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Assignment A7

Aim:- Write C++/Java program to draw inscribed and Circumscribed circles in the triangle as shown as an example below. (Use any Circle drawing and Line drawing algorithms)

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#include <iostream>

#include <graphics.h>

#include <math.h>

using namespace std;

int sign(float n)

{

if(n>1)

return 1;

else if(n<1)

return -1;

else

return 0;

}

void dda\_line(float xa,float ya,float xb,float yb)

{

int i,dx,dy,steps;

float x,y,Dx,Dy;

dx=xb-xa;

dy=yb-ya;

if(abs(dx)>abs(dy))

steps=abs(dx);

else

steps=abs(dy);

Dx=(float) dx/steps;

Dy=(float) dy/steps;

x=xa;

y=ya;

putpixel(x,y,YELLOW);

x=xa+(0.5\*sign(Dx));

y=ya+(0.5\*sign(Dy));

for(i=1;i<steps;i++)

{

x=x+Dx;

y=y+Dy;

putpixel(x,y,YELLOW);

}

}

void draw(float c1,float c2,float r)

{

float pk,x,y;

x=0;

y=r;

pk=3-(2\*r);

do

{

putpixel(c1+x,c2+y,YELLOW);

putpixel(c1+y,c2+x,YELLOW);

putpixel(c1+y,c2-x,YELLOW);

putpixel(c1+x,c2-y,YELLOW);

putpixel(c1-x,c2-y,YELLOW);

putpixel(c1-y,c2-x,YELLOW);

putpixel(c1-y,c2+x,YELLOW);

putpixel(c1-x,c2+y,YELLOW);

if(pk<0)

{

pk=pk+(4\*x)+6;

}

else

{

pk=pk+(4\*(x-y))+10;

y--;

}

x++;

}while(x<y);

}

int main()

{

float x1,y1,x2,y2,x3,y3,h,l,r1,r2,c1,c2;

int gd=DETECT,gm;

cout<<"\nEnter Starting Co-ordinates of Base of Triangle :"<<endl;

cin>>x1>>y1;

cout<<"\nEnter Length of base : ";

cin>>l;

x2=(x1+l);

y2=y1;

float val=sqrt(3);

h=(val/2)\*l;

x3=x1+(l/2);

y3=(y1-h);

r1=(l/sqrt(3));

r2=h-r1;

c1=(x1+x2)/2;

c2=y1-r2;

initgraph(&gd,&gm,NULL);

dda\_line(x1,y1,x2,y2);

dda\_line(x1,y1,x3,y3);

dda\_line(x2,y2,x3,y3);

draw(c1,c2,r1);

draw(c1,c2,r2);

getch();

closegraph();

return 0;

}

**---------------------------------------------------------------------------------------------------------------------**

**OUTPUT :-**

Enter Starting Co-ordinates of Base of Triangle :

100

300

Enter Length of base : 300

