EXPERIMENT – 3

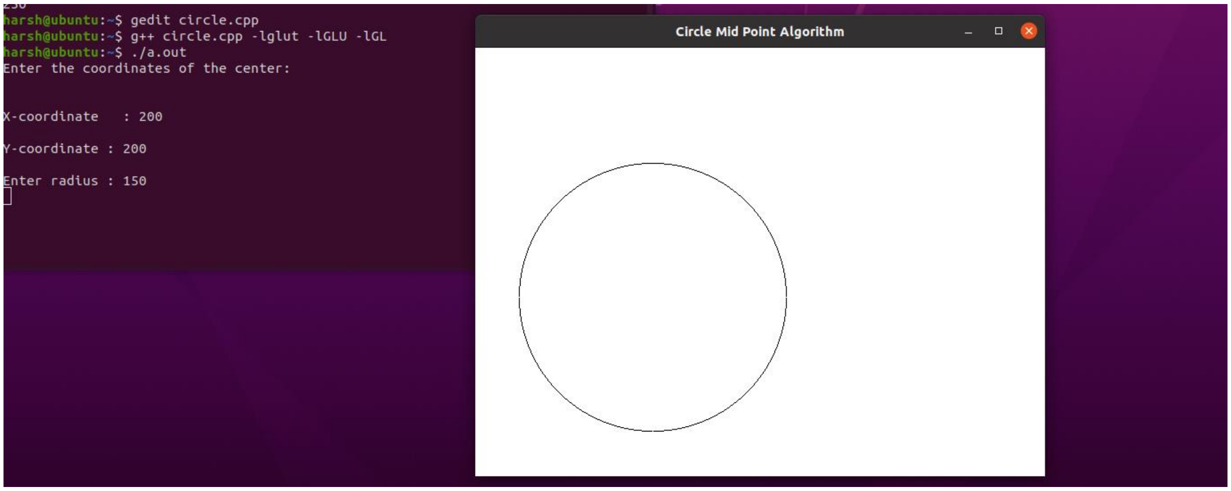
Drawing a circle using Circle Generating Algorithm

CODE :

```
#include <stdio.h>
#include <iostream>
#include <GL/glut.h>
using namespace std;

int pntX1, pntY1, r;

void plot(int x, int y)
{
   glBegin(GL_POINTS);
   glVertex2i(x+pntX1, y+pntY1);
   glEnd();
}


void myInit (void)
{
   glClearColor(1.0, 1.0, 1.0, 0.0);
   glColor3f(0.0f, 0.0f, 0.0f);
   glPointSize(4.0);
   glMatrixMode(GL_PROJECTION);
   glLoadIdentity();
   gluOrtho2D(0.0, 640.0, 0.0, 480.0);
}


void midPointCircleAlgo()
{
   int x = 0;
   int y = r;
   float decision = 5/4 - r;
   plot(x, y);

   while (y > x)
   {
      if (decision < 0)
      {
         x++;
         decision += 2*x+1;
      }
      else
      {
         y--;
         x++;
```

```
            decision += 2*(x-y)+1;
        }
        plot(x, y);
        plot(x, -y);
        plot(-x, y);
        plot(-x, -y);
        plot(y, x);
        plot(-y, x);
        plot(y, -x);
        plot(-y, -x);
    }

}

void myDisplay(void)
{
    glClear (GL_COLOR_BUFFER_BIT);
    glColor3f (0.0, 0.0, 0.0);
    glPointSize(1.0);

    midPointCircleAlgo();

    glFlush ();
}

int main(int argc, char** argv)
{
    cout << "Enter the coordinates of the center:\n\n" << endl;

    cout << "X-coordinate   : "; cin >> pntX1;
    cout << "\nY-coordinate : "; cin >> pntY1;
    cout << "\nEnter radius : "; cin >> r;


    glutInit(&argc, argv);
    glutInitDisplayMode (GLUT_SINGLE | GLUT_RGB);
    glutInitWindowSize (640, 480);
    glutInitWindowPosition (100, 150);
    glutCreateWindow ("Circle Mid Point Algorithm");
    glutDisplayFunc(myDisplay);
    myInit ();
    glutMainLoop();

}
```

OUTPUT :



```
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harsh@ubuntu:~$ gedit circle.cpp
harsh@ubuntu:~$ g++ circle.cpp -lglut -lGLU -lGL
harsh@ubuntu:~$ ./a.out
Enter the coordinates of the center:


X-coordinate   : 200

Y-coordinate : 200

Enter radius : 150
```