**LAB Report 1**

**CSE 412**

**Computer Graphics**

**Section 3**

**Name:** Raihan Munim **ID:** 181400138

**Topic:** House, tree with background

**Code:**

#include<windows.h>

#include <GL/glut.h>

void init(void)

{

glClearColor(1.0, 1.0, 1.0, 0.0); // Set display window colour to white

glMatrixMode(GL\_PROJECTION); // Set projection parameters

gluOrtho2D(0.0, 400.0, 0.0, 400.0);

}

void drawShapes(void)

{

glClear(GL\_COLOR\_BUFFER\_BIT); // Clear display window

// background sky

glColor3f (0.000f, 0.749f, 1.000f); // deep sky blue

glBegin(GL\_POLYGON);

glVertex3f (0, 170, 0.0);

glVertex3f (400, 170, 0.0);

glVertex3f (400, 400, 0.0);

glVertex3f (0, 400, 0.0);

glEnd();

// ground

glColor3f (0.561f, 0.737f, 0.561f); // dark sea green

glBegin(GL\_POLYGON);

glVertex3f (0, 0, 0.0);

glVertex3f (400, 0, 0.0);

glVertex3f (400, 170, 0.0);

glVertex3f (0, 170, 0.0);

glEnd();

// house structure

glColor3f(0.957f, 0.643f, 0.376f); // sandy brown

glBegin(GL\_POLYGON);

glVertex3f (50, 20, 0.0);

glVertex3f (220, 20, 0.0);

glVertex3f (220, 200, 0.0);

glVertex3f (50, 200, 0.0);

glEnd();

// bottom tile

glColor3f(0.4,0.0,0.0);

glBegin(GL\_POLYGON);

glVertex3f (50, 200, 0.0);

glVertex3f (220, 200, 0.0);

glVertex3f (200, 240, 0.0);

glVertex3f (70, 240, 0.0);

glEnd();

// top tile

glColor3f(0.4,0.1,0);

glBegin(GL\_POLYGON);

glVertex3f (70, 240, 0.0);

glVertex3f (200, 240, 0.0);

glVertex3f (220, 260, 0.0);

glVertex3f (55, 260, 0.0);

glEnd();

// left window

glColor3f(0.545f, 0.271f, 0.075f);

glBegin(GL\_POLYGON);

glVertex3f (60, 70, 0.0);

glVertex3f (100, 70, 0.0);

glVertex3f (100, 100, 0.0);

glVertex3f (60, 100, 0.0);

glEnd();

// door

glColor3f(0.545f, 0.271f, 0.075f);

glBegin(GL\_POLYGON);

glVertex3f (110, 20, 0.0);

glVertex3f (160, 20, 0.0);

glVertex3f (160, 120, 0.0);

glVertex3f (110, 120, 0.0);

glEnd();

// right window

glColor3f(0.545f, 0.271f, 0.075f);

glBegin(GL\_POLYGON);

glVertex3f (170, 70, 0.0);

glVertex3f (210, 70, 0.0);

glVertex3f (210, 100, 0.0);

glVertex3f (170, 100, 0.0);

glEnd();

// tree trunk

glColor3f(0.4,0.1,0);

glBegin(GL\_POLYGON);

glVertex3f (270, 20, 0.0);

glVertex3f (310, 20, 0.0);

glVertex3f (310, 200, 0.0);

glVertex3f (270, 200, 0.0);

glEnd();

// leaf bottom

glColor3f(0.3,0.4,0.0);

glBegin(GL\_TRIANGLES);

glVertex2i(240,200);

glVertex2i(340,200);

glVertex2i(290,250);

glEnd();

// leaf center

glColor3f(0.3,0.4,0.0);

glBegin(GL\_TRIANGLES);

glVertex2i(245,220);

glVertex2i(335,220);

glVertex2i(290,250);

glEnd();

// leaf top

glColor3f(0.3,0.4,0.0);

glBegin(GL\_TRIANGLES);

glVertex2i(250,230);

glVertex2i(330,230);

glVertex2i(290,300);

glEnd();

glFlush(); // Process all OpenGL routines

}

int main(int argc, char\* argv[])

{

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

glutInitDisplayMode(GLUT\_SINGLE|GLUT\_RGB); // Set display mode

glutInitWindowPosition(500, 100); // Set window position

glutInitWindowSize(800, 700); // Set window size

glutCreateWindow("GL Line house"); // Create display window

init(); // Execute initialisation procedure

glutDisplayFunc(drawShapes); // Send graphics to display window

glutMainLoop(); // Display everything and wait

return 0;

}

**Coordinate Calculation**

