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#include<iostream>

#include<graphics.h>

#include<math.h>

using namespace std;

float xi,yi,di,dl,dll,r;

int limit=0;

int xc=650,yc=350;

void mh();

void md();

void mv();

void ddal(int x1, int y1, int x2, int y2);

void bresenham(int rr)

{

r=rr;

xi=0;

yi=r;

di=2\*(1-r);

while(yi>=limit)

{

putpixel(xc+xi,yc+yi,WHITE);

putpixel(xc-xi,yc-yi,WHITE);

putpixel(xc+xi,yc-yi,WHITE);

putpixel(xc-xi,yc+yi,WHITE);

if(di<0)

{

dl=2\*di+2\*yi-1;

if(dl<=0)

mh();

else

md();

}

else if (di>0)

{

dll=2\*di-2\*xi-1;

if(dll<=0)

md();

else

mv();

}

else if(di==0)

md();

};

}

void mh()

{

xi=xi+1;

di=di+2\*xi+1;

}

void md()

{

xi=xi+1;

yi=yi-1;

di=di+2\*xi-2\*yi+2;

}

void mv()

{

yi=yi-1;

di=di-2\*yi+1;

}

void ddal(int x1, int y1, int x2, int y2)

{

float l;

float dx,dy,x,y;

if(abs(x2-x1)>=(y2-y1))

l=abs(x2-x1);

else

l=abs(y2-y1);

dx=(x2-x1)/l;

dy=(y2-y1)/l;

x=x1+0.5;

y=y1+0.5;

int i=1;

while(i<=l)

{

putpixel(int(x),int(y),RED);

x=x+dx;

y=y+dy;

i++;

}

}

int main()

{

int radius,m,n;

cout<<"Enter the radius of the circle"<<endl;

cin>>radius;

n=radius\*cos(30\*3.14/180);

m=radius\*sin(30\*3.14/180);

initwindow(1300,750);

bresenham(radius);

ddal(xc,yc-r,xc+n,yc+m);

ddal(xc+n,yc+m,xc-n,yc+m);

ddal(xc-n,yc+m,xc,yc-r);

bresenham(m);

getch();

}

