# Department of Computing

# CS361: Computer Graphics

# Class: BSCS-2AB & BESE-3AB

# Lab03: Object Transformation

# Date: 21th September, 2015

# Time: 2:00pm- 5:00pm

# Instructor: Dr. Muhammad Muddassir Malik

# Lab 3: Object Transformation

# Introduction

The **CanvasRenderingContext2D**.rotate() method of the Canvas 2D API adds a rotation to the transformation matrix. The angle argument represents a clockwise rotation angle and is expressed in radians.

**Objectives**

After performing this lab students should be able to:

Perform basic transformations.

**Tools/Software Requirement**

For testing HTML 5, CSS, JS

**References:**

<https://developer.mozilla.org/en-US/docs/Web/API/CanvasRenderingContext2D/rotate>

<https://github.com/toji/gl-matrix>

<http://learningwebgl.com/blog/?p=28>

**Lab Task**

**Task 1: [3]**

Create four triangles\*. Place one triangle in the top left quadrant. Place second triangle in the second quadrant and rotate it by 45 degrees. Place third triangle in the third quadrant; rotate it by -45 and scale by a factor of 2. Place the forth triangle in the fourth quadrant and it has an x-shear of 0.5 with reference line y = -1

**Task 2: [3]**

Create a cube, which is rotated by 45 degrees on all the three axis.

**Task3: [3]**

Create a hexagon and a pentagon. Rotate them by an angle. The angle is controlled by a slider. You can implement dat.gui instead of implementing the slider in the HTML **[1].** Translate the pentagon by 0.5 and hexagon by -0.5 on x-axis.

You **must** pass the rotation and the translation matrix separately to the vertex shader for the task.

\* You can use vertices array with only 6 elements in it.

For this lab you must use gl-matrix.js or gl-matrix-min.js for matrix manipulation.

dat.gui: <https://code.google.com/p/dat-gui/>



**Deliverable**

Upload your code with snap shots of the output.