling back the functions as well as makes sure there's no excessive code either. Finally with each function created there was also a destroy function added to help save the users resources when utilizing said functions. Overall the code created is both organized and modular in order for it to be much easier on readability and scalability with the added benefit of comments along the way to help anyone reading it know what each section of the code does.

Overall OpenGL is incredibly difficult. It is the culmination of 3D graphics coding with the addition of linear algebra in Matrix creations. Without a doubt if it were not for the tutorials and added resources of the textbook, creating this project would be nil impossible.