Shopee Programming Contest #2

Jul 25, 2020, 02:00 PM CST - Jul 25, 2020, 05:15 PM CST

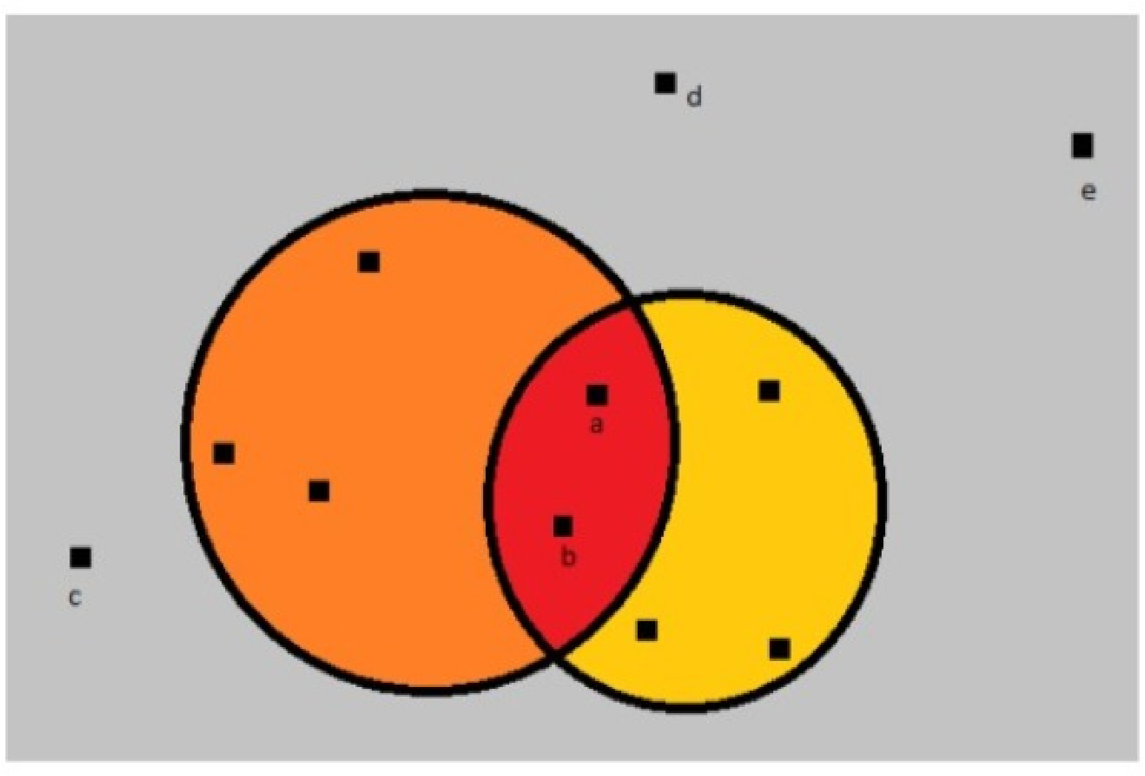
WiFi Network

Max. score: 20

This problem is no longer available for practice. Apology for any inconvenience!

As we all know Shopee is one of the fastest-growing e-commerce in the world. Shopee has a large number of engineers to develop and maintain the platform. So it's expected it's internal office network is very complex and only one master WiFi network hub has already failed to support the network stability and bandwidth. Now Shopee has decided to get master WiFi network hubs from two different companies namely **GeoFi** and **AirFi**. However now there is another big problem, these two networking device manufacturing companies have a long history of rivalry. They developed their network technology in such a way that these two networks cancel each other. Meaning, if an engineer is inside the network range of both **GeoFi** and **AirFi** network hubs, he/she will not get any signal from either of these two network hubs (see the picture).

As installing networking devices without very complex calculation can bring networking blackout at different locations on the office floor, shopee IT-center decided to install only one **GeoFi** network hub on the office floor. The same rule goes for the **AirFi** network hub. Each hub has a range **R** and they cover a circular area of radius **R** centering the position of the network hub. Shopee IT-center wishes every engineer should get the WiFi signal from one of the two new network hubs. Now Shopee IT-center wants your help to get the answer to the following question. Given the coordinates of each of the engineers, coordinates of the **GeoFi** network hub **Cg** and **AirFi** network hub **Ca**, the range of these network hubs **Rg(GeoFi)** and **Ra(AirFi)** can you find the number of engineers that will not get any network services?



In the picture above the two points (a,b) in the intersected area do not get any WiFi signal. Also the three points(c,d,e) outside the area of the circles do not have any WiFi signal.

Input

There will be only one test case. The test case begins with an integer **N** $(1 \le N \le 10^5)$, the number of engineers in the office.

Each of the next N lines will have two integers **x, y** $(0 \le x,y \le 10^8)$ representing the coordinates of the engineers.

The next line contains four integers **Xg, Yg** representing **Cg**, and **Xa, Ya** representing **Ca**.

The next line contains an integer number **Q** $(1 \le Q \le 10^5)$, representing the number of queries. Each of the next **Q** lines will have two integers **Rg, Ra** $(0 \le Rg, Ra \le 10^8)$.

Output

For each query (given value of **Rg, Ra**), print the number of engineers that will not get any WiFi signal.

SAMPLE INPUT

```
11
2 3
3 6
5 5
6 10
9 7
8 5
9 4
11 3
12 6
11 12
14 10
6 7 10 5
5
4 3
3 3
9 3
8 3
3 2
```

SAMPLE OUTPUT

```
5
6
5
6
7
```

Time Limit:	2.0 sec(s) for each input file.
Memory Limit:	256 MB
Source Limit:	1024 KB
Marking Scheme:	Score is assigned when all the testcases pass.
Allowed Languages:	Bash, C, C++, C++14, C++17, Clojure, C#, D, Erlang, F#, Go, Groovy, Haskell, Java, Java 8, Java 14, JavaScript(Rhino), JavaScript(Node.js), Julia, Kotlin, Lisp, Lisp (SBCL), Lua, Objective-C, OCaml, Octave, Pascal, Perl, PHP, Python, Python 3, Python 3.8, R(RScript), Racket, Ruby, Rust, Scala, Swift-4.1, Swift, TypeScript, Visual Basic

CODE EDITOR

Save Python 3.8 (python 3.8.2)

```
def solver():
    def calcDist(first, second):
        return math.ceil(math.sqrt(
            (first[0] - second[0]) ** 2 +
            (first[1] - second[1]) ** 2
        ))

    N = int(input())
    engCoord = []
    for i in range(N):
        x, y = [int(j) for j in input().split()]
        engCoord.append((x, y))

    Xg, Yg, Xa, Ya = [int(j) for j in input().split()]
    engDist = []
    for coord in engCoord:
        engDist.append((calcDist(coord, (Xg, Yg)), calcDist(coord, (Xa, Ya))))

    Q = int(input())
    for i in range(Q):
        res = 0
        Rg, Ra = [int(j) for j in input().split()]
        for dist in engDist:
            if Rg < dist[0] and Ra < dist[1]:
                res += 1
            elif Rg >= dist[0] and Ra >= dist[1]:
```

1:1 vscode

Provide custom input

COMPILE & TEST SUBMIT

Your Rating:

View all comments

RECENT SUBMISSIONS

DEVELOPERS	RESULT	LANGUAGE
Shermint	❗	Python 3.8
7kkh	❗	Python 3.8
Techtus	❗	Python 3.8
Old iron 666	❗	Python 3
Old iron 666	⊗	C++14
nurtantioq	⚠	Java 8
nurtantioq	⊗	JavaScript(Node.js)

View All

Resources
Tech Recruitment Blog
Product Guides
Developer hiring guide
Engineering Blog
Developers Blog
Developers Wiki
Competitive Programming
Start a Programming Club
Practice Machine Learning

Solutions
Assess Developers
Conduct Remote Interviews
Assess University Talent
Organize Hackathons

Company
About Us
Press
Careers

Service & Support
Technical Support
Contact Us

+1-650-461-4192
contact@hackerearth.com