ellipse

Thursday, May 02, 2024 9:34 PM

```
#include<iostream>
#include<graphics.h>
#include<conio.h>
#include<math.h>
using namespace std;


void plotpoints(int x, int y,int *p){
    putpixel(x+p[0],getmaxy()-(y+p[1]),255);
    putpixel(x+p[0],getmaxy()-(-y+p[1]),255);
    putpixel(-x+p[0],getmaxy()-(-y+p[1]),255);
    putpixel(-x+p[0],getmaxy()-(y+p[1]),255);
}


void Ellipse(int a,int b, int *p){
    int x=0,y=b;
    int sa=a*a;
    int sb=b*b;
    double d1=sb-sa*b+0.25*sa;
    plotpoints(x,y,p);
    while( sa*(y-0.5) > sb*(x+1)){ // Region 1
        if(d1<0) { //choose E   E= b^2 (2x + 3)
            d1+=sb*((2*x)+3);
        }
        else{   //choose SE    SE= b^2 (2x + 3) + a^2 (-2y + 2)
            d1+=sb*((2*x)+3) + sa*(-(2*y)+2);
            y--;
        }
        x++;
        plotpoints(x,y,p);
    }
    double d2 = sb*(x+0.5)*(x+0.5) + sa*(y-1)*(y-1) -sa*sb;
    while (y>0){ // Region 2
        if(d2<0){ // choose SE  SE= b^2 (2x + 2) + a^2 (-2y + 3)
            d2+= sb*((2*x)+2) + sa*(-(2*y)+3);
            x++;
        }
        else { // choose S    S= a^2 (-2y + 3)
            d2+= sa*(-(2*y)+3);
        }
        y--;
        plotpoints(x,y,p);
    }
}
int main(){
    int gd = DETECT, gm;
    char pathtodriver[] = "";
    initgraph(&gd, &gm, pathtodriver);
    int *p=new int(2);



    int a =50;
    int b =60;


    p[0]=200;
    p[1]=300;


    Ellipse(a,b,p);
    getch();
    closegraph();
    return 0;
```

```
}
```