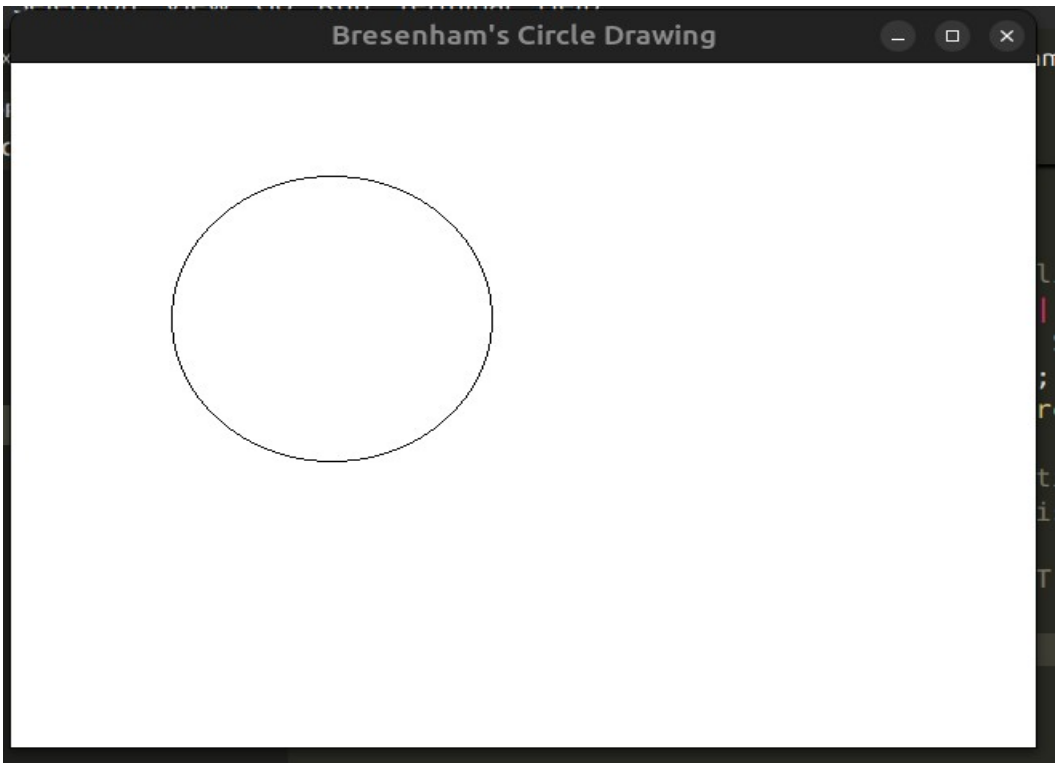
Name:Harshada Gopal Rayate
Roll No:19 SEDA
Subject :CGAVR

Bresenham Circle Algorithm

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

int centerX = 200;
int centerY = 300;

// Function to plot points in all octants of the circle
void drawCirclePoints(int x, int y) {
glBegin(GL_POINTS);
glVertex2i(centerX + x, centerY + y);
glVertex2i(centerX - x, centerY + y);
glVertex2i(centerX + x, centerY - y);
glVertex2i(centerX - x, centerY - y);
glVertex2i(centerX + y, centerY + x);
glVertex2i(centerX - y, centerY + x);
glVertex2i(centerX + y, centerY - x);
glVertex2i(centerX - y, centerY - x);
glEnd();
}

// Bresenham's Circle Drawing Algorithm
void bresenhamCircle(int radius) {
int x = 0;
int y = radius;
int decisionParam = 1 - radius; // Initial decision parameter

drawCirclePoints(x, y); // Draw the initial points

while (x < y) {
x++;
if (decisionParam < 0) {
decisionParam += 2 * x + 1; // Mid-point is inside the circle
} else {
y--;
decisionParam += 2 * (x - y) + 1; // Mid-point is outside the circle
}
drawCirclePoints(x, y); // Draw points for all octants
}
}
```

```
// Display function to render the circle
void display() {
glClear(GL_COLOR_BUFFER_BIT); // Clear the screen

int radius = 100; // Set the radius of the circle
bresenhamCircle(radius); // Draw the circle

glFlush();
}

// Initialization function to set up OpenGL settings
void initialize() {
glClearColor(1.0f, 1.0f, 1.0f, 0.0f); // Set background color to white
glColor3f(0.0f, 0.0f, 0.0f); // Set drawing color to black
gluOrtho2D(0.0, 640.0, 0.0, 480.0); // Define the coordinate system
}

int main(int argc, char** argv) {
glutInit(&argc, argv); // Initialize GLUT
glutInitDisplayMode(GLUT_SINGLE | GLUT_RGB); // Set display mode
glutInitWindowSize(640, 480); // Set window size
glutInitWindowPosition(100, 100); // Set window position
glutCreateWindow("Bresenham's Circle Drawing"); // Create window with title

initialize(); // Call initialization function
glutDisplayFunc(display); // Register display callback

glutMainLoop(); // Enter the GLUT event loop
return 0;
}
```


Bresenham's Circle Drawing