National University of Sciences and Technology (NUST)
School of Electrical Engineering and Computer Science

Department of Computing

Computer Graphics

Class: BSCS and BESE

Assignment 1

Submission Due: Oct 11th, 2015, 11:59 pm

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National University of Sciences and Technology (NUST)
School of Electrical Engineering and Computer Science

Assignment 1

Introduction

In this assignment you have to understand and implement the following concepts

- Basic Drawing
- Tessellation and Twist

Objectives

- To develop skills for using OpenGL

Tools/Software Requirement

- WebGL enabled browser and an appropriate IDE.

Problem Statement:

Task 1: Create a program that draws a user-selected primitive on the canvas using a user-selected color and a size. User can pick a primitive like a triangle, a square or a pentagon to draw. User then selects a color for drawing and also chooses the size of the primitive. After that the primitive is drawn on every mouse click. User can draw multiple objects choosing a primitive, its size and a color at will. **[3]**

Use dat.GUI in program for selection. **[1]**

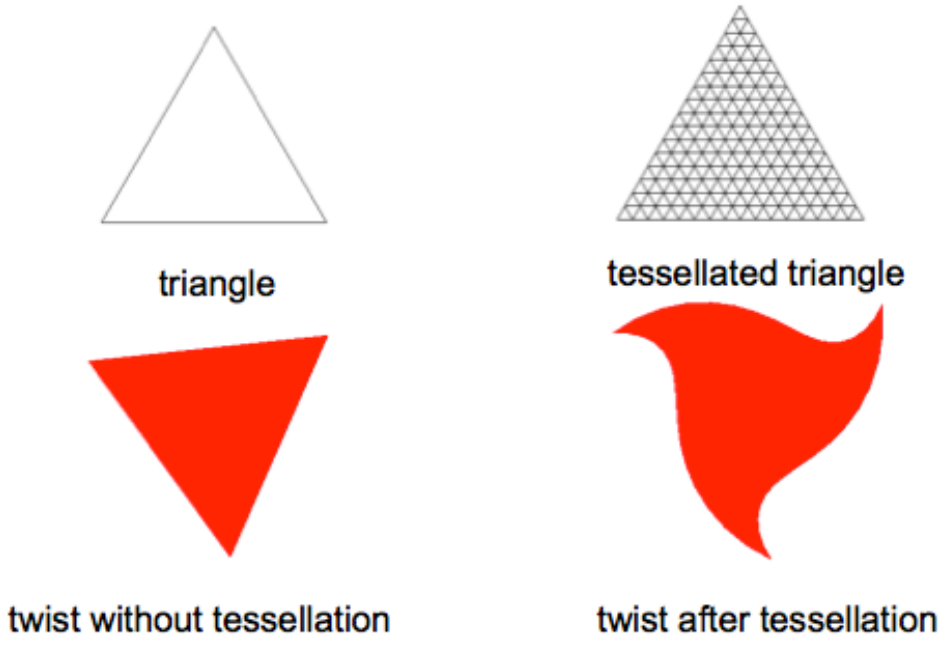
Task 2: In this task you will code functionality to tessellate a triangle using recursion and apply twist to the vertices.

Twist: It is the rotation of vertices depending upon how far they are from the origin. The further a vertex is from the origin the greater it rotates. 'd' is the distance from the origin. Twist will be implemented using a slider where user can select the angle.

$$x' = x\cos(d\theta) - y\sin(d\theta)$$
$$y' = x\sin(d\theta) + y\cos(d\theta)$$
$$d \propto \sqrt{x^2 + y^2}$$

Tessellation: A triangle can be subdivided into multiple triangles. For example a triangle can easily be divided into 4 sub triangles. In turn each triangle can be further divided into four more

and so on. The number of times each triangle will be divided depends on the user chosen number. **[4]**



You get credit for adding more functionality, writing readable code with comments and aesthetics. **[2],**

Any assumptions that you take must be properly stated.

You must do this work individually. You cannot share your code with anyone or copy code. Plagiarism will result in zero marks.

Deliverables

Submit only ONE zip file on the given LMS link, which contains both the tasks in folders named TASK1 and TASK2. Make sure to bundle all the dependent libraries in the zip file so your program is ready to run. Your file should be named as asg1[YOUR FIRST AND LAST NAME].zip

Always submit 1 day before the deadline to avoid any last minute delays.