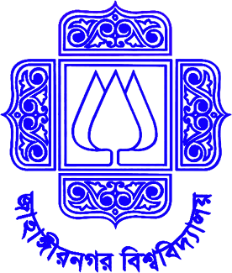
**Title: Lab Work 2**

*Course title: Computer Graphics Laboratory*

*Course code: CSE-304*

*3rd Year 1st Semester Examination 2022*

**Date of Submission**: 4 June 2023

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**Submitted to-**

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| --- | --- | --- | --- |
| **Sl** | Class Roll | Exam Roll | Name |
| 01 | 361 | 202173 | Mahiyat Tanzim |

**Scan Convert a Circle (Midpoint Algorithm):**

**Source Code**

#include<stdio.h>

#include<math.h>

#include<graphics.h>

int main()

{

int x,y,p,r,h,k;

//double x,y;

printf("Enter the coordinates of the center: ");

scanf("%d%d",&h,&k);

printf("Enter the radius of the circle: ");

scanf("%d",&r);

x=0;

y=r;

p=1-r;

initwindow(1000,600);

while(x<=y)

{

putpixel(x+h,y+k,LIGHTBLUE);

putpixel(y+h,x+k,LIGHTBLUE);

putpixel(-y+h,x+k,LIGHTBLUE);

putpixel(-x+h,y+k,LIGHTBLUE);

putpixel(-x+h,-y+k,LIGHTBLUE);

putpixel(-y+h,-x+k,LIGHTBLUE);

putpixel(y+h,-x+k,LIGHTBLUE);

putpixel(x+h,-y+k,LIGHTBLUE);

if(p<0)p+=(2\*x+3);

else

{

p+=(2\*(x-y)+5);

y--;

}

x++;

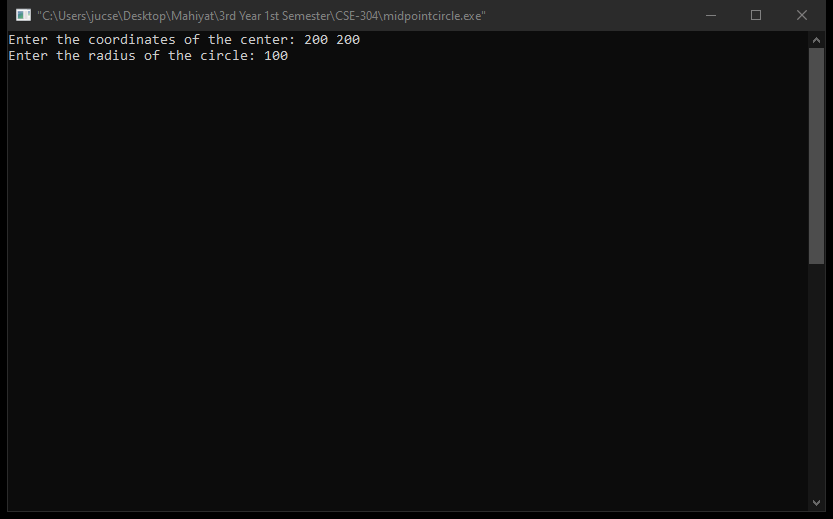
}

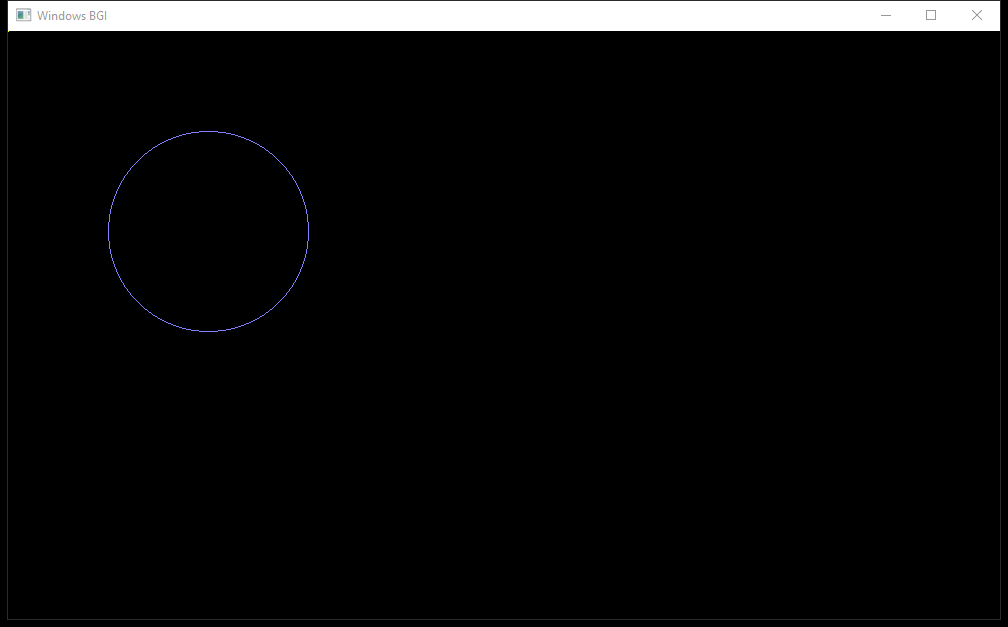
getch();

return 0;

}

**Screenshot:**





**Scan Convert an Ellipse (Midpoint Algorithm):**

**Source Code:**

#include<stdio.h>

#include<math.h>

#include<graphics.h>

int main()

{

int x,y,p,h,k,a,b,fx,fy;

printf("Enter the coordinates of the center: ");

scanf("%d%d",&h,&k);

printf("Enter the lengths of major and minor axes: ");

scanf("%d%d",&a,&b);

x=0;

y=b;

fx=0;

fy=2\*b\*a\*a;

p=b\*b-a\*a\*b+0.25\*a\*a;

initwindow(1000,600);

while(fx<fy)

{

putpixel(x+h,y+k,LIGHTBLUE);

putpixel(-x+h,y+k,LIGHTBLUE);

putpixel(-x+h,-y+k,LIGHTBLUE);

putpixel(x+h,-y+k,LIGHTBLUE);

x++;

fx+=(2\*b\*b);

if(p<0)p+=(fx+b\*b);

else

{

y--;

fy-=(a\*a\*2);

p+=(fx+b\*b-fy);

}

}

putpixel(x+h,y+k,LIGHTBLUE);

putpixel(-x+h,y+k,LIGHTBLUE);

putpixel(-x+h,-y+k,LIGHTBLUE);

putpixel(x+h,-y+k,LIGHTBLUE);

p=b\*b\*(x+0.5)\*(x+0.5)+a\*a\*(y-1)\*(y-1)-a\*a\*b\*b;

while(y>0)

{

y--;

fy-=(a\*a\*2);

if(p>=0)

{

p-=(fy+a\*a);

}

else

{

x++;

fx+=(2\*b\*b);

p+=(fx-fy+a\*a);

}

putpixel(x+h,y+k,LIGHTBLUE);

putpixel(-x+h,y+k,LIGHTBLUE);

putpixel(-x+h,-y+k,LIGHTBLUE);

putpixel(x+h,-y+k,LIGHTBLUE);

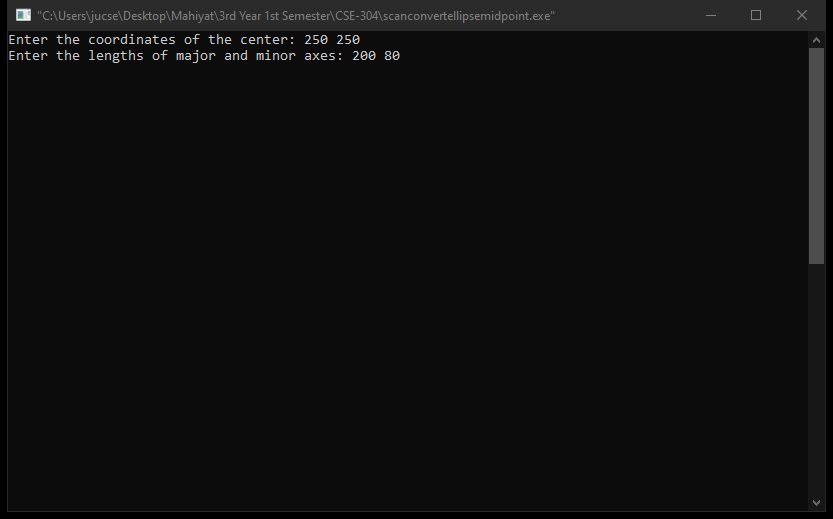
}

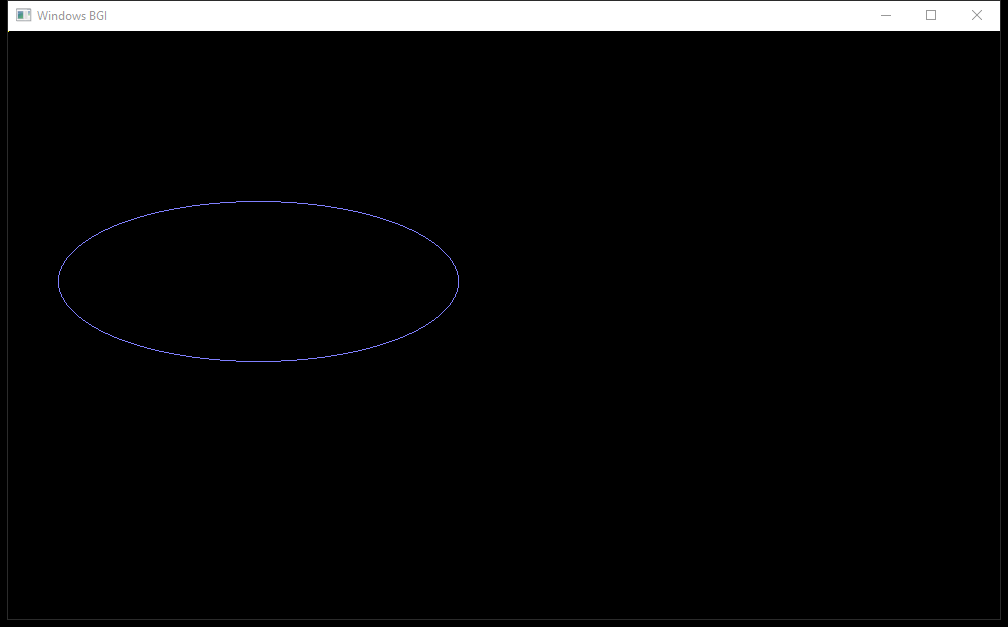
getch();

return 0;

}

**Screenshot:**

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