Assignment No.5

# Name: Omkar Manohar Hepat

# Class: CS-B

# Roll No: 31 PRN No: 12211509

# Subject: CGAVR

## Q1. Implementation of 2D transformations

#include <GL/glut.h>

#include <iostream>

#include <cstdlib>

int choice = 0;

void init() {

glClearColor(1.0, 1.0, 1.0, 1.0);

glMatrixMode(GL\_PROJECTION);

gluOrtho2D(-10, 10, -10, 10);

}

void drawTriangle() {

glBegin(GL\_TRIANGLES);

glVertex2f(0.0, 5.0);

glVertex2f(-5.0, -5.0);

glVertex2f(5.0, -5.0);

glEnd();

}

void displayMenu() {

std::cout << "Menu:\n";

std::cout << "1. Scale\n";

std::cout << "2. Translate\n";

std::cout << "3. Reflect\n";

std::cout << "4. Rotate\n";

std::cout << "5. Shear in X\n";

std::cout << "6. Shear in Y\n";

std::cout << "7. Quit\n";

std::cout << "Enter your choice: ";

std::cin >> choice;

}

void scale() {

glScalef(0.5, 0.5, 1.0);

}

void translate() {

glTranslatef(2.0, 2.0, 0.0);

}

void reflect() {

glScalef(1.0, -1.0, 1.0);

}

void rotate() {

glRotatef(45.0, 0.0, 0.0, 1.0);

}

void shearX() {

glTranslatef(1.0, 0.0, 0.0);

glScalef(1.5, 1.0, 1.0);

}

void shearY() {

glTranslatef(0.0, 1.0, 0.0);

glScalef(1.0, 1.5, 1.0);

}

void display() {

glClear(GL\_COLOR\_BUFFER\_BIT);

glColor3f(0.0, 0.0, 1.0);

displayMenu();

switch (choice) {

case 1:

scale();

break;

case 2:

translate();

break;

case 3:

reflect();

break;

case 4:

rotate();

break;

case 5:

shearX();

break;

case 6:

shearY();

break;

case 7:

exit(0);

default:

std::cout << "Invalid choice!\n";

break;

}

drawTriangle();

glFlush();

}

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

glutInit(&argc, argv);

glutInitDisplayMode(GLUT\_SINGLE | GLUT\_RGB);

glutInitWindowSize(500, 500);

glutInitWindowPosition(100, 100);

glutCreateWindow("2D Transformation of Triangle");

init();

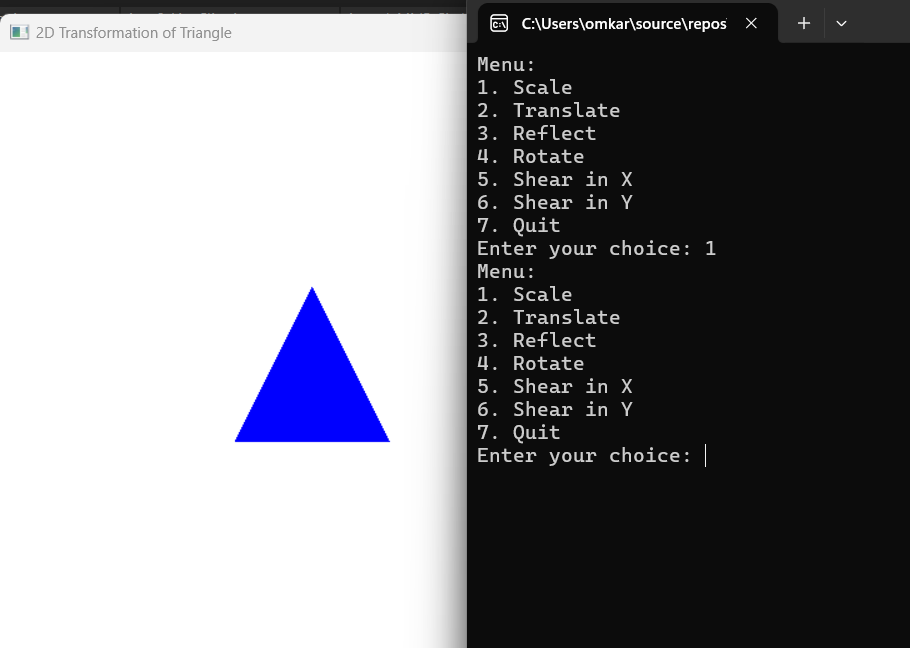
glutDisplayFunc(display);

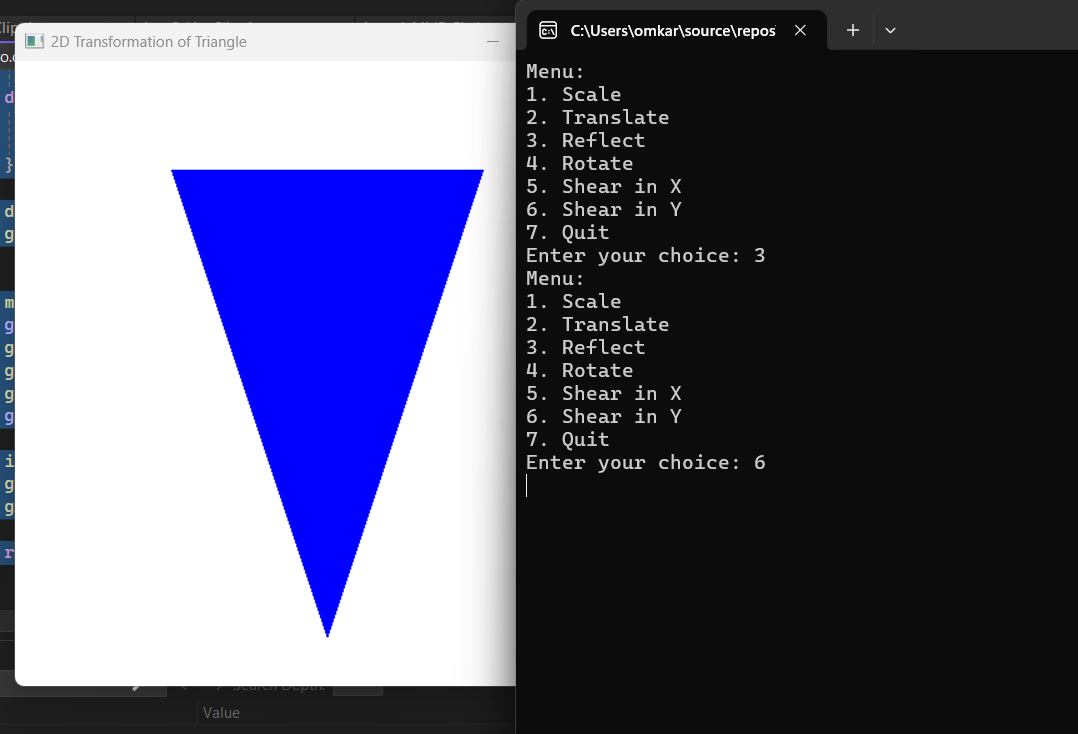
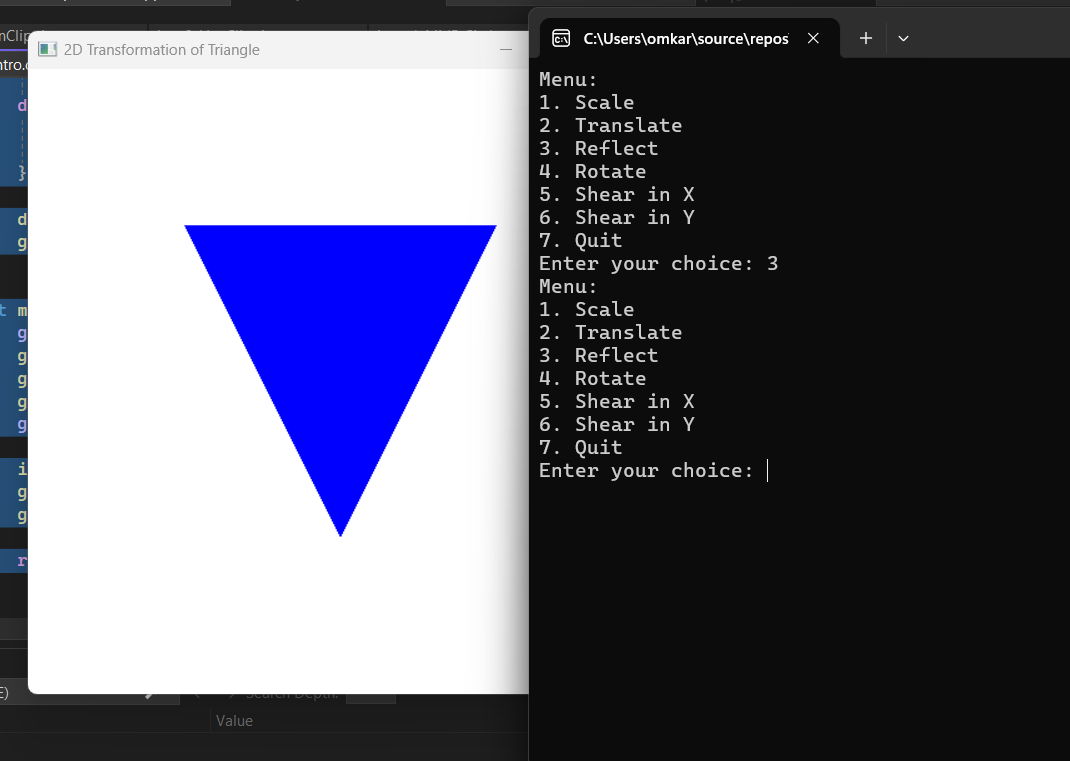
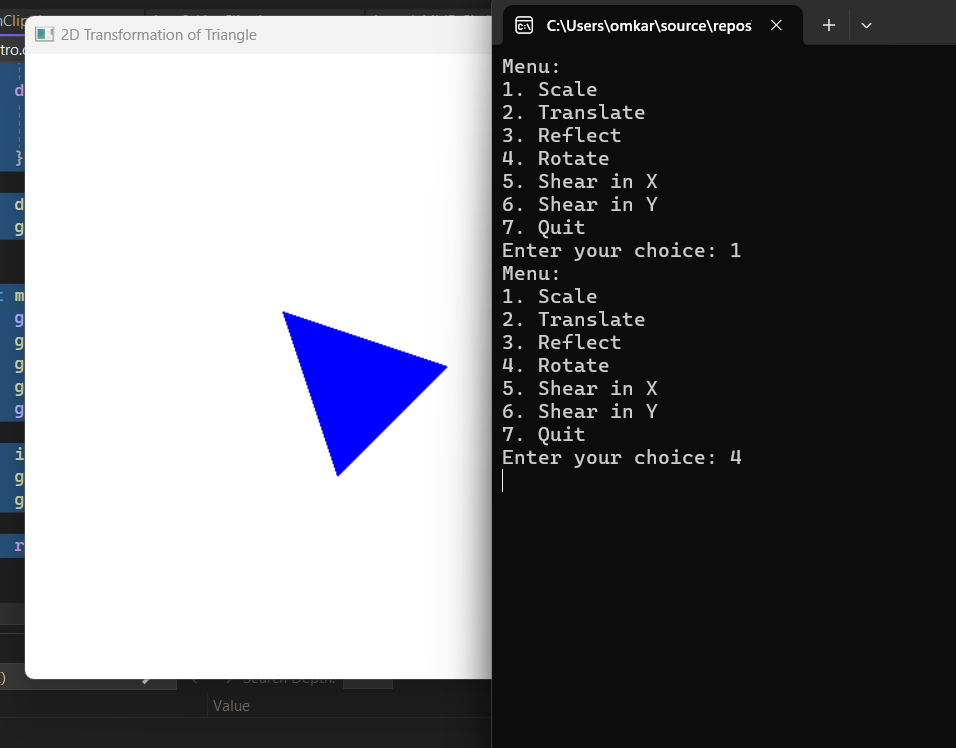
glutMainLoop();

return 0;

}

Output:



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