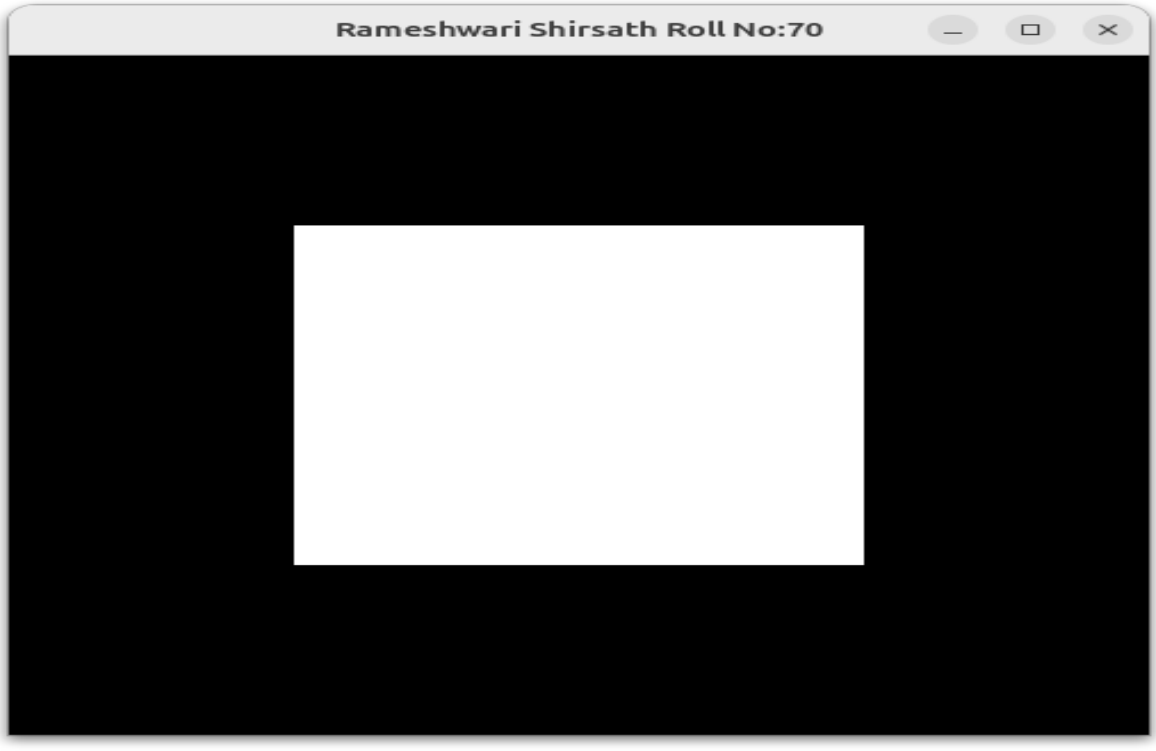
Practical -1

```
#include <GL/freeglut.h>
#include <GL/gl.h>
void renderFunction()
{
glClearColor(0.0, 0.0, 0.0, 0.0);
glClear(GL_COLOR_BUFFER_BIT);
glColor3f(1.0, 1.0, 1.0);
glOrtho(-1.0, 1.0, -1.0, 1.0, -1.0, 1.0);glBegin(GL_POLYGON);
glVertex2f(-0.5, -0.5);
glVertex2f(-0.5, 0.5);
glVertex2f(0.5, 0.5);
glVertex2f(0.5, -0.5);
glEnd();
glFlush();
}
int main(int argc, char** argv)
{
glutInit(&argc, argv);
glutInitDisplayMode(GLUT_SINGLE);
glutInitWindowSize(500,500);
glutInitWindowPosition(100,100);
glutCreateWindow("Rameshwari Shirsath Roll No:70");
glutDisplayFunc(renderFunction);
glutMainLoop();
return 0;
}
```

Output:



Practical -1 DDA

```
#include <stdio.h>
#include <stdlib.h>
#include <GL/glut.h>

float X1,Y1,X2,Y2;

void init(void)
{
    glClearColor(0.0,0.0,0.0,0.0);
    glMatrixMode(GL_PROJECTION);
    gluOrtho2D(-100.0,100.0,-100.0,100.0);
}

void setPixel(GLint x, GLint y)
{
    glBegin(GL_POINTS);
    glVertex2i(x,y);
    glEnd();
}

void DDA(void)
{
    float dx=(X2-X1);
    float dy=(Y2-Y1);
    float steps;
    float xInc,yInc,x=X1,y=Y1;

    /* Find out whether to increment x or y */
    steps=(abs(dx)>abs(dy))?(abs(dx)):(abs(dy));
    xInc=dx/(float)steps;
    yInc=dy/(float)steps;

    /* Clears buffers to preset values */
    glClear(GL_COLOR_BUFFER_BIT);

    /* Plot the points */
    setPixel(x,y);
    int k;for(k=0;k<steps;k++)
    {
        x+=xInc;
        y+=yInc;
        setPixel(x,y);
    }

    glFlush();
}

int main(int argc, char **argv)
{
    printf("Enter two end points of the line to be drawn:\n");
    printf("\nEnter Point1(X1,Y1):\n");
    scanf("%f%f",&X1,&Y1);
    printf("\nEnter Point2(X2,Y2):\n");
    scanf("%f%f",&X2,&Y2);

    glutInit(&argc, argv);
```

```
    glutInitDisplayMode(GLUT_SINGLE|GLUT_RGB);
    glutInitWindowSize(500, 500);
    glutInitWindowPosition(0, 0);
    glutCreateWindow("Rameshwari Shirsath Roll No:70");
    init();
    glutDisplayFunc(DDA);    glutMainLoop();
    return 0;
}
```

Output:

Practical -1 BRESENHAM LINE

```
#include <GL/glut.h>
#include <iostream>

void drawLine(int x1, int y1, int x2, int y2) {
    int dx = abs(x2 - x1);
    int dy = abs(y2 - y1);

    int sx = x1 < x2 ? 1 : -1;
    int sy = y1 < y2 ? 1 : -1;

    int err = dx - dy;
    int x = x1;
    int y = y1;

    glPointSize(2.0);
    glBegin(GL_POINTS);
```

```
    while (true) {
        glVertex2i(x, y);

        if (x == x2 && y == y2) {
            break;
        }

        int e2 = 2 * err;

        if (e2 > -dy) {
            err -= dy;
            x += sx;
        }

        if (e2 < dx) {
            err += dx;
            y += sy;
        }
    }

    glEnd();
}

void display() {
    glClear(GL_COLOR_BUFFER_BIT);

    glColor3f(1.0, 1.0, 1.0);
    drawLine(100, 100, 400, 400);

    glFlush();
}

int main(int argc, char **argv) {
    glutInit(&argc, argv);
    glutInitDisplayMode(GLUT_SINGLE);
    glutInitWindowSize(500, 500);
    glutCreateWindow("Rameshwari Shirsath Roll No:70");

    gluOrtho2D(0.0, 500.0, 0.0, 500.0);

    glutDisplayFunc(display);
    glutMainLoop();

    return 0;
}
```

Output: