Lab Report. 02

Lab Experiment: Scan Conversion of Circle, Ellipse using (Midpoint algorithm)

Course Title: Computer Graphics Laboratory

Course code: CSE-304

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Submitted to-

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1.Experiment Name: Scan Conversion of Circle using Midpoint algorithm

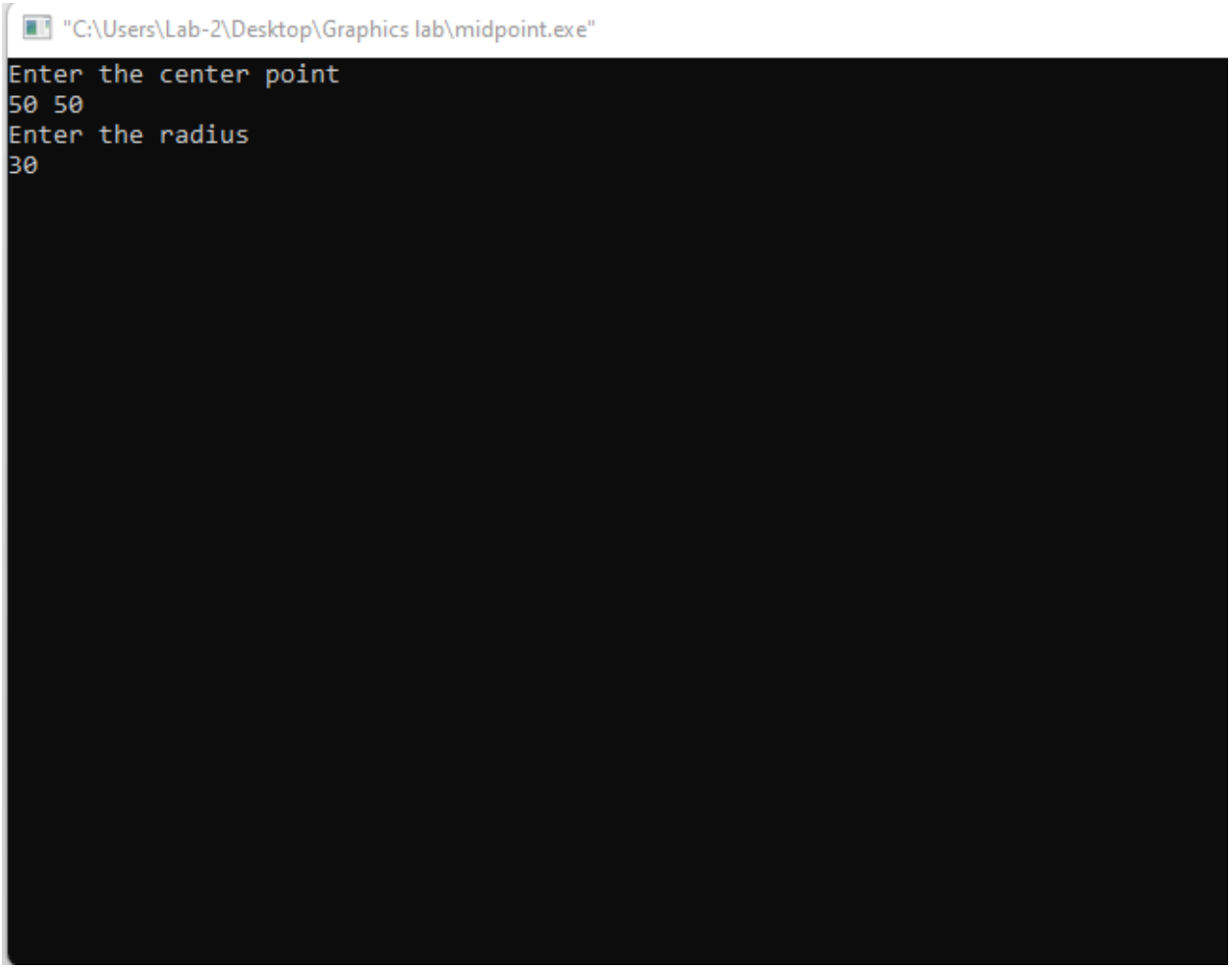
Code:

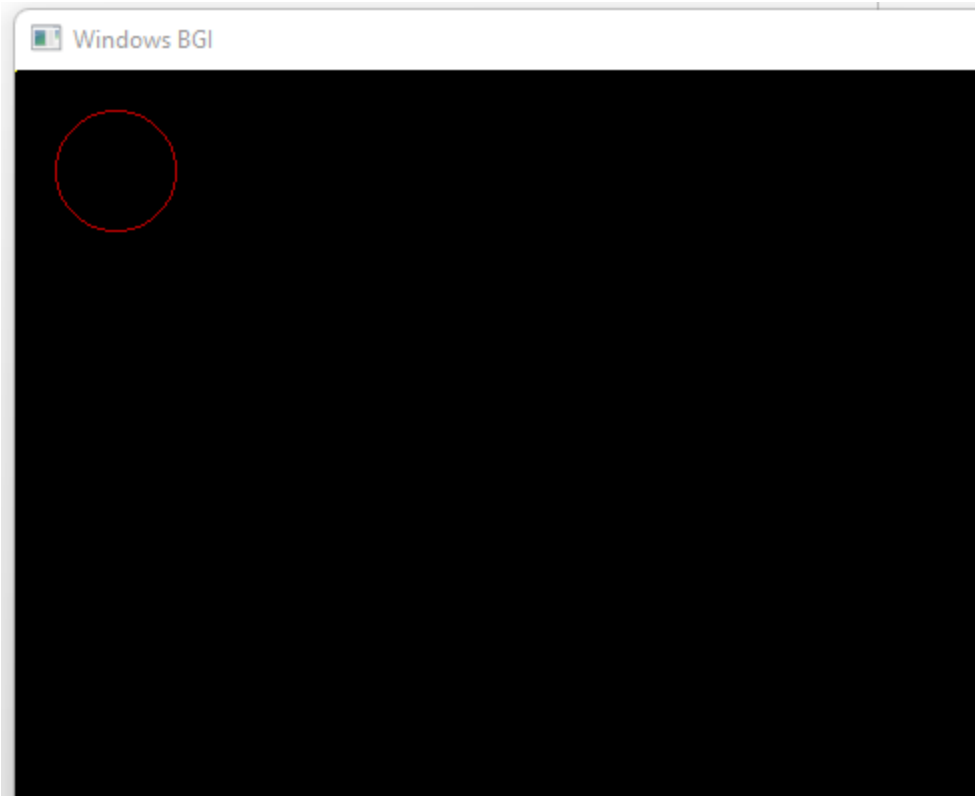
```
#include <iostream>

#include <dos.h>

#include <graphics.h>

using namespace std;

void drawCircle(int xc, int yc, int x, int y)

{

putpixel(xc+x, yc+y, RED);

putpixel(xc-x, yc+y, RED);

putpixel(xc+x, yc-y, RED);

putpixel(xc-x, yc-y, RED);

putpixel(xc+y, yc+x, RED);

putpixel(xc-y, yc+x, RED);

putpixel(xc+y, yc-x, RED);

putpixel(xc-y, yc-x, RED);

}

void circlemid(int xc, int yc, int r)

{

int x = 0, y = r;

int p=(1-r);

drawCircle(xc, yc, x, y);

while (y >= x)

{

x++;
```

```
if (p> 0)
{
y--;
p+=2*(x-y)+1;
}
else
{
p+=2*x+1;
        }
drawCircle(xc, yc, x, y);
}
}
int main()
{
int xc ,yc,r;
int gd = DETECT, gm;
cout<<"Enter the center point"<<endl;
cin>>xc>>yc;
cout<<"Enter the radius"<<endl;
cin>>r;
initgraph(&gd, &gm,"C:\\TURBOC3\\BGI");
circlemid(xc, yc, r);
getch();
    closegraph();
```

```
return 0;
}
```

Output:


"C:\Users\Lab-2\Desktop\Graphics lab\midpoint.exe"
Enter the center point
50 50
Enter the radius
30



2.Experiment Name: Scan Conversion of Ellipse using Midpoint algorithm

Code:

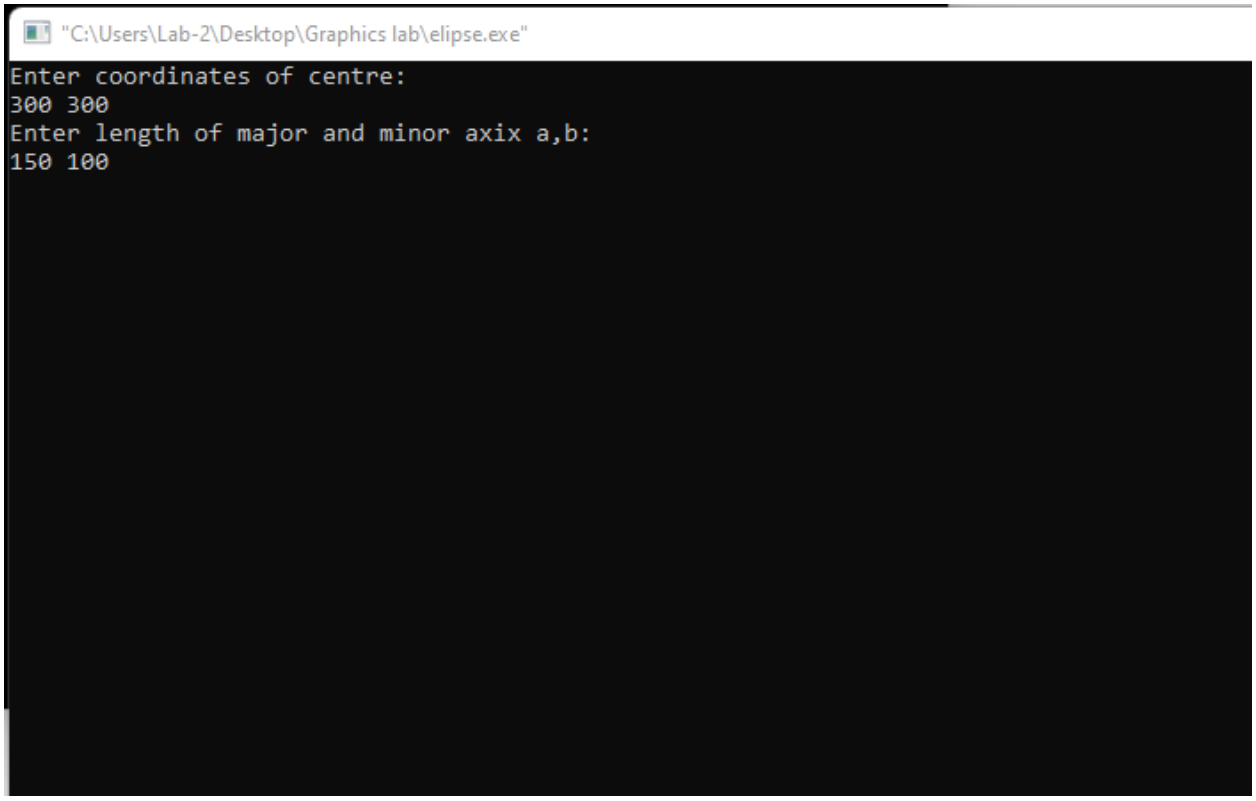
```
#include<graphics.h>

#include<iostream>

using namespace std;


void elipse(double xc,double yc,double a,double b)

{

    double p=b*b-a*a*b+a*a/4;

    double x=0, y=b;

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

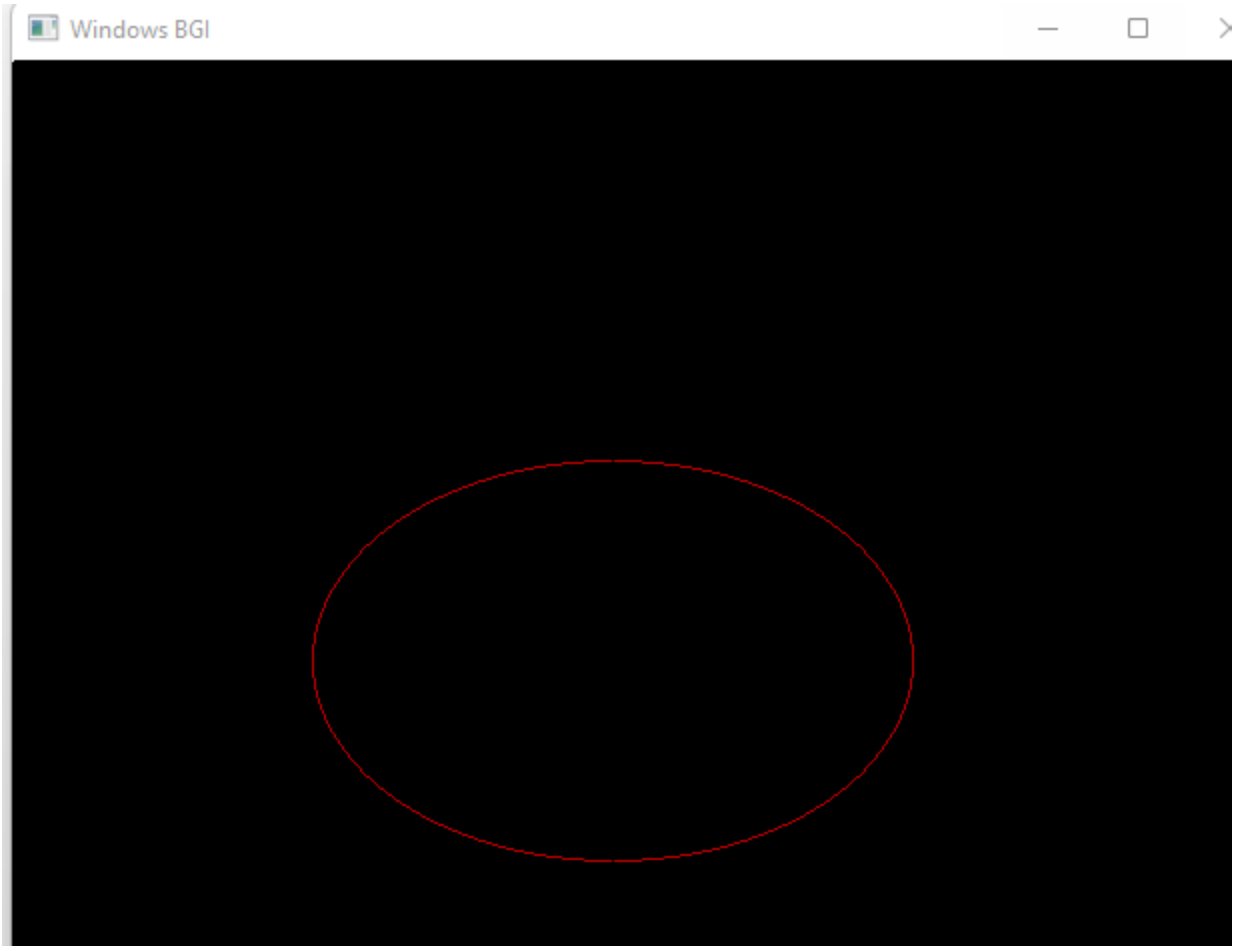
```
{
    x++;
    if(p < 0)
    {
        p = p+2*b*b*x+b*b;
    }
    else
    {
        y--;
        p = p+2*b*b*x-2*a*a*y-b*b;
    }
    putpixel(xc+x,yc+y,RED);
    putpixel(xc+x,yc-y,RED);
    putpixel(xc-x,yc+y,RED);
    putpixel(xc-x,yc-y,RED);
}



p=b*b*(x+0.5)*(x+0.5)+a*a*(y-1)*(y-1)-a*a*b*b;
while(y > 0)
{
    y--;
    if(p <= 0)
    {
        x++;
```

```
            p = p+2*b*b*x-2*a*a*y+a*a;
        }
        else
        {
            p = p-2*a*a*y+a*a;
        }
        putpixel(xc+x,yc+y,RED);
        putpixel(xc+x,yc-y,RED);
        putpixel(xc-x,yc+y,RED);
        putpixel(xc-x,yc-y,RED);
    }
}

int main()
{
    int gd = DETECT, gm;
    double xc,yc,x,y, a,b;

   initgraph(&gd, &gm,"C:\\TURBOC3\\BGI");

    cout<<"Enter coordinates of centre: ";
    cin>>xc>>yc;
    cout<<"Enter length of major and minor axix a,b: ";
    cin>>a>>b;
```

```
    elipse(xc, yc, a, b);
    getch();
    closegraph();
}
```

Output:


"C:\Users\Lab-2\Desktop\Graphics lab\elipse.exe"
Enter coordinates of centre:
300 300
Enter length of major and minor axix a,b:
150 100


Windows BGI