Homework 4 – OpenGL Basics

Due: November 14th (11:59pm)

Overview:

This assignment aims to get you up and running with OpenGL so you are ready to complete Project 4 (game programming). The goal of this assignment will be to get some simple OpenGL demos compiling and make some small modifications to them. The code relies on the SDL3 framework, which you should have working from Project 1.

A quick start guide to OpenGL has been posted on the course webpage. Before starting the homework look at the code. You should be able to understand the basic ideas of every line of *BlankSceen.cpp*. With the help of the OpenGL quick start guide, you should be able to understand the other files as well.

A. Compile and Run the Demos (20 point each, 80 points total):

Take an image of each of the following demos running on your computer:
TriangleColored.cpp, *Cube3D.cpp*, *CubeLit.cpp*, *ModelLoad.cpp*
You should have four pictures, one for each demo.

B. Quick Checks Questions (5 point per problem, 20 points total):

Q1. In *Cube3D.cpp* we call `glEnable(GL_DEPTH_TEST)`. Remove this call, how do you explain the resulting image?

Q2. Currently, all of our examples exit when Escape is pressed. Update the code to also exit when the "Q" key is pressed. What did you need to change?

Q3. In *CubeLit.cpp* change the shader so the light is coming from below the cube. What change did you make?

Q4. Create a new model file, by hand, that contains a single large triangle. Load this model instead of the defaults. Upload a picture of the rendering of this large triangle.

Extra Credit: Programming Exercises (1 point per problem, 8 points max):

Complete any of the programming exercises as the end of the guide. These are of varying difficulties, feel free to choose the easiest ones. =)

Submission Details:

Submission should be in the form of a link to a webpage. The site should contain at least one image per demo in Section A, images of 2 different models for *ModelLoad.cpp*, a sentence or two for each question in Section B, and a short description (~1 paragraph) Additionally, include the code needed to compile any extra credit exercises along with an image or short clip of each exercise working.