Program #1
CISC 3620

Due date

This assignment is due at 11:59pm on Thursday, March 10. Four total excused late days are available to you for this course. One point will be deducted for each unexcused late day. No submissions will be accepted after 11:59pm on Thursday, March 17.

Description

For your first assignment, you will create a program that renders a two-dimensional image and responds to certain inputs as specified below. The goal of this assignment is for you to demonstrate that you understand

• the structure of an OpenGL program
• Cartesian coordinates
• callbacks and interactivity
• affine transformations

Requirements and grading

(10 points) Open an OpenGL window.
(10 points) Model a two-dimensional image in an array of vertices and colors. Your image should be made up of at least six triangles and three colors. Points for creativity.
(10 points) When lowercase ‘r’ is pressed, the image should rotate about the origin in a \textit{counter-clockwise} direction. When uppercase ‘R’ is pressed, the image should rotate about the origin in a \textit{clockwise} direction.
(10 points) When lowercase ‘s’ is pressed, your image should shrink (uniformly). When uppercase ‘S’ is pressed, your image should grow (uniformly).
(10 points) When lower case ‘x’ is pressed, your image should move in the negative x direction (left). When uppercase ‘X’ is pressed, your image should move in the positive x direction (right).
(10 points) When lower case ‘y’ is pressed, your image should move in the negative y direction (left). When uppercase ‘Y’ is pressed, your image should move in the positive y direction (right).
(10 points) When lowercase ‘a’ is pressed, you should create an animation by continuously applying a transformation of your choice. (Points for creativity.) When uppercase ‘A’ is pressed, stop the animation.
(20 points) Code organization and style. Make sure your code is very readable: variable and function names should be meaningful; everything should be well commented.
(10 points) Executable runs on first try.

Note

• The \textit{degree} of a transformation (e.g. how much your object should rotate or shrink) is not specified; the only requirement is that it should be easily noticeable.

• The starting point for your project should be the result of the tutorial that draws a triangle in a window (HW #0.1).

• You should also refer to the example program posted on the class website and Blackboard. (Your image and animation must be significantly different from the ones in the example.)

• You may use the transformation matrices provided by glm.
Submission

Submissions will be through Blackboard.
You will upload a compressed folder containing

- A file called “main.cpp” that includes all your code.
- An *executable* version of your program. If you started with the Glitter project, this will be in Glitter/Build/Glitter/Debug.
- A file called README that indicates whether the executable was built for Windows, Mac, or Unix.

Call the folder YOURLASTNAME.program1.submission.

Collaboration and communication

You are encouraged to use the online discussion board in Blackboard to discuss issues that come up in the course of completing this assignment. Answering questions on this board will be counted as participation credit for this class. In addition, I will be monitoring the board and helping to resolve issues.

Regarding plagiarism: do not post more than a couple of lines of code. If your problem requires more context than that it is probably best resolved during office hours.

I can be contacted for assistance regarding this project (and throughout the course) at proflevitan@gmail.com. Please include CISC3620 in the subject header. My office hours are Wednesday 9:30-11:30 in 3114 Ingersoll.