```
#include<stdio.h>
#include<GL/glut.h>
#include<math.h>
int ww=1200,wh=800;
int xi,yi,xf,yf,r;
float theta=2.0933;
void putpixel(int x,int y)
{
glBegin(GL_POINTS);
glVertex2i(x,y);
glEnd();
glFlush();
}
double round(double n)
{
return(n>=0)?(int)(n+0.5):(int)(n-0.5);
}
void Bresenham_circle(int xc,int yc,int xr)
{
int x=0,y=xr;
int d=3-2*y;
while(x<=y)
{
putpixel(xc+x,yc+y);
putpixel(xc+y,yc+x);
putpixel(xc-x,yc+y);
putpixel(xc-x,yc-y);
putpixel(xc-y,yc+x);
putpixel(xc-y,yc-x);
putpixel(xc+y,yc-x);
putpixel(xc+x,yc-y);
if(d<0)
d=d+(4*x)+6;
else
{
d=d+(4*(x-y))+10;
y--;
}
x++;
}
}
void bresenhamAlg(int x0,int y0,int x1,int y1)
{
int dx=abs(x1-x0);
int dy=abs(y1-y0);
int x,y;
if(dx>=dy)
{
int d=2*dy-dx;
int ds=2*dy;
```

```
int dt=2*(dy-dx);
if(x0<x1)
{
x=x0;
y=y0;
}
else
{
x=x1;
y=y1;
x1=x0;
y1=y0;
}
putpixel(x,y);
while(x<x1)
{
if(d<0)
d+=ds;
else
{
if(y<y1)
{
y++;
d+=dt;
}
else
{
y--;
d+=dt;
}
}
x++;
putpixel(x,y);
}
}
else
{
int d=2*dx-dy;
int ds=2*dx;
int dt=2*(dx-dy);
if(y0<y1)
{
x=x0;
y=y0;
}
else
{
x=x1;
y=y1;
y1=y0;
```

```
x1=x0;
}
putpixel(x,y);
while(y<y1)
{
if(d<0)
d+=ds;
else
{
if(x>x1)
{
x--;
d+=dt;
}
else
{
x++;
d+=dt;
}
}
y++;
putpixel(x,y);
}
}
}
void triangle(int ix,int iy)
{
int x=ix,y=iy,x1,x2,y1,y2;
x1=xi+(x-xi)*cos(theta)-(y-yi)*sin(theta);
y1=yi-r/2;
x2=xi+(x-xi)*cos(theta)+(y-yi)*sin(theta);
y2=yi-r/2;
bresenhamAlg(x,y,x1,y1);
bresenhamAlg(x,y,x2,y2);
bresenhamAlg(x1,y1,x2,y2);
}
void display()
{
glClearColor(1.0,1.0,1.0,1.0);
glColor3f(0.0,0.0,0.0);
glClear(GL_COLOR_BUFFER_BIT);
glutSwapBuffers();
Bresenham_circle(xi,yi,r);
Bresenham_circle(xi,yi,r/2);
triangle(xi,(yi+r));
glFlush();
}
void myinit()
{
glViewport(0,0,ww,wh);
```

```
glMatrixMode(GL_PROJECTION);
glLoadIdentity();
gluOrtho2D(0.0,(GLdouble)ww,0.0,(GLdouble)wh);
glMatrixMode(GL_MODELVIEW);
}


int main(int argc,char **argv)
{
printf("Enter centre of the circle");
scanf("%d%d",&xi,&yi);
printf("\n Enter radius of the circle");
scanf("%d",&r);
glutInit(&argc,argv);
glutInitDisplayMode(GLUT_SINGLE|GLUT_RGB);
glutInitWindowSize(ww,wh);
glutCreateWindow("Bresenham-Circle");
myinit();
glutDisplayFunc(display);
glutMainLoop();
return 0;
}
```