Homework 4: Texture Mapping

COSC4370 Interactive Computer Graphics (Fall 2023)

DUE: APRIL 1, 2023 AT 11:59 PM

1. Introduction

In this assignment, we will practice texture mapping in OpenGL and shader.

2. Setup

This homework will use the same libraries as we did in HW3.

a. Fork this link: https://replit.com/@MartinLee7/Template

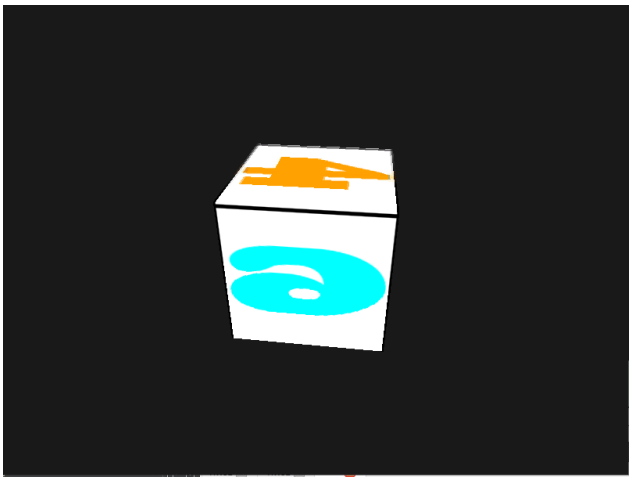
b. Upload the starter files to the project and overwrite the default file with the provided one.

c. Get permission to read and execute script.sh by using the following command: `chmod u=rx script.sh`

d. Then run script.sh by using `./script.sh` (Instead of run button, you should run this command every time to compile.)

3. The Main Assignment

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:



4. Deliverables

Submit all deliverables to your GitHub repository.

a. Code (texture.vs, texture.frag and main.cpp) (45%)
b. A screenshot (preferably .png) of your result (5%)
c. You need to write a detailed report in pdf format. You should state the assignment problem, explain the algorithm or method you use, explain details of implementation, discuss your results, etc. (50%)

5. Late submission and plagiarism check

A punishment deduction of 25% credit will be applied if your submission is later than the due date for less than 1 day. 50% for between 1 and 2 days. Later than that will be treated as give up, and the grade will be 0.

All your submissions will be subject to plagiarism check; if found, your behavior will be reported directly to the department. Any referred materials should be labeled in your source code and declared in your report.

6. Hint

The parts you have to modify are specified as TODOs in main.cpp and both the shaders.