COSC 4370 - Homework 4

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1 Problem

The goal of this assignment is to implement texture mapping in OpenGL. The uv data is hard coded in the main function. You will write code to transfer the uv data to OpenGL buffer, just like what we are doing for vertex position. You will also write the code for binding texture in the rendering loop and shader code to draw the texture. A tutorial on texture mapping can be found at https://learnopengl.com/Getting-started/Textures. If you implement everything correctly, you should be able to reproduce a rotating textured cube like the following:

2 Method

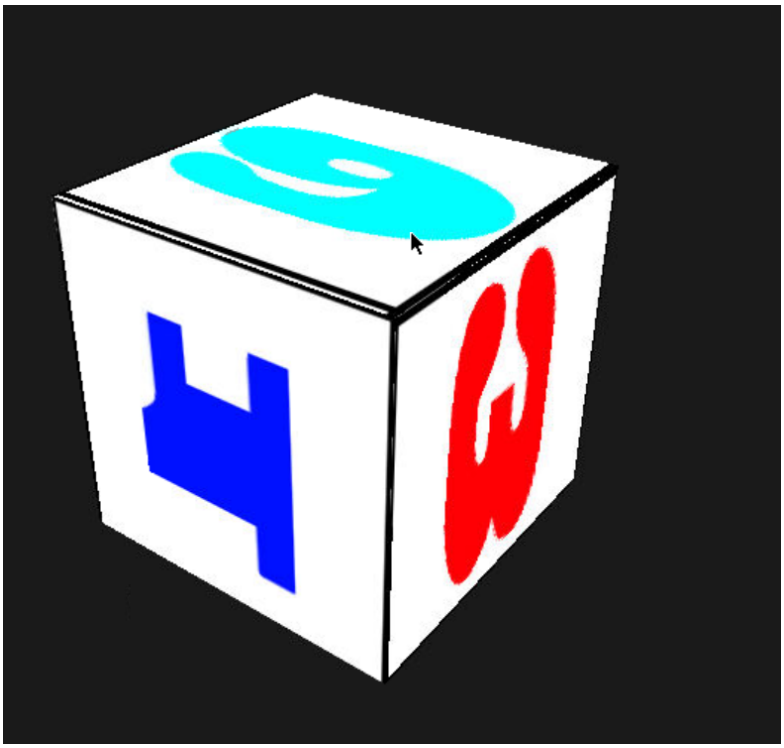
From the given source code I altered methods in the main file and both texture files. In order to reproduce the above image I needed to first complete the projection matrix so there would be something in view once the cube started rotating. I also needed to set up the UV buffer so the textures would be laid out correctly onto the cube. The last changes were to the texture.vs and texture.frag files and this was in order to get the cube to apply the sample texture onto the faces and make sure I didn't end up with a black screen

3 Implementation

Again I found it difficult to apply the textures to my cube so I was able to find resources online to help with this assignment. I set up the projection in main and the perspective function will create a 4x4 projection used for a vertex shader. I also needed to set up the UV buffer that would map out the texture onto the cube. This was the most challenging part for me, this is where I relied heavily on my online resources that I found for OpenGL. In texture.frag I needed to apply the texture sample to my UV buffer, this was easy just by applying that to the color of the cube and it would be set correctly. Last I needed to finish the texture.vs file where I needed to set the position in order to achieve the rotating cube in view.

4 Results

The output for my code was a white rotating cube with the textures 1-6 on each side. My program outputted the same image as was described in the instructions. I linked all the sources that I used below as well as in a text document included in my submission



Main- https://github.com/nimelica/COSC4370/blob/main/hw4/main.cpp
Camera- https://github.com/nimelica/COSC4370/blob/main/hw4/Camera.h
Texture.frag-
https://github.com/nimelica/COSC4370/blob/main/hw4/texture.frag
Texture.vs- https://github.com/nimelica/COSC4370/blob/main/hw4/texture.vs