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CS 330

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**Project Reflection**

The 3D scene I created is inspired by the following 2D image:

A picture containing indoor, tool

Description automatically generated

What I didn’t initially realize was how difficult this was going to be to recreate in a realistic way using OpenGL. For instance, consider the broom head. The broom head in this picture is a complex object, made up of many different shapes. There are also multiple textures. My initial plan was to simplify the broom head into two trapezoidal prisms, one for the plastic and another for the bristles. Notice also how the head is angled and its position in relation to other objects. The broom head in my present project is a far cry from my initial vision, however. Getting the coordinates right and combining multiple objects turns out to take a lot more coding than I’d anticipated. So in reality, I ended up simplifying even more, using just a single elongated cube with a single texture to represent the broom head as can be seen in the image below:

A picture containing text, flag

Description automatically generated

The positioning of the objects in relation to one another and their relative sizing, etc. has been greatly simplified as well. Notice also that everything is made of cubes. So the broom handle for instance is not round as in the original 2D photo, for instance. I wanted to use a cylinder, but I was having difficulty with implementing the code and settled for the cube.

Navigation around the scene uses the W, S, A, and D keys as inputs to be able to move up (W), down(S), left(A), and right(D). Input from the mouse changes the viewpoint of the camera.

In order to accomplish situating the multiple objects in relation to one another and binding the individual textures to each respective object, I used a separate VAO, VBO, and set of vertices for each object. As for portability, there are a couple reusable functions within the code. For instance, there is a function that loads the image. This function could be reused in a different scene.