**Mid Point Ellipse**

**Write a program to implement mid-point circle drawing algorithm.**

#include<iostream>

#include<graphics.h>

#include<conio.h>

using namespace std;

int main()

{

initwindow(800,800);

int xc,yc,x,y;

float p;

long r1,r2;

cout<<"Enter coordinates of centre"<<endl;

cin>>xc>>yc;

putpixel (xc,yc,WHITE);

cout<<"Enter horizontal and vertical radius of ellipse"<<endl;

cin>>r1>>r2;

cout<<"Region 1:"<<endl;

p=r2\*r2-r1\*r1\*r2+r1\*r1/4;

x=0;

y=r2;

while(2\*r2\*r2\*x <= 2\*r1\*r1\*y)

{

if(p<0)

{

x++;

p = p+2\*r2\*r2\*x+r2\*r2;

}

else

{

x++;

y--;

p = p+2\*r2\*r2\*x-2\*r1\*r1\*y-r2\*r2;

}

putpixel(xc+x,yc+y,RED);

cout<<"( "<<xc+x<<" , "<<yc+y<<" ) ";

putpixel(xc+x,yc-y,GREEN);

cout<<"( "<<xc+x<<" , "<<yc-y<<" ) ";

putpixel(xc-x,yc+y,BLUE);

cout<<"( "<<xc-x<<" , "<<yc+y<<" ) ";

putpixel(xc-x,yc-y,YELLOW);

cout<<"( "<<xc-x<<" , "<<yc-y<<" ) ";

}

cout<<endl;

cout<<"Region 2:"<<endl;

p=r2\*r2\*(x+0.5)\*(x+0.5)+r1\*r1\*(y-1)\*(y-1)-r1\*r1\*r2\*r2;

while(y>0)

{

if(p<=0)

{

x++;

y--;

p = p+2\*r2\*r2\*x-2\*r1\*r1\*y+r1\*r1;

}

else

{

y--;

p = p-2\*r1\*r1\*y+r1\*r1;

}

putpixel(xc+x,yc+y,RED);

cout<<"( "<<xc+x<<" , "<<yc+y<<" ) ";

putpixel(xc+x,yc-y,GREEN);

cout<<"( "<<xc+x<<" , "<<yc-y<<" ) ";

putpixel(xc-x,yc+y,BLUE);

cout<<"( "<<xc-x<<" , "<<yc+y<<" ) ";

putpixel(xc-x,yc-y,YELLOW);

cout<<"( "<<xc-x<<" , "<<yc-y<<" ) ";

}

getch();

closegraph();

return 0;

}

**OUTPUT:**



