Course title: Computer Graphics Laboratory

Course code: CSE-304

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Scan converting ellipse:

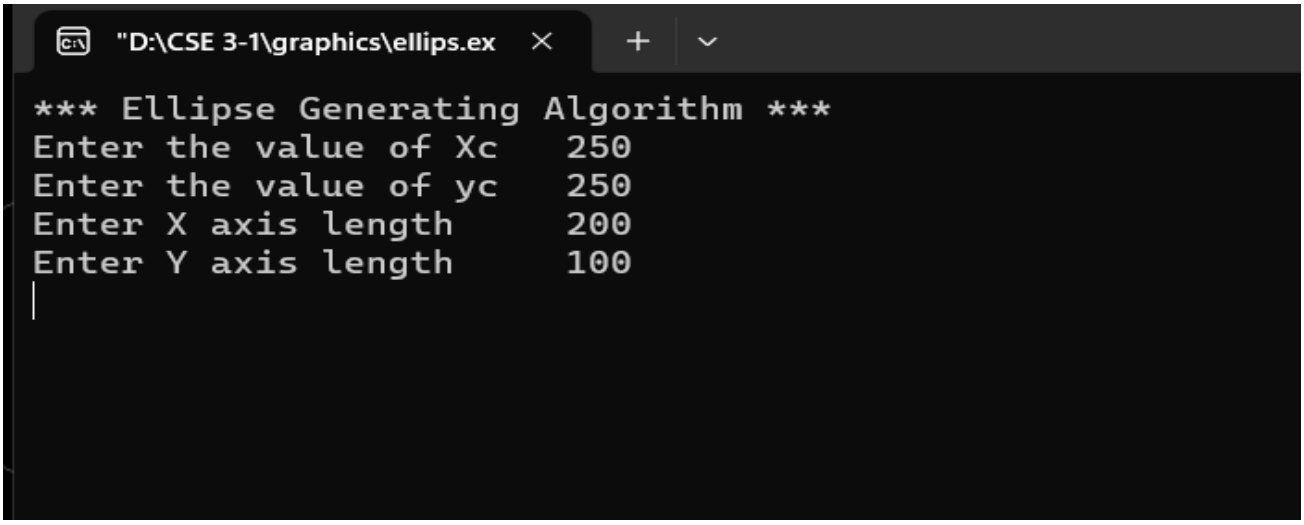
```
#include<bits/stdc++.h>
#include<conio.h>
#include<graphics.h>
#include<math.h>
using namespace std;
void disp();
float x,y;
int xc,yc;
main()
{
        int gd=DETECT,gm,a,b;
        float p1,p2;
        //clrscr();

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,8);
          putpixel(xc-x,yc+y,8);
          putpixel(xc+x,yc-y,8);
          putpixel(xc+x,yc-y,8);
 }
```

Output:


"D:\CSE 3-1\graphics\ellips.ex
*** Ellipse Generating Algorithm ***
Enter the value of Xc 250
Enter the value of yc 250
Enter X axis length 200
Enter Y axis length 100


Windows BGI

Circle using midpoint algorithm:

```
#include <iostream>
#include <graphics.h>
void plotPoints(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 p = 1 - r;
   plotPoints(xc, yc, x, y);
   while (x < y)
   {
      x++;

      if (p < 0)
         p += 2 * x + 1;
      else
      {
         y--;
         p += 2 * (x - y) + 1;
      }
      plotPoints(xc, yc, x, y);
   }
}

int main()
{
   int gd = DETECT, gm;
   initgraph(&gd, &gm, "");
   int xc = 320;
   int yc = 240;
   int r = 100;
   midpointCircle(xc, yc, r);

   delay(5000);
   closegraph();

   return 0;
}
```

Output: