**EXPERIMENT - 01**

1. **Implement Brenham’s line drawing algorithm for all types of slope.**

#include<GL/glut.h>

#include<stdio.h>

int x1, y1, x2, y2;

void draw\_pixel(int x, int y)

{

glColor3f(1.0,0.0,0.0);

glBegin(GL\_POINTS);

glVertex2i(x, y);

glEnd();

}

void brenhams\_line\_draw(int x1, int y1, int x2, int y2)

{

int dx=x2-x1,dy=y2-y1;

int p=2\*dy\*dx;

int twoDy=2\*dy;

int twoDyMinusDx=2\*(dy-dx); // paranthesis are required

int x=x1,y=y1;

if(dx<0)

{

x=x2;

y=y2;

x2=x1;

}

draw\_pixel(x, y);

while(x<x2)

{

x++;

if(p<0)

p+=twoDy;

else

{

y++;

p+=twoDyMinusDx;

}

draw\_pixel(x, y);

}

}

void myInit()

{

glClearColor(0.0,0.0,0.0,1.0);

glMatrixMode(GL\_PROJECTION);

glLoadIdentity();

gluOrtho2D(0.0, 500.0, 0.0, 500.0);

glMatrixMode(GL\_MODELVIEW);

}

void display()

{

glClear(GL\_COLOR\_BUFFER\_BIT);

brenhams\_line\_draw(x1, y1, x2, y2);

glFlush();

}

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

{

printf( "Enter Start Points (x1,y1)\n");

scanf("%d %d", &x1, &y1);

printf( "Enter End Points (x2,y2)\n");

scanf("%d %d", &x2, &y2);

glutInit(&argc, argv);

glutInitDisplayMode(GLUT\_SINGLE|GLUT\_RGB);

glutInitWindowSize(500, 500);

glutInitWindowPosition(0, 0);

glutCreateWindow("Bresenham's Line Drawing");

myInit();

glutDisplayFunc(display);

glutMainLoop();

}

**OUTPUT :**

