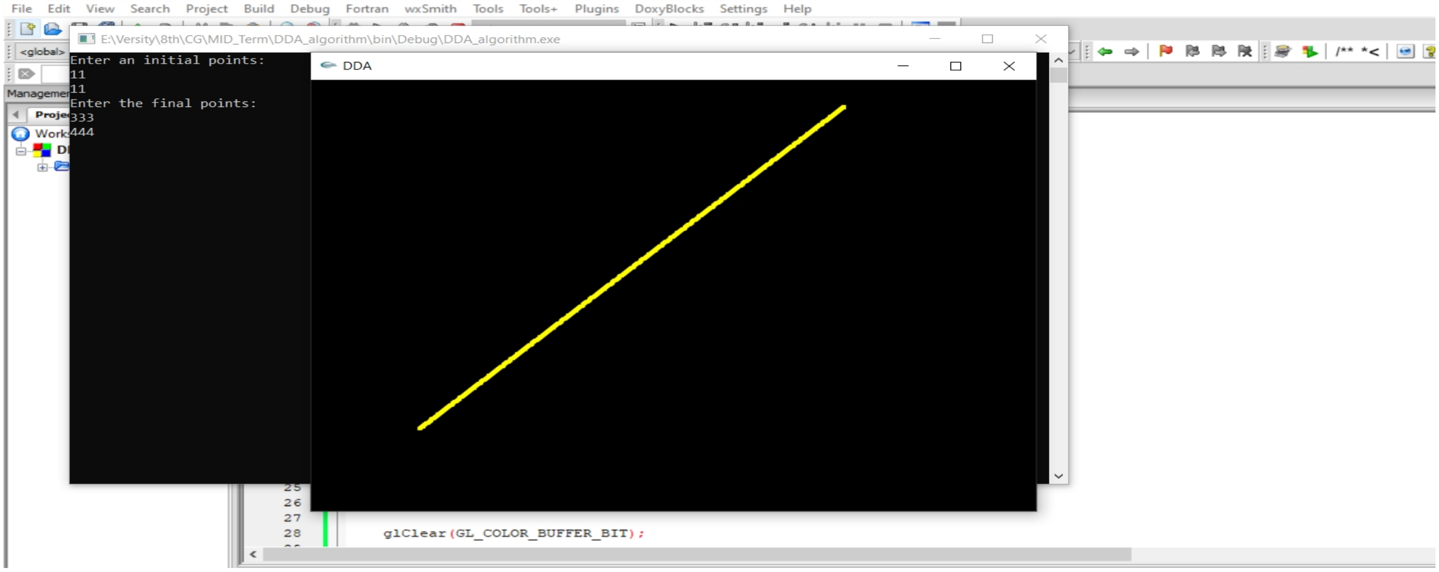
Answer Qusetion no:1

```
// Sample Line Incremental (DDA) Algorithm
#include<windows.h>
#include<iostream>
#include<math.h>
#include <stdio.h>
#include<GL/gl.h>
#include <GL/glut.h>

using namespace std;

int X1, Y1, X2, Y2, r ,cx, cy;

void DDA(void)
{

  double dx=(X2-X1),dy=(Y2-Y1),l;
  float xInc,yInc,x=X1,y=Y1;
   int ds=2*dy - dx;



  if(abs(dx)>abs(dy))
    l=(abs(dx));
  else
    l=(abs(dy));

  glClear(GL_COLOR_BUFFER_BIT);

  glBegin(GL_POINTS);

  glVertex2d(x,y);

  for(int i=0; i<l; i++)
  {
    if(ds>0)
    {
        int m=2*(dy-dx);
        x = x+1;
        y = y+1;
        glVertex2d(round(x), round(y));
        ds=ds+m;

    }
    else if(ds<=0)
    {
        int m=2*dy;

        x=x+1;
        y=y;
        glVertex2d(round(x), round(y));
        ds=ds+m;
    }

  }
  glEnd();

  glFlush();

}

void myInit (void)
{
  glClearColor(0.0, 0.0, 0.0, 0.0);
  glColor3f(1.0f, 1.0f, 0.0f);
  glPointSize(4.0);
  glMatrixMode(GL_PROJECTION);
  glLoadIdentity();
  gluOrtho2D(-100.0, 640.0,-100.0, 480.0);
```

```
}

int main(int argc, char** argv)

{

   glutInit(&argc, argv);

   glutInitDisplayMode (GLUT_SINGLE | GLUT_RGB);

   glutInitWindowSize (640, 480);

   glutInitWindowPosition (100, 150);

   glutCreateWindow ("DDA");


   cout<<"Enter an initial points:\t"<<endl;

   cin>>X1;

   cin>>Y1;

   cout<<"Enter the final points:\t"<<endl;

   cin>>X2;

   cin>>Y2;

   glutDisplayFunc(DDA);

   myInit ();

   glutMainLoop();


}
```

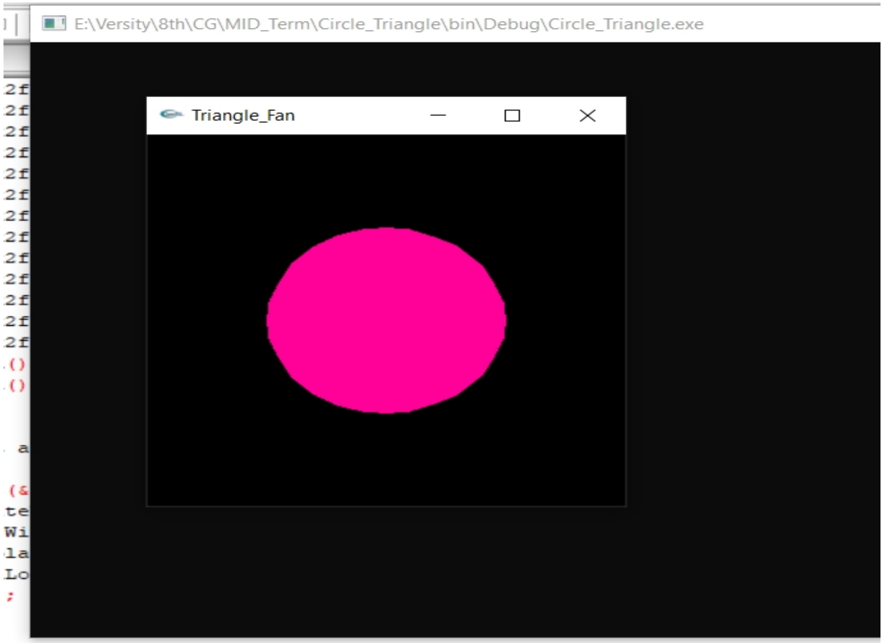


```
Enter an initial points:
11
11
Enter the final points:
333
444
```

```
    glClear(GL_COLOR_BUFFER_BIT);
```

Answer Qusetion no:2

```
#include <windows.h>
#include <GL/glut.h>
void display()
{
        glClearColor(0.0f, 0.0f, 0.0f, 1.0f);
        glClear(GL_COLOR_BUFFER_BIT);

   glBegin(GL_TRIANGLE_FAN);
   glColor3f(1.0f,0.0f,0.6f);
   glVertex2f(0.0f, 0.0f);

    glVertex2f(0.5f, 0.0f);
   glVertex2f(0.49f, 0.1f);
   glVertex2f(0.45f, 0.2f);
   glVertex2f(0.4f, 0.3f);
   glVertex2f(0.3f, 0.4f);
   glVertex2f(0.2f, 0.45f);
   glVertex2f(0.1f, 0.49f);
   glVertex2f(0.0f, 0.5f);
   glVertex2f(-0.1f, 0.49f);
   glVertex2f(-0.2f, 0.46f);
   glVertex2f(-0.3f, 0.4f);
   glVertex2f(-0.4f, 0.3f);
   glVertex2f(-0.45f, 0.2f);
   glVertex2f(-0.49f, 0.1f);
   glVertex2f(-0.5f, 0.0f);
   glVertex2f(-0.49f, -0.1f);
   glVertex2f(-0.45f, -0.2f);
   glVertex2f(-0.4f, -0.3f);
   glVertex2f(-0.3f, -0.4f);
   glVertex2f(-0.2f, -0.46f);
   glVertex2f(-0.1f, -0.49f);
   glVertex2f(-0.0f, -0.5f);
   glVertex2f(0.1f, -0.49f);
   glVertex2f(0.2f, -0.45f);

   glVertex2f(0.3f, -0.4f);

   glVertex2f(0.4f, -0.3f);

   glVertex2f(0.45f, -0.2f);

   glVertex2f(0.49f, -0.1f);

   glVertex2f(0.5f, -0.0f);

     glEnd();

    glFlush(); // Render now

}


int main(int argc, char** argv)

{

            glutInit(&argc, argv);

            glutCreateWindow("Triangle_Fan");

            glutInitWindowSize(320, 320);

            glutDisplayFunc(display);

            glutMainLoop();

            return 0;

}
```


E:\Versity\8th\CG\MID_Term\Circle_Triangle\bin\Debug\Circle_Triangle.exe
Triangle_Fan

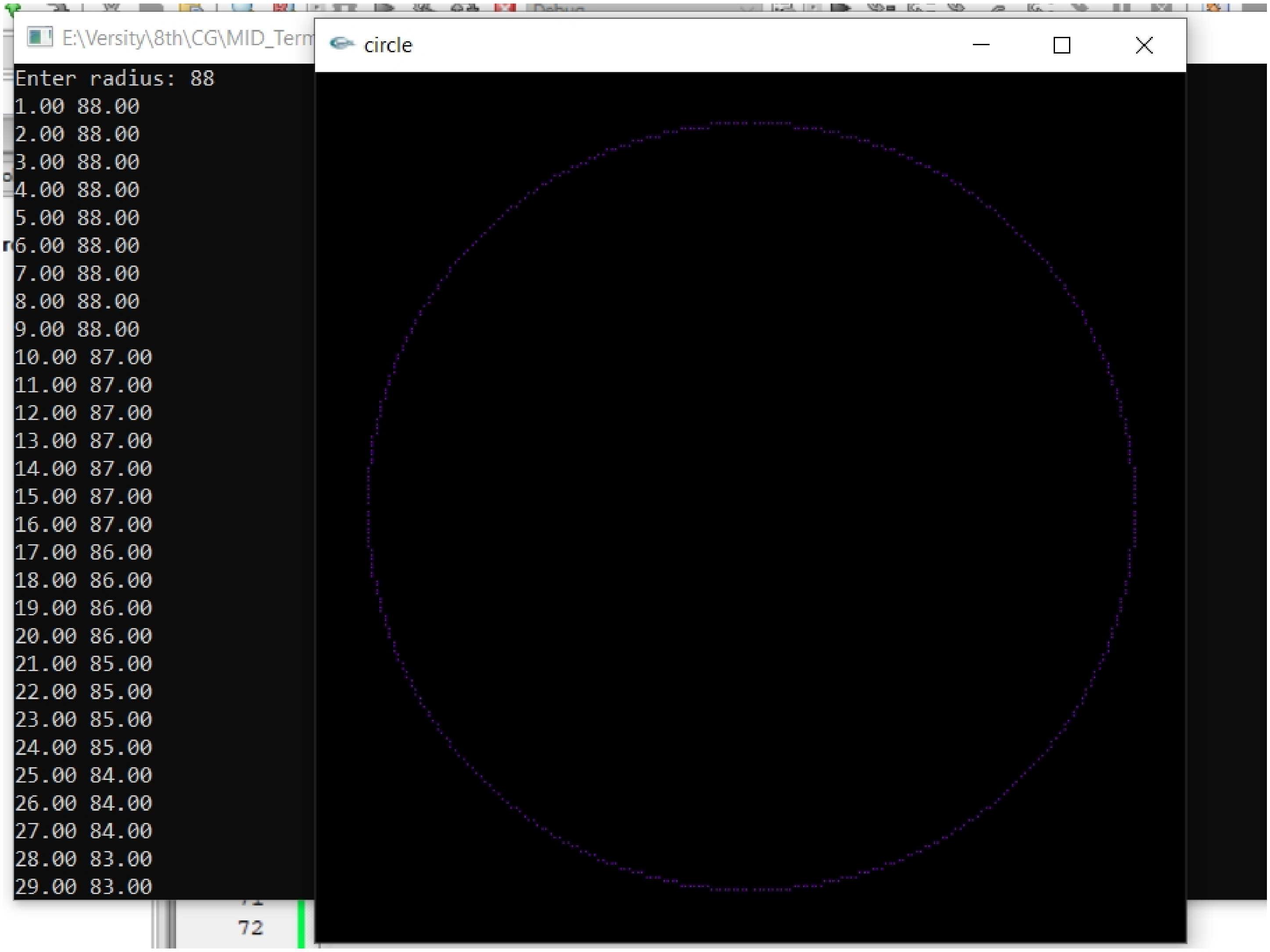
Answer Qusetion no:3

```
#include <stdio.h>
```

```
#include <GL/gl.h>

#include <GL/glut.h>


float x=0,y,x2,y2,m,i,j,p;

int dx=0,dy=0,r;

void display(void)

{


glClear (GL_COLOR_BUFFER_BIT);


glEnd();


  glColor3f (0.6, 0.0, 1.0);

  glBegin(GL_POINTS);

  p=1-r;

  while((x<=y))

  {

    if(p<0)

      {

      x=x+1;

      y=y;

      printf("%0.2f %0.2f\n",x,y);

      p=p+(2*x)+1;

      }

      else

      {

      x=x+1;

      y=y-1;

      printf("%0.2f %0.2f\n",x,y);

      p=p+(2*x)+1-(2*y);

      }

      glVertex3f (((x/100)), ((y/100)), 0.0);

      glVertex3f (((y/100)), ((x/100)), 0.0);

      glVertex3f ((-(x/100)), (-(y/100)), 0.0);
```

```
        glVertex3f ((-(x/100)), ((y/100)), 0.0);

        glVertex3f (((x/100)), (-(y/100)), 0.0);

        glVertex3f (((y/100)), (-(x/100)), 0.0);

        glVertex3f ((-(y/100)), (-(x/100)), 0.0);

        glVertex3f ((-(y/100)), ((x/100)), 0.0);

      }

glEnd();



glFlush ();

}

void init (void)

{


glClearColor (0.0, 0.0, 0.0, 0.0);


glMatrixMode(GL_PROJECTION);

glLoadIdentity();

glOrtho(-1.0, 1.0, -1.0, 1.0, -1.0, 1.0);


}


int main(int argc, char** argv)

{


  printf("Enter radius: ");

  scanf("%d",&r);

  y=r;

  glutInit(&argc, argv);

  glutInitDisplayMode (GLUT_SINGLE | GLUT_RGB);

  glutInitWindowSize (500, 500);

  glutInitWindowPosition (100, 100);

  glutCreateWindow ("circle");

  init ();
```

```
    glutDisplayFunc(display);

    glutMainLoop();

    return 0;

}
```



```
Enter radius: 88
1.00 88.00
2.00 88.00
3.00 88.00
4.00 88.00
5.00 88.00
6.00 88.00
7.00 88.00
8.00 88.00
9.00 88.00
10.00 87.00
11.00 87.00
12.00 87.00
13.00 87.00
14.00 87.00
15.00 87.00
16.00 87.00
17.00 86.00
18.00 86.00
19.00 86.00
20.00 86.00
21.00 85.00
22.00 85.00
23.00 85.00
24.00 85.00
25.00 84.00
26.00 84.00
27.00 84.00
28.00 83.00
29.00 83.00
```