CANADIAN COLLEGE OF MODERN TECHNOLOGY

1 Silicon Hill

Mile 91

**ASSIGNMENT ONE**

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**DEPARTMENT:** COMPUTER SCIENCE

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**MODULE:** COMPUTER GRAPHIC

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Q1. Using the GLUT library in Code block draw three different shapes, no two shapes should be the same.

Answer

A program to display three different shapes (Square, Pentagon and Triangle).

#include <windows.h>

#include <GL/glut.h>

void initGL() {

// To Set "clearing" or background color

glClearColor(1.0f, 0.1f, 1.1f, 0.0f);

}

Void display () {

glClear(GL\_COLOR\_BUFFER\_BIT);

glBegin(GL\_QUADS);

glColor3f(0.0f, 1.0f, 0.1f);

glVertex2f(-0.8f, 0.1f);

glVertex2f(-0.2f, 0.1f);

glVertex2f(-0.2f, 0.7f);

glVertex2f(-0.8f, 0.7f);

glEnd();

glBegin(GL\_TRIANGLES);

glColor3f(1.0f, 0.0f, 0.0f); //Red and blue

glVertex2f(0.8f, 0.4f);

glColor3f(1.0f, 0.0f, 0.1f);

glVertex2f(0.9f, -0.4f);

glColor3f(0.0f, 0.0f, 1.0f);

glVertex2f(0.6f, -0.9f);

glEnd();

glBegin(GL\_POLYGON);

glColor3f(1.0f, 1.0f, 0.0f); // Yellow

glVertex2f(0.6f, 0.4f);

glVertex2f(0.6f, 0.4f);

glVertex2f(0.7f, 0.4f);

glVertex2f(0.6f, 0.6f);

glVertex2f(0.4f, 0.6f);

glVertex2f(0.3f, 0.4f);

glEnd();

glFlush(); // Render now

}

int main(int argc, char\*\* argv) {

glutInit(&argc, argv); // Initialize GLUT

glutCreateWindow("Vertex, Primitive & Color"); // Create window with the given title

glutInitWindowSize(320, 320);

glutInitWindowPosition(50, 50);

glutDisplayFunc(display);

initGL();

glutMainLoop();

return 0;

}

Q2. You are required make an assumption for the variables:

for window, Twin = ?, Xwmax = ?, Ywmin = ?, Ywmax = ?.

for viewport, Xvmin = ?, Xvmax = ?, Yvmin = ?, Yvmax = ?.

Now a point ( Xw, Yw ) be (?,?) on the window.

1. Calculate that point on viewport ( Xv, Yv ).

**Solution**

Let’s assume for window:

XWmin = 12, XWmax = 42

YWmin = 12, YWmax = 62

Let’s assume for view port:

XVmin = 32, XVmax = 62

YVmin = 42, YVmax = 62

Now a point (XW,YW) be (22, 42) on the window .

We have to calculate the point on view port,

i.e. (XV, YV)

Hence considering the following formulae, i.e. scaling factor of x coordinate and is scaling factor of y coordinate

To calculate the scale factor for the x coordinate, we use the formula:

To calculate the scale factor for the Y coordinate, we use the formula:

To find the view port of XV is:

XV = XVmin +(XW -XWmin ) Sx

XV

XV

XV

XV

Therefore, the point on the view port is 42.

To find the view port of XV is:

YV = YVmin +(YW- YWmin ) SY

YV

YV

YV

YV

Therefore, the view port of YV is : 54 ans