**Lab Report 2**

*Course title: Computer Graphics Laboratory*

*Course code: CSE-304*

*3rd Year 1st Semester*

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Description automatically generated

**Submitted to-**

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# Scan convert a circle using midpoint algorithm:

Source Code:

#include<bits/stdc++.h>

#include<graphics.h>

int main()

{

float x,y,r;

int sx,sy,sr;

printf("Enter center point(x,y): ");

scanf("%f %f",&x,&y);

sx = floor(x);

sy = floor(y);

printf("Enter radius: ");

scanf("%f",&r);

sr = floor(r);

int dx = 0;

int dy = sr;

int d = 1 - sr;

int gd= DETECT, gm;

initgraph(&gd,&gm,"");

while(dx <= dy)

{

putpixel(sx+dx,sy+dy,WHITE);

putpixel(sx-dx,sy+dy,WHITE);

putpixel(sx+dx,sy-dy,WHITE);

putpixel(sx-dx,sy-dy,WHITE);

putpixel(sx+dy,sy+dx,WHITE);

putpixel(sx-dy,sy+dx,WHITE);

putpixel(sx+dy,sy-dx,WHITE);

putpixel(sx-dy,sy-dx,WHITE);

if(d < 0)

{

d += 2\*dx + 3;

}

else

{

d += (2 \* (dx - dy)) + 5;

dy--;

}

dx++;

}

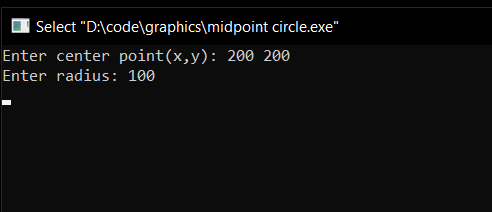
getch();

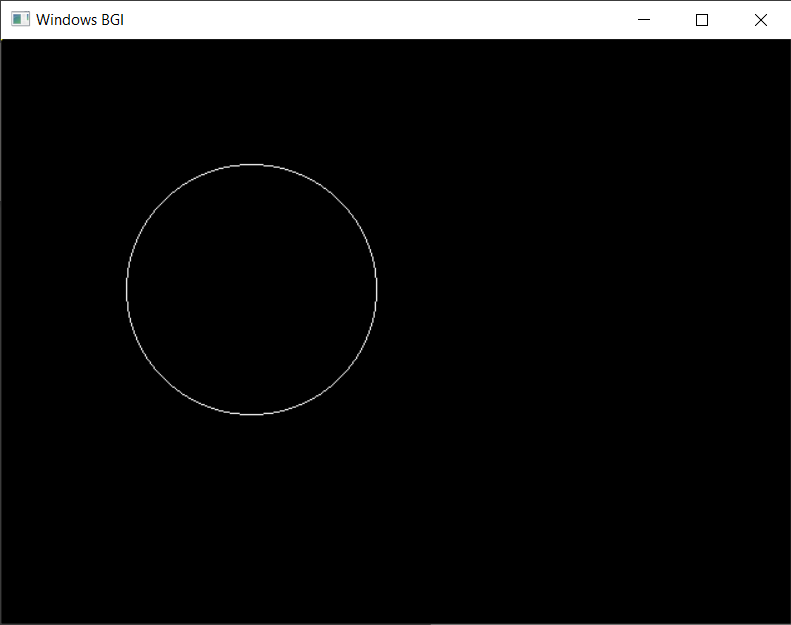
closegraph();

return 0;

}

Output:





## Scan converting an ellipse using midpoint algorithm:

Source Code:

#include<bits/stdc++.h>

#include<graphics.h>

void setpix(int sx,int sy,int dx,int dy)

{

putpixel(sx+dx,sy+dy,WHITE);

putpixel(sx+dx,sy-dy,WHITE);

putpixel(sx-dx,sy+dy,WHITE);

putpixel(sx-dx,sy-dy,WHITE);

}

int main()

{

float x,y,r,a,b;

int sx,sy,sa,sb;

printf("Enter center point(x,y): ");

scanf("%f %f",&x,&y);

sx = floor(x);

sy = floor(y);

printf("Enter major axis: ");

scanf("%f",&a);

printf("Enter minor axis: ");

scanf("%f",&b);

sa = floor(a);

sb = floor(b);

int dx = 0;

int dy = sb;

int aa,bb,aa2,bb2;

aa = sa\*sa;

bb = sb\*sb;

aa2 = aa \* 2;

bb2 = bb \* 2;

int fx = 0,fy = aa2\*sb;

int d = bb - aa\*b + round(0.25\*aa);

int gd= DETECT, gm;

initgraph(&gd,&gm,"");

while(fx < fy)

{

setpix(sx,sy,dx,dy);

dx++;

fx += bb2;

if(d < 0)

{

d += fx + bb;

}

else

{

dy--;

fy -= aa2;

d += fx + bb - fy;

}

}

setpix(sx,sy,dx,dy);

d = round(bb \*(dx+0.5) \* (dx+0.5)) + (aa \* (dy-1) \* (dy-1)) - aa\*bb;

while(dy > 0)

{

dy--;

fy -= aa2;

if(d >= 0)

{

d = d - fy + aa;

}

else

{

dx++;

fx += bb2;

d = d + fx - fy + aa;

}

setpix(sx,sy,dx,dy);

}

getch();

closegraph();

return 0;

}

Output Screenshot:

