Assignment 1: Introduction to OpenGL

Assignment Specification:

Install OpenGL as discussed in the class. Next, download the attached program **Triangle.cpp** along with the shader files (**triangle.vs** and **triangle.fs**). Run and Compile the program. Next, make the following changes:

1) Change the background color. You can choose any color other than black. Write down the code to change the color. Show the screen shot with the code.
2) Change the color of the triangle. You can choose any color other than red as given in the original program. Write down the code to change the color. Show the screen shot with the code.
3) Replace GL_TRIANGLE with GL_TRIANGLE_STRIP, GL_TRIANGLE_FAN in **glDrawArrays** command. Does the output for each case differ from the original output? Why or why not?
4) The triangle is composed of three points. Show the points. Write down the codes that draw points. Vary the size of the points. Show the screen shot with the code.
5) The triangle has three sides. Draw the lines to show the three sides of the triangle; vary the width of the lines. Use GL_LINE, GL_LINE_LOOP. Write down the codes that draw lines. Show the screen shots for different line width along with the code.

Submit the **.cpp** file after making the following changes to the original program.

6) Add one more point to the existing triangle so that the resultant figure looks like a square. Draw the colored square;
7) Replace GL_TRIANGLE with GL_TRIANGLE_STRIP, GL_TRIANGLE_FAN in **glDrawArrays** command for the square. Does the output for each case differ from the original output? Why or why not?
8) Now, the square is composed of two triangles; Show the sides (lines) of the two triangles;
9) Add a keyboard button to change from the polygon mode to wireframe (lines only) mode.

Submission:

Include a pdf file named **Assignment1.pdf** to answer questions 1 to 5. For questions 6 to 9, submit the modified file as **TriangleModified.cpp**. Include at the top of your solution (in comments), your name, what compiler(s) you used. Minimal documentation is required – use good naming conventions for variables and comment any non-trivial code (describe what it does).

Place your solution in a zipped file named with your last name followed by the first initial of your first name followed by '1' (ex: **CSCD396YasminS1.zip**) and submit the solution via canvas.

Thus, your zip should contain the following:

- A file named **TriangleModified.cpp**, and a pdf file named **Assignment1.pdf**.

Submission deadline is **Thursday, January 18, 11:59 pm**.

This assignment carries a weightage of **5%** of the course.