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/*
  File: circles.cpp
  Created by: Tan Qi Hao
  Creation Date: 2/5/2019
  Synopsis: This program finds the location of a query point relative to
the circles A, B and C.
*/

#include <iostream>
#include <cmath>
using namespace std;

int main()
{
  double Xa, Ya;  //x and y coordinates of the center of circle A
  double Ra;      //radius of circle A
  double Xb, Yb;  //x and y coordinates of the center of circle B
  double Rb;      //radius of circle B
  double Xc, Yc;  //x and y coordinates of the center of circle C
  double Rc;      //radius of circle C
  double Xq, Yq;  //x and y coordinates of the query point

  cout << "Enter x and y coordinates of circle A (2 values): ";
  cin >> Xa;
  cin >> Ya;
  cout << "Enter radius of circle A: ";
  cin >> Ra;

  cout << "Enter x and y coordinates of circle B (2 values): ";
  cin >> Xb;
  cin >> Yb;
  cout << "Enter radius of circle B: ";
  cin >> Rb;

  cout << "Enter x and y coordinates of circle C (2 values): ";
  cin >> Xc;
  cin >> Yc;
  cout << "Enter radius of circle C: ";
  cin >> Rc;

  cout << "Enter x and y coordinates of query point (2 values): ";
  cin >> Xq;
  cin >> Yq;

  if (sqrt(pow(Xq - Xa, 2) + pow(Yq - Ya, 2)) <= Ra && sqrt(pow(Xq - Xb,
2) + pow(Yq - Yb, 2)) <= Rb && sqrt(pow(Xq - Xc, 2) + pow(Yq - Yc, 2)) <=
Rc)
    {cout << "Circles A, B, and C contain point (" << Xq << "," << Yq <<
").";}

  else if (sqrt(pow(Xq - Xa, 2) + pow(Yq - Ya, 2)) <= Ra && sqrt(pow(Xq -
Xb, 2) + pow(Yq - Yb, 2)) <= Rb)
    {cout << "Circles A and B contain point (" << Xq << "," << Yq <<
").";}
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  else if (sqrt(pow(Xq - Xb, 2) + pow(Yq - Yb, 2)) <= Rb && sqrt(pow(Xq -
Xc, 2) + pow(Yq - Yc, 2)) <= Rc)
    {cout << "Circles B and C contain point (" << Xq << "," << Yq <<
").";}

  else if (sqrt(pow(Xq - Xa, 2) + pow(Yq - Ya, 2)) <= Ra && sqrt(pow(Xq -
Xc, 2) + pow(Yq - Yc, 2)) <= Rc)
    {cout << "Circles A and C contain point (" << Xq << "," << Yq <<
").";}

  else if (sqrt(pow(Xq - Xa, 2) + pow(Yq - Ya, 2)) <= Ra)
    {cout << "Circles A contains point (" << Xq << "," << Yq << ").";}

  else if (sqrt(pow(Xq - Xb, 2) + pow(Yq - Yb, 2)) <= Rb)
    {cout << "Circles B contains point (" << Xq << "," << Yq << ").";}

  else if (sqrt(pow(Xq - Xc, 2) + pow(Yq - Yc, 2)) <= Rc)
    {cout << "Circles C contains point (" << Xq << "," << Yq << ").";}

  else {cout << "No circle contains point (" << Xq << "," << Yq << ").";}

  cout << endl;

  return 0;
}
```