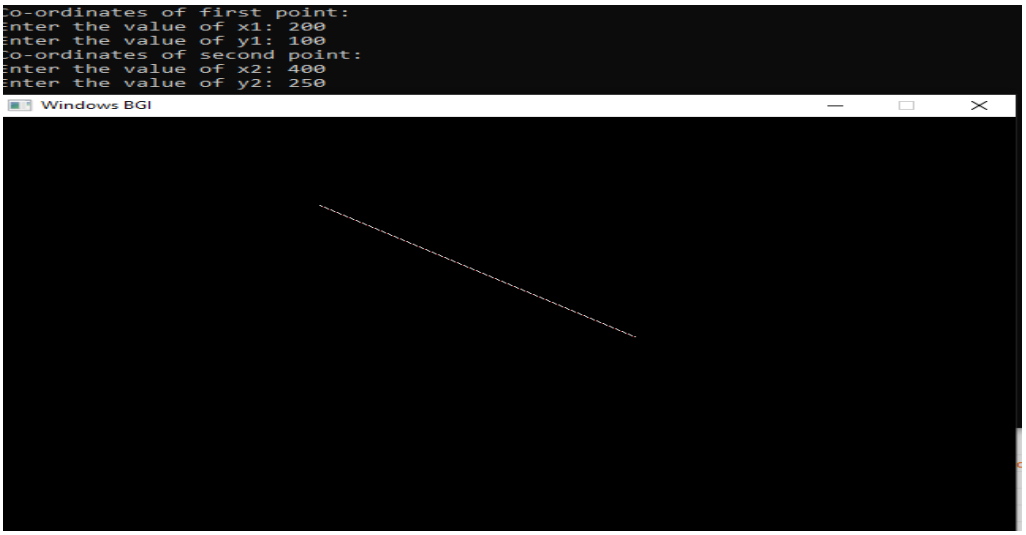
NAME : IRA BHARDWAJ
COURSE : BCA SEM-6TH SEC : C
ROLL NO :2121215(29)
SUBJECT : Computer Graphics
PROBLEM STATEMENT: Write a program to draw a line using Bresenham's line generation algorithm.
OBJECTIVE: This lab exercise implements the line drawing algorithm using decision parameter and pixel values.
SOURCE CODE :

```
#include<stdio.h>
#include<graphics.h>
int main( )
{
	int gd=DETECT, gm, x0, y0, x1, y1, dx, dy, p, x, y;
	printf("Co-ordinates of first point: ");
	printf("\nEnter the value of x1: ");
	scanf("%d",&x0);
	printf("Enter the value of y1: ");
	scanf("%d",&y0);
	printf("Co-ordinates of second point: ");
	printf("\nEnter the value of x2: ");
	scanf("%d",&x1);
	printf("Enter the value of y2: ");
	scanf("%d",&y1);
	initgraph(&gd,&gm,"");
	dx=x1-x0;
	dy=y1-y0;
	x=x0;
	y=y0;
	p=2*dy-dx;
	while(x<x1)
	{
		if(p>=0)
		{
			putpixel(x,y,15);
			y=y+1;
			p=p+2*dy-2*dx;
		}
		else
		{
			putpixel(x,y,4);
			p=p+2*dy;
		}
		x=x+1;
	}
	getch();
	closegraph();
	return 0;
}
```

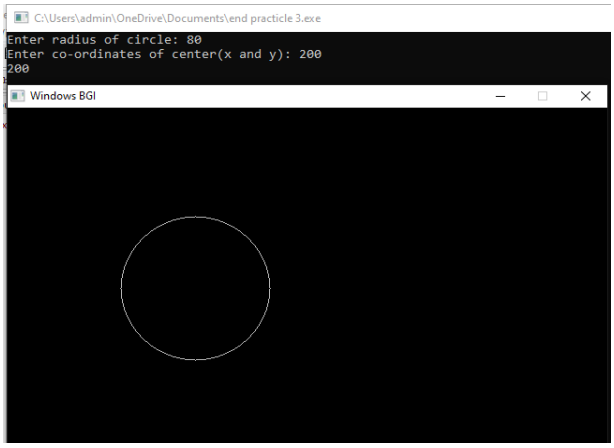
OUTPUT :


Co-ordinates of first point:
Enter the value of x1: 200
Enter the value of y1: 100
Co-ordinates of second point:
Enter the value of x2: 400
Enter the value of y2: 250
Windows BGI

NAME : IRA BHARDWAJ
COURSE : BCA SEM-6TH SEC : C
ROLL NO :2121215 (29)
SUBJECT : Computer Graphics
PROBLEM STATEMENT: Write a program to draw a Circle using Mid-point Circle generation Algorithm.
OBJECTIVE: The lab assignment objective is to implement Mid-point Circle generation algorithm which plots the circle using eight segment approach.
SOURCE CODE :

```
#include<stdio.h>
#include<graphics.h>
void drawcircle(int x0, int y0, int radius)
{
        int x = radius;
        int y = 0;
        int err = 0;
        while (x >= y){
        putpixel(x0 + x, y0 + y, 7);
        putpixel(x0 + y, y0 + x, 7);
        putpixel(x0 - y, y0 + x, 7);
        putpixel(x0 - x, y0 + y, 7);
        putpixel(x0 - x, y0 - y, 7);
        putpixel(x0 - y, y0 - x, 7);
        putpixel(x0 + y, y0 - x, 7);
        putpixel(x0 + x, y0 - y, 7);
        if (err <= 0)
        y += 1;
        err += 2*y + 1;
        if (err > 0)
        x -= 1;
        err -= 2*x + 1; }
}
int main( ){
int gdriver=DETECT, gmode, error, x, y, r; printf("Enter radius of circle: "); scanf("%d", &r);
printf("Enter co-ordinates of center(x and y): ");
scanf("%d%d", &x, &y);
initgraph(&gdriver, &gmode, "");
drawcircle(x, y, r);
delay(9999999);
return 0;}
```

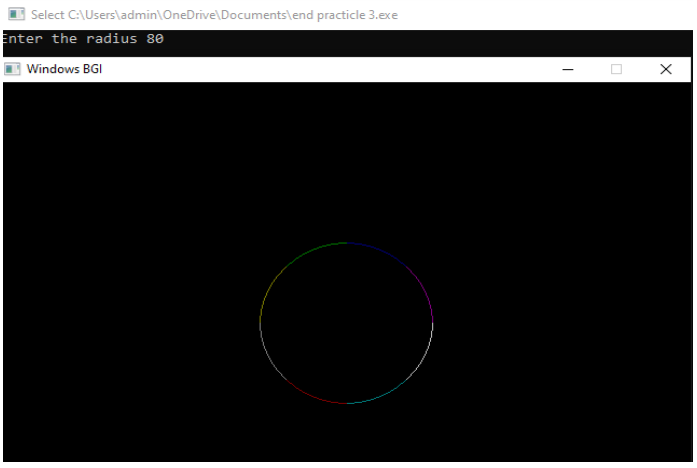
OUTPUT :



NAME : IRA BHARDWAJ
COURSE : BCA SEM-6TH SEC : C
ROLL NO :2121215(29)
SUBJECT : Computer Graphics
PROBLEM STATEMENT: Write a program to draw a Circle using Bresenham's Circle algorithm.
OBJECTIVE: The lab assignment objective is to implement Bresenham's Circle generation algorithm which plots the circle using eight segment approach.
SOURCE CODE :

```
#include<stdio.h>
#include<graphics.h>
int main(){
        int gd=DETECT,gm;
        int r,x,y,p,xc=320,yc=240;
        printf("Enter the radius ");
        scanf("%d",&r);
        initgraph(&gd,&gm,"");
        x=0;
        y=r;
        putpixel(xc+x,yc-y,1);
        p=3-(2*r);
        for(x=0;x<=y;x++){
                if (p<0)
                y=y;
                p=(p+(4*x)+6);
                else
                y=y-1;
                p=p+((4*(x-y)+10));
                putpixel(xc+x,yc-y,1);
                putpixel(xc-x,yc-y,2);
                putpixel(xc+x,yc+y,3);
                putpixel(xc-x,yc+y,4);
                putpixel(xc+y,yc-x,5);
                putpixel(xc-y,yc-x,6);
                putpixel(xc+y,yc+x,7);
                putpixel(xc-y,yc+x,8);
        }
        getch();
        closegraph();
}
```

OUTPUT :

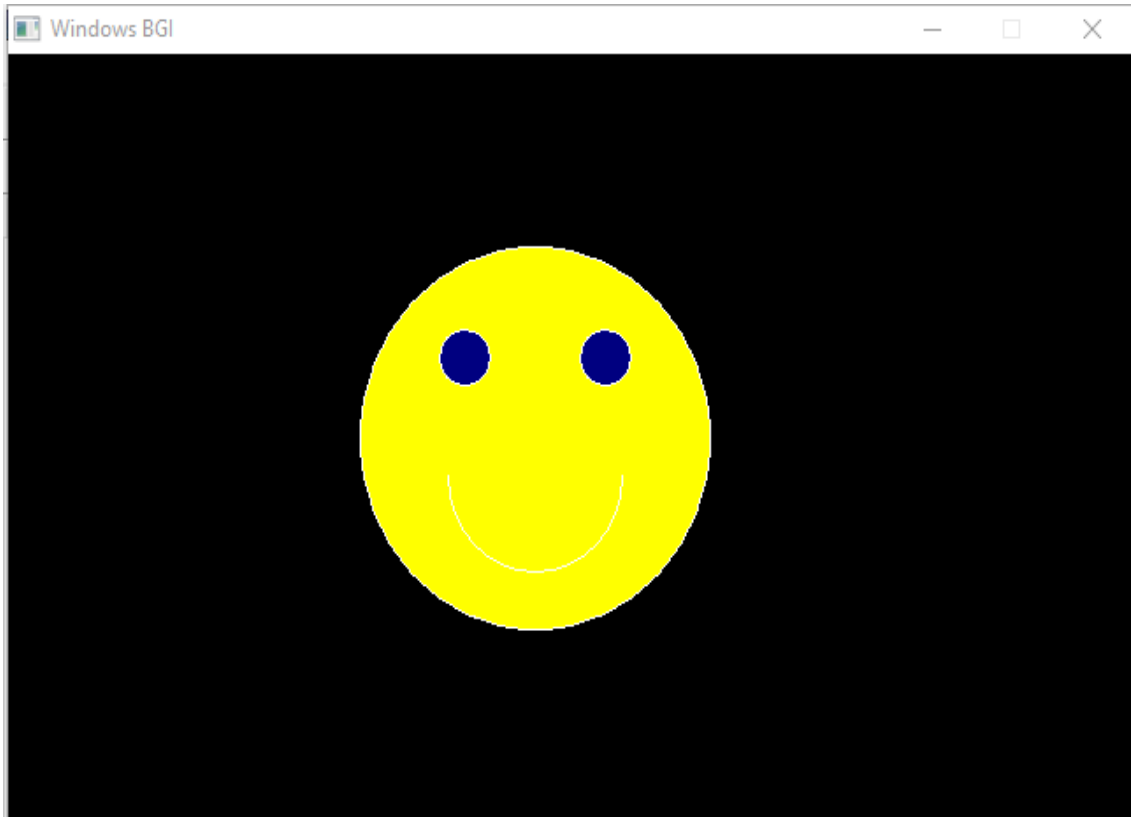


NAME : IRA BHARDWAJ
COURSE : BCA SEM-6TH SEC: C
ROLL NO :2121215(29)
SUBJECT : Computer Graphics
PROBLEM STATEMENT : Write a program to draw Smiley.
OBJECTIVE: To give a understanding to students of pixel positions and drawing figures using basic graphics objects.

SOURCE CODE :

```
#include <stdio.h>
#include <graphics.h>
int main( )
{
        int gd=DETECT,gm;
        initgraph(&gd,&gm," ");
        circle(300,200,100);
        setfillstyle(SOLID_FILL,YELLOW);
        floodfill(299,210,15);
        circle(260,158,15);
        setfillstyle(SOLID_FILL,BLUE);
        floodfill(259,159,15);
        circle(340,158,15);
        setfillstyle(SOLID_FILL,BLUE);
        floodfill(341,159,15);
        ellipse(300,220,180,0,50,50);
        delay(99999);
        closegraph( );
}
```

OUTPUT :



NAME : IRA BHARDWAJ
COURSE : BCA SEM-6TH SEC : C
ROLL NO :2121215(29)
SUBJECT : Computer Graphics
PROBLEM STATEMENT : Write a program to Zoom-in and zoom-out a circle.
OBJECTIVE: To give a understanding to students of pixel positions and drawing figures using basic graphics objects.
SOURCE CODE :

```
#include<stdio.h>
#include<graphics.h>
int main( )
{
        int gd=DETECT,gm,rad=0,n=10;
        printf("Enter radius : ");
        scanf("%d",&rad);
        initgraph(&gd,&gm," ");
        while(n)
        {
                setcolor(15);
                circle(200,200,rad);
                delay(1000);
                if(rad%2 == 0)
                rad = rad-30;
                else
                rad = rad+49;
                cleardevice();
                n--;
        }
}
```

OUTPUT :