

Lab II

*Course title: Computer Graphics Lab*  
*Course code: CSE-304*

*3<sup>rd</sup> Year 1<sup>st</sup> Semester Examination 2022*

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## Experiment 05

### Scan Conversion of a circle using Mid Point Algorithm:

#### Source Code:

```
#include <iostream>

#include <graphics.h>

void drawCircle(int xc, int yc, int x, int y)
{
    putpixel(xc + x, yc + y, WHITE);
    putpixel(xc - x, yc + y, WHITE);
    putpixel(xc + x, yc - y, WHITE);
    putpixel(xc - x, yc - y, WHITE);
    putpixel(xc + y, yc + x, WHITE);
    putpixel(xc - y, yc + x, WHITE);
    putpixel(xc + y, yc - x, WHITE);
    putpixel(xc - y, yc - x, WHITE);
}

void midpointCircle(int xc, int yc, int r)
{
    int x = 0;
    int y = r;
    int d = 1 - r;
```

```

drawCircle(xc, yc, x, y);

while (y > x)
{
    if (d < 0)
    {
        d += 2 * x + 3;
    }
    else
    {
        d += 2 * (x - y) + 5;
        y--;
    }
    x++;

    drawCircle(xc, yc, x, y);
}

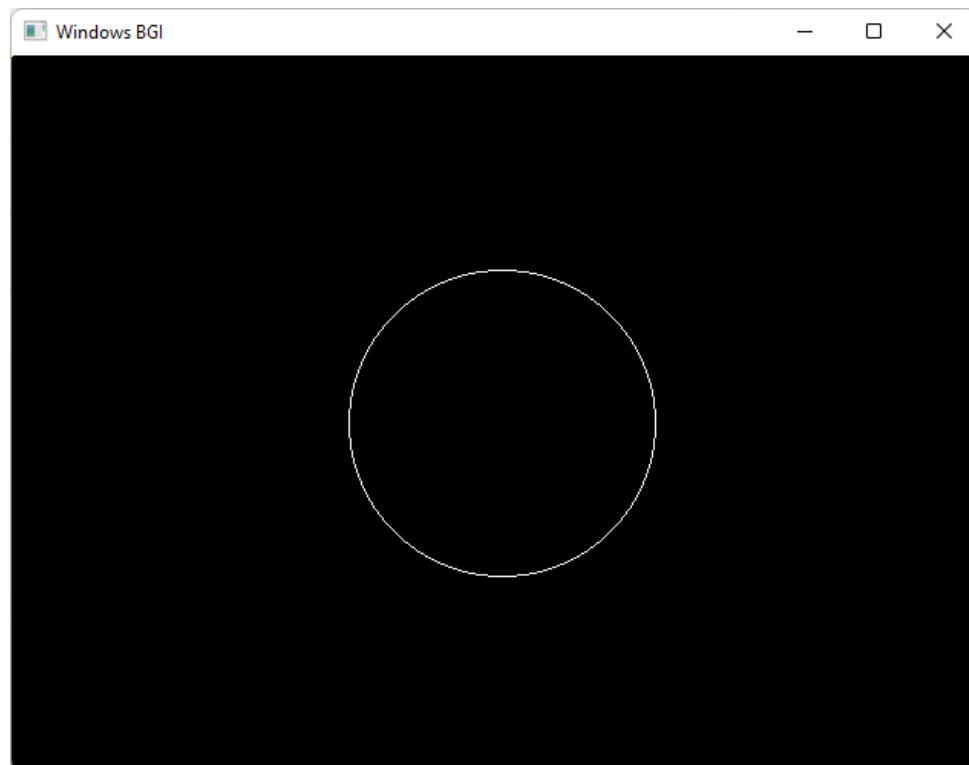
int main()
{
    int xc = 320; // X-coordinate of the center
    int yc = 240; // Y-coordinate of the center
    int r = 100; // Radius of the circle

    int gd = DETECT, gm;

```

```
initgraph(&gd, &gm, "");  
  
midpointCircle(xc, yc, r);  
  
delay(5000);  
closegraph();  
  
return 0;  
}
```

**Output:**



## Experiment 06

### Scan Conversion of a Ellipse:

#### Source Code:

```
#include<graphics.h>

#include<bits/stdc++.h>

using namespace std;

void disp();

float x,y;

int xc,yc;

int main()

{

    int gd=DETECT,gm,a,b;

    float p1,p2;


    initgraph(&gd,&gm,"c:\\turboc3\\bgi");

    printf("---Ellipse Generating Algorithm---\n");

    printf("Enter the value of Xc:\t");

    scanf("%d",&xc);

    printf("Enter the value of Yc:\t");

    scanf("%d",&yc);

    printf("Enter X axis length:\t");

    scanf("%d",&a);

    printf("Enter Y axis length:\t");
```

```

scanf("%d",&b);

x=0;

y=b;

disp();

p1=(b*b)-(a*a*b)+(a*a)/4;

while((2.0*b*b*x)<=(2.0*a*a*y))

{

    x++;

    if(p1<=0)

        p1=p1+(2.0*b*b*x)+(b*b);

    else

    {

        y--;

        p1=p1+(2.0*b*b*x)+(b*b)-(2.0*a*a*y);

    }

    disp();

    x=-x;

    disp();

    x=-x;

    delay(50);

}

x=a;

y=0;

disp();

```

```


p2=(a*a)+2.0*(b*b*a)+(b*b)/4;
while((2.0*b*b*x)>(2.0*a*a*y))
{
    y++;
    if(p2>0)
        p2=p2+(a*a)-(2.0*a*a*y);
    else
    {
        x--;
        p2=p2+(2.0*b*b*x)-(2.0*a*a*y)+(a*a);
    }
    disp();
    y=-y;
    disp();
    y=-y;
    delay(50);
}
getch();
closegraph();
}

void disp()
{
    putpixel(xc+x,yc+y,7);
    putpixel(xc-x,yc+y,7);

```

```
    putpixel(xc+x,yc-y,7);  
    putpixel(xc+x,yc+y,7);  
}
```

### **Output:**



```
C:\Users\Lab-2\Desktop\SKB-391\ellipse.exe  
---Ellipse Generating Algorithm---  
Enter the value of Xc: 320  
Enter the value of Yc: 240  
Enter X axis length: 100  
Enter Y axis length: 50
```

