COSC 4370 – Homework 4

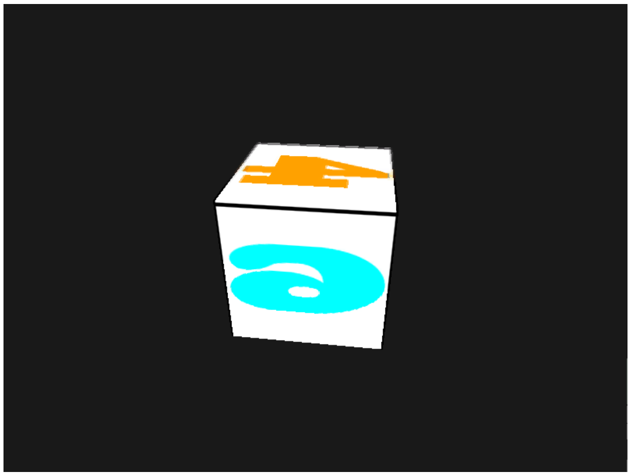
Name: Joseph Jophy UHID#: 2048762

Apr 4 2023

1 Problem

The assignment requires texture mapping in OpenGL and shader. We will write code to transfer the uv data to OpenGL buffer, just like what we are doing for vertex position. We will also write the code for binding texture in the rendering loop and shader code to draw the texture.

Our task is to recreate a cube that looks like this.



2 Method

Our goal is to map textures from the texture.dds files onto the OpenGL cube. We will first transfer the uv data which has already been hardcoded for us to the OpenGL buffer. We will then write the code to bind the texture to the cube and shader code to draw the texture.

3 Implementation

3.1 setUpUVBuffer (main.cpp)

We will send the uv data to openGL buffer. We will use the functions glGenBuffers, glBindBuffer, glBufferData, glVertexAttribPointer, glEnableVertexAttribArray. This buffer will let us know which areas need to be textured

3.2 Set up Projection Matrix (main.cpp)

The projection matrix is set up so we know where to plot the points on a plane to create a cube. We will be using a perspective projection by setting projection = glm::perspective(…,…)

3.3 Bind textures (main.cpp)

We will use openGL glBindTexture function to bind or map the texture to the cube.

3.4 Texture.frag

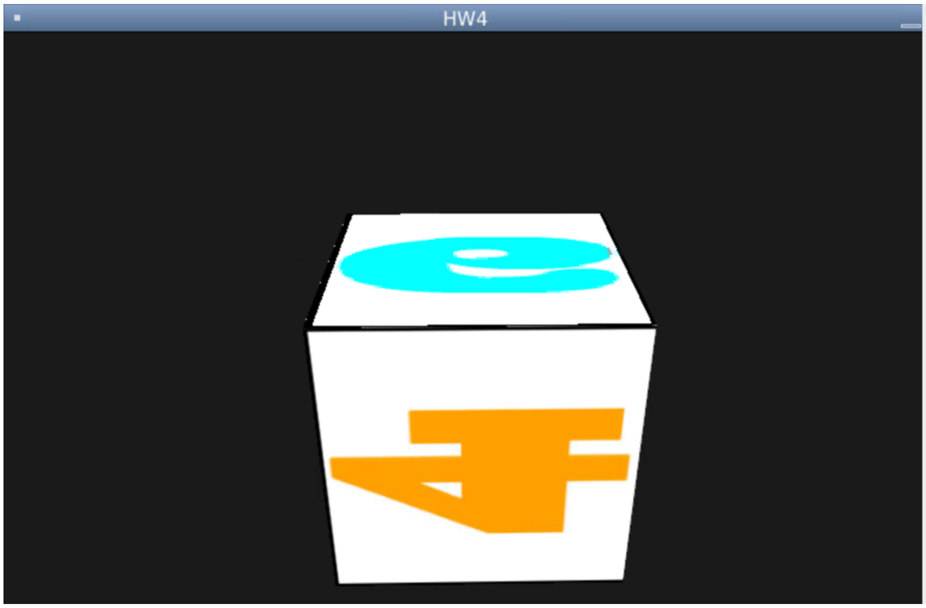
We will set the color by using the texture function given our UV value and myTextureSampler(our texture)

3.5 Texture.vs

We set the openGL position to the projection*view*model*position. We also interpolate UV by setting it to the negative value of our given vertexUV. This will make sure that the object is projected onto the plane properly.

4 Results

The output of the program is a window displaying the cube.


HW4