Module 7 Final Project

CS 330

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## Justification

The objects I chose were generally simple with a few exceptions. I am new to OpenGL so I didn’t want to make the project too challenging, but I also wanted to test myself and learn as much about the modeling library as possible. The simplest shapes I chose included the book object and the exercise ball. While these objects were simple to create, it was difficult finding adequest textures for them that worked well with the rest of the scene. The book took some time to texture because I the image I found was okay, but not great. I tried to change the lighting to make it look better, and if I could have done more work I would have added another plane to act as the cover with the rest of the book appearing blue. However, this would have caused me to also create a plane for the spine so the book would look like a cohesive object. The sphere was easy to make but also difficult to find a texture for. I ended up using a tape material that seemed to replicate the original material in most respects besides color. This seemed to work well with the scene so I went with it. The final two shapes, the timer and the jar, took a bit more work. Both of these objects were made with several shapes, the clock taking the most amount of shapes and textures. I chose to use a prism and box for the box of the clock, and used another box for the screen that slightly clipped outside of the clock base. This gave the clock a closer look to the original. I textured the base and prism of the clock similarly, while I gave the screen a green texture that seemed to fit well with the overall object. The jar is made of two cylinders, each having a different texture that represents the base and top of the jar. The top of the jar consists of a red texture that I tried to make look like the actual top, while the base is a brown plastic color that I thought looked like peanut butter. Both of these objects were more difficult to create, but they ended up looking alright.

## Navigation

The user can navigate the 3D scene using the WASD keys for lateral movement based on the position of the cameras current view. The user can use the Q and E keys to move up and down respectively, again based on the current view of the camera. The user can use the mouse wheel to increase the speed of the camera so they can move around the scene faster. The user can also press the O button to switch to orthographic view, and if they press the P button it will return them to perspective view. These features all work with a mouse and keyboard and they were important to implement because they allow the user to move around the scene freely and easily.

## Custom Functions

A few of the additional functions included DefineObjectMaterials() and SetpSceneLights(). These functions are important to the scene because they give the objects more details by defining how lights affect each material, and adding lights to the scene respectively. In the DefineObjectMaterials functions I was able to define custom lighting parameters for each material by connecting the parameters with a material string tag. This is a connected feature in OpenGL, which is utilized through the SetShaderMaterial() function. The SetupSceneLights() function was also important because it allowed me to add light objects to the scene which not only added more detail to the scene, but also made it seem more realistic. The scene displays shadows and objects have reflectivity which makes the scene look better overall. I had a fun time creating this project and it was interesting to see the many different systems that go into creating simple 3D objects. It’s clear that the developers of OpenGL put a lot of work into creating a library that anyone can use and learn from. I think if I had to do this project again, I would choose slightly more complex objects, and create my own shapes, with the new knowledge I have gained.