**Program: Midpoint Ellipse Algorithm**

#include<stdio.h>

#include<graphics.h>

#include<math.h>

#include<dos.h>

void main()

{

int gd=DETECT,gm;

float p,x,y,xc,yc,a,b;

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

cleardevice();

line(0,240,640,240);

line(320,0,320,480);

printf("Enter xc and yc \n");

scanf("%f%f",&xc,&yc);

printf("Enter a and b \n");

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

x=0;

y=b;

//Region 1

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

do

{

putpixel(320+(xc+x),240-(yc+y),9);

putpixel(320+(xc+x),240-(yc-y),9);

putpixel(320+(xc-x),240-(yc+y),9);

putpixel(320+(xc-x),240-(yc-y),9);

if(p<0)

{

x=x+1;

p=p+(2\*b\*b\*x)+(b\*b);

}

else

{

x=x+1;

y=y-1;

p=p+2\*b\*b\*x-2\*a\*a\*y+b\*b;

}

} while(2\*b\*b\*x < 2\*a\*a\*y);

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

do

{

putpixel(320+(xc+x),240-(yc+y),7);

putpixel(320+(xc+x),240-(yc-y),7);

putpixel(320+(xc-x),240-(yc+y),7);

putpixel(320+(xc-x),240-(yc-y),7);

if(p>0)

{

y=y-1;

p=p-(2\*a\*a\*y)+(a\*a);

}

else

{

x=x+1;

y=y-1;

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

}

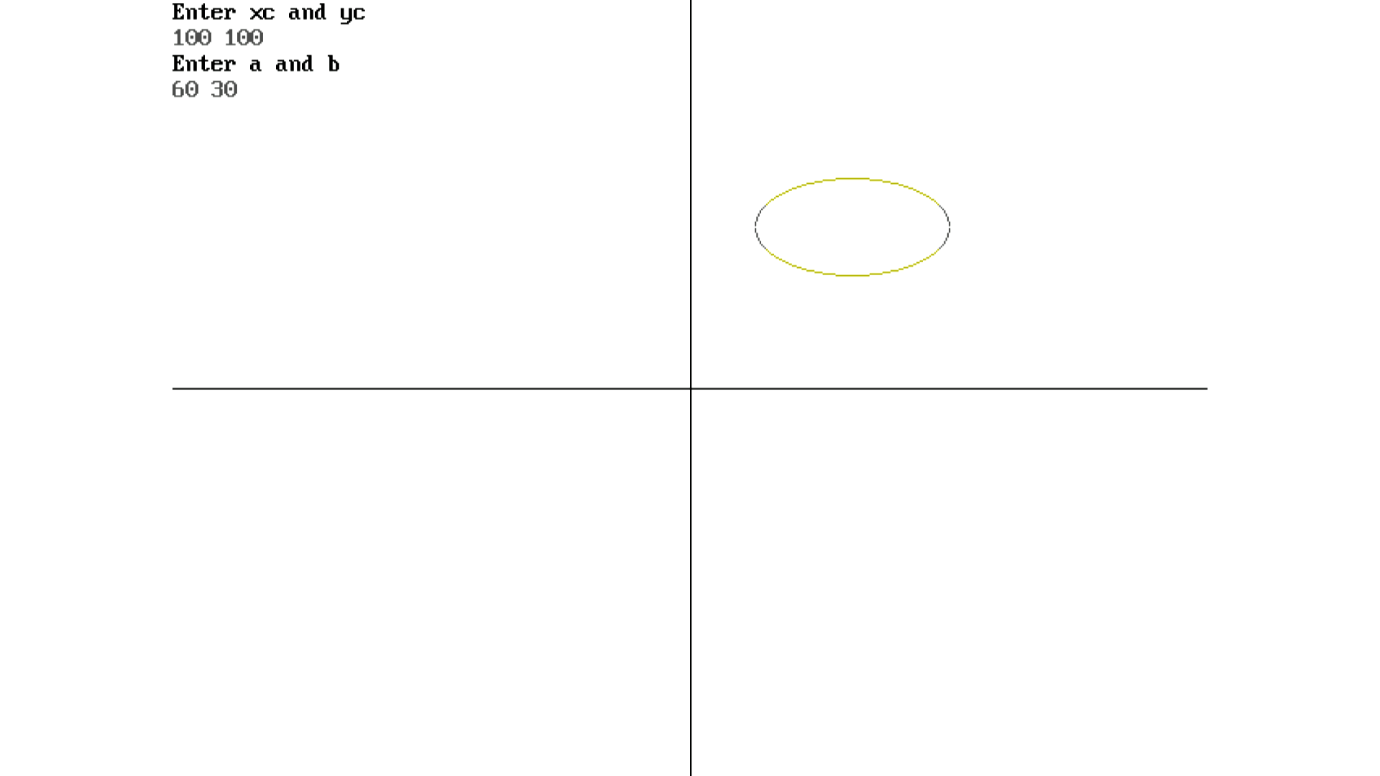
}while(y !=0);

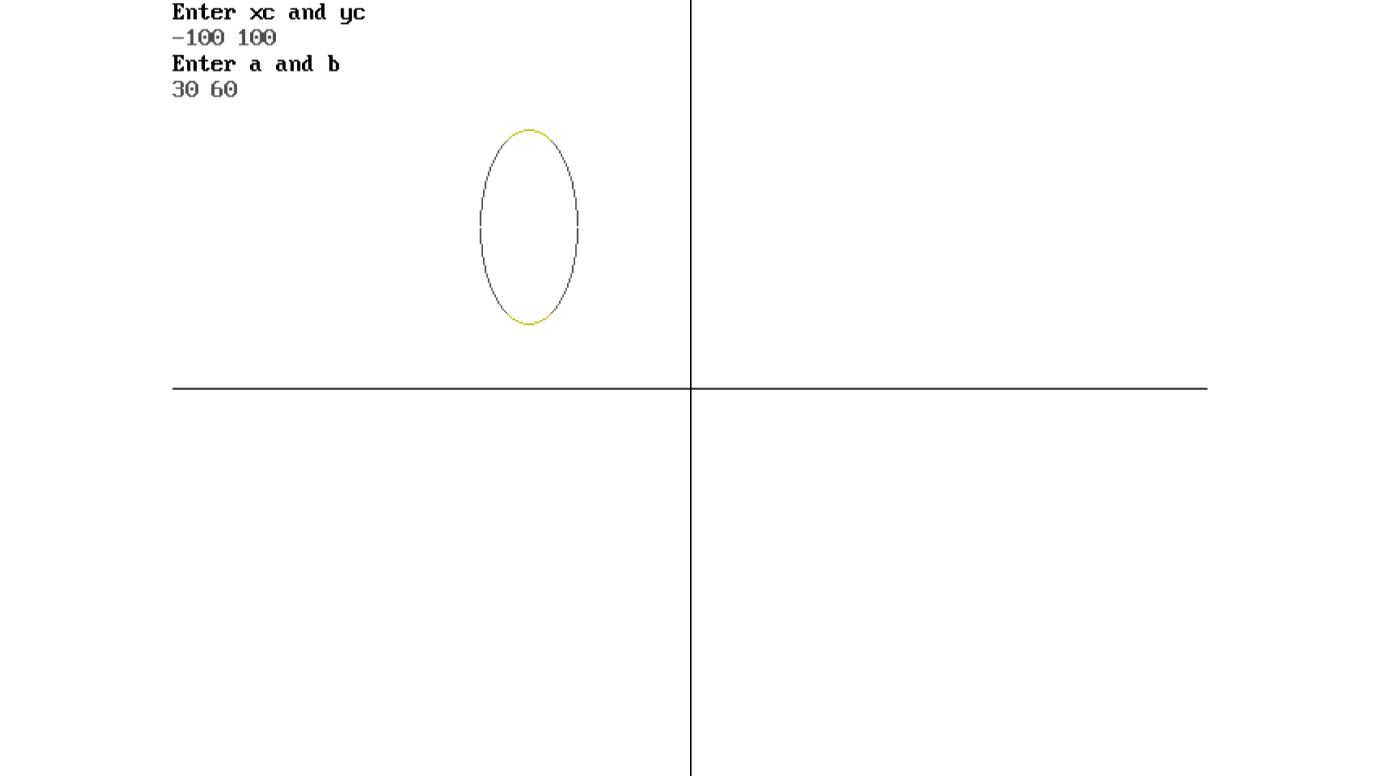
getch();

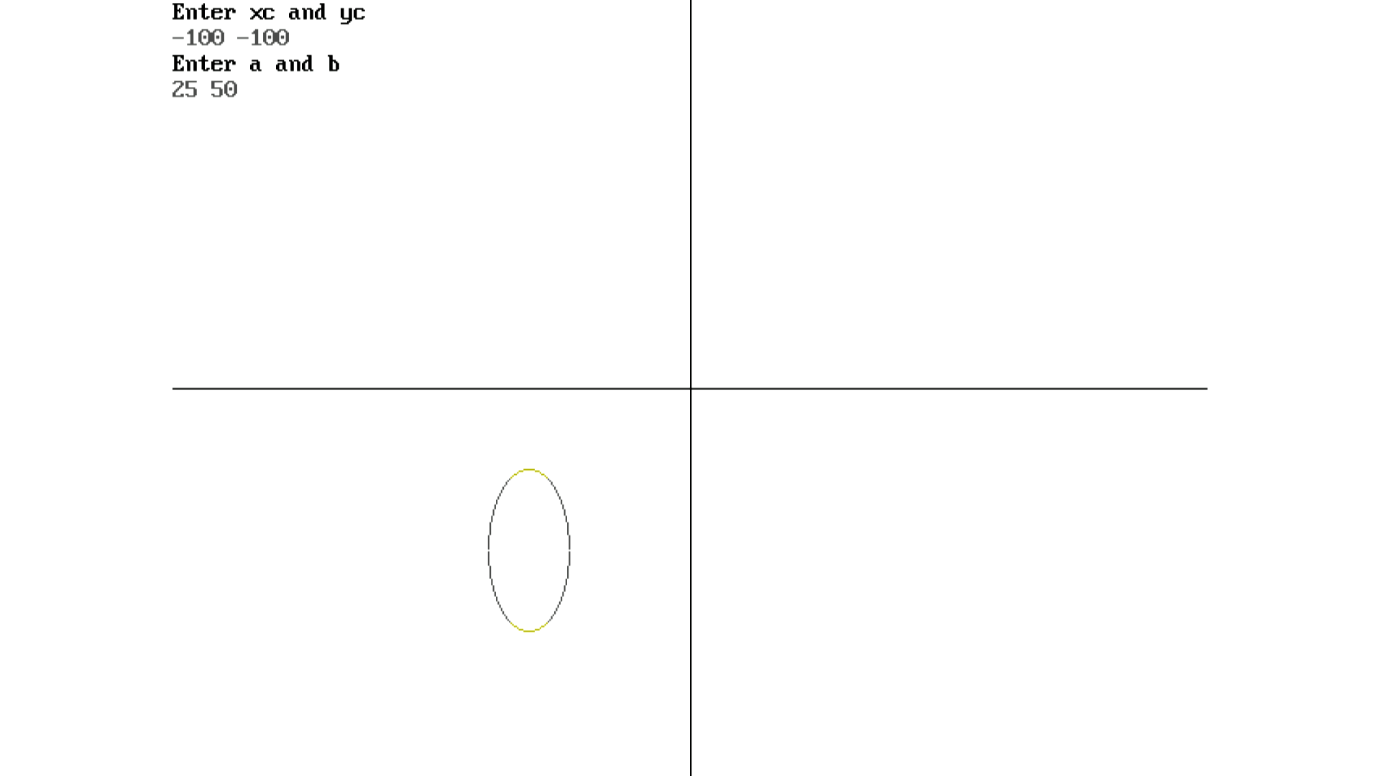
closegraph();

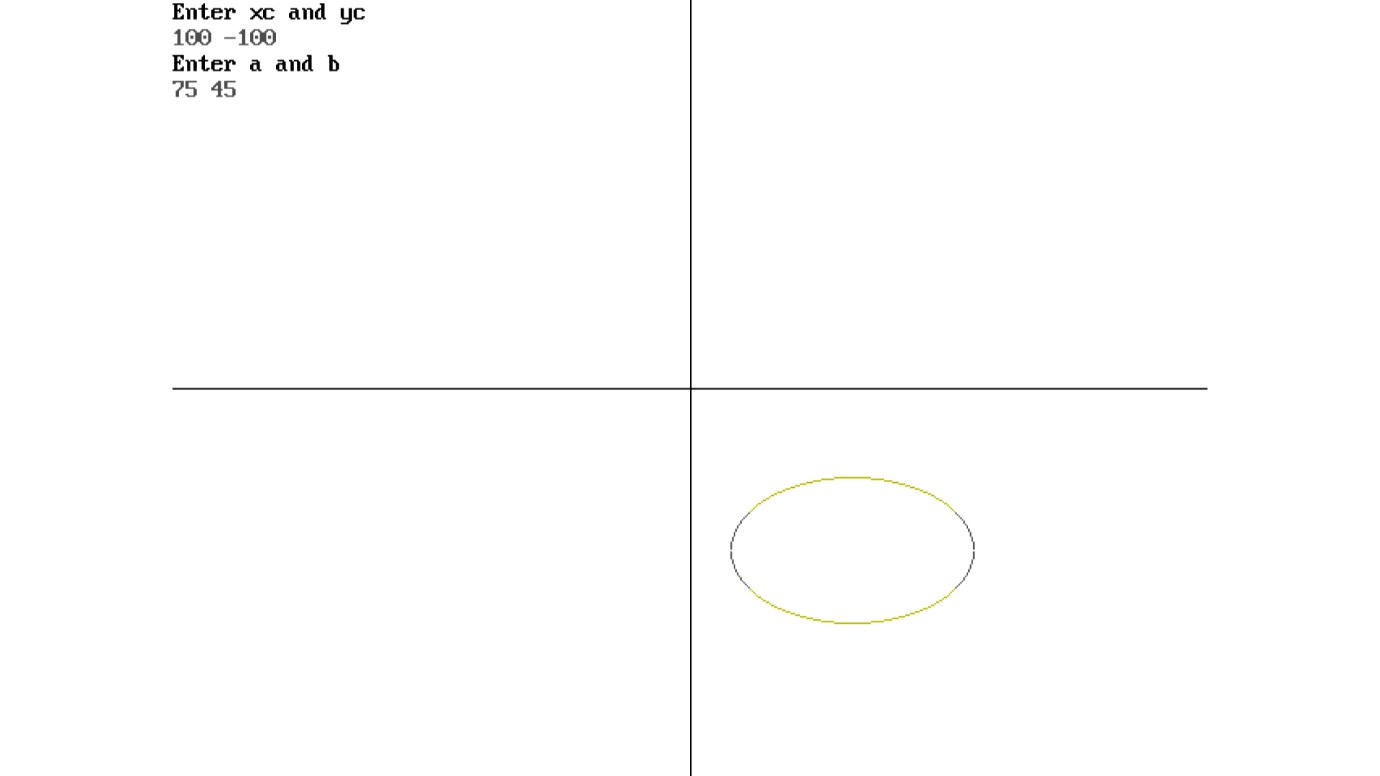
}

**Output:**

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