**EXPERIMENT - 02**

2. **Create and rotate a triangle about the origin and a fixed point.**

#include<GL/glut.h>

#include<stdio.h>

int x,y;

int rFlag=0;

void draw\_pixel(float x1,float y1)

{

glColor3f(0.0,0.0,1.0);

glPointSize(5.0);

glBegin(GL\_POINTS);

glVertex2f(x1,y1);

glEnd();

}

void triangle()

{

glColor3f(1.0,0.0,0.0);

glBegin(GL\_POLYGON);

glVertex2f(100,100);

glVertex2f(250,400);

glVertex2f(400,100);

glEnd();

}

float th=0.0;

float trX=0.0,trY=0.0;

void display()

{

glClear(GL\_COLOR\_BUFFER\_BIT);

glLoadIdentity();

if(rFlag==1) //Rotate Around origin

{

trX=0.0;

trY=0.0;

th+=0.1;

draw\_pixel(0.0,0.0);

}

if(rFlag==2) //Rotate Around Fixed Point

{

trX=x;

trY=y;

th+=0.1;

draw\_pixel(x,y);

}

glTranslatef(trX,trY,0.0);

glRotatef(th,0.0,0.0,1.0);

glTranslatef(-trX,-trY,0.0);

triangle();

glutPostRedisplay();

glutSwapBuffers();

}

void myInit()

{

glClearColor(0.0,0.0,0.0,1.0);

glMatrixMode(GL\_PROJECTION);

glLoadIdentity();

gluOrtho2D(-500.0, 500.0, -500.0, 500.0);

glMatrixMode(GL\_MODELVIEW);

}

void rotateMenu (int option)

{

if(option==1)

rFlag=1;

if(option==2)

rFlag=2;

if(option==3)

rFlag=3;

}

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

{

printf( "Enter Fixed Points (x,y) for Roration: \n");

scanf("%d %d", &x, &y);

glutInit(&argc, argv);

glutInitDisplayMode(GLUT\_DOUBLE|GLUT\_RGB);

glutInitWindowSize(500, 500);

glutInitWindowPosition(0, 0);

glutCreateWindow("Create and Rotate Triangle");

myInit();

glutDisplayFunc(display);

glutCreateMenu(rotateMenu);

glutAddMenuEntry("Rotate around ORIGIN",1);

glutAddMenuEntry("Rotate around FIXED POINT",2);

glutAddMenuEntry("Stop Rotation",3);

glutAttachMenu(GLUT\_RIGHT\_BUTTON);

glutMainLoop();

}

**OUTPUT** : 

