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#include <stdio.h>
#include <math.h>

/* This program finds the center point and radius of a circle inscribed into a
triangle*/
/* Copyright (c) 2017 Nathan Christian(npchristi@iu.edu)*/

double distance(double x00, double x01, double y00, double y01)
{
    return sqrt(pow((x01-x00),2)+pow((y01-y00),2));
}

double radius (double aa,double xy0, double bb,double xy1, double cc, double xy2)
{
    return ((aa*xy0)+(bb*xy1)+(cc*xy2))/(aa+bb+cc);
}

int main()
{
    double x0,y0,x1,y1,x2,y2,xc,yc,r,a,b,c,s;

    printf("What is the x0 value? ");
    scanf("%lf", &x0);

    printf("\nWhat is the y0 value? ");
    scanf("%lf", &y0);

    printf("\nWhat is the x1 value? ");
    scanf("%lf", &x1);

    printf("\nWhat is the y1 value? ");
    scanf("%lf", &y1);

    printf("\nWhat is the x2 value? ");
    scanf("%lf", &x2);

    printf("\nWhat is the y2 value? ");
    scanf("%lf", &y2);

    a=distance(x1,x2,y1,y2);
    b=distance(x0,x2,y0,y2);
    c=distance(x0,x1,y0,y1);
    s=(a+b+c)/2;
    r=sqrt((s-a)*(s-b)*(s-c)/s);
    xc=radius(a,x0,b,x1,c,x2);
    yc=radius(a,y0,b,y1,c,y2);

    printf("\nThe radius is rounded to %.2lf.\n", r);
    printf("The center coordinates are rounded to (%.2lf,%.2lf)\n", xc,yc);

    return 0;
}

```