

Competitive Programming SS24

Submit until end of contest



Problem: crossbow (2.0 second timelimit)

Once upon a time, when live contests were conducted truly live and in person, some other teams in your course performed better than you and you are angry. Angry at their bold display of superiority, angry at their bouncy symbols of triumph. You are angry that they had more balloons than you. Next time, that is, when the next live contests with real balloons occur, you will be prepared. All you need is a fully automated new scope for your emergency crossbow. The scope should display the number of balloons you would pop if you pull the trigger at a given moment. Of course your childproof crossbow is only harmful to balloons.

Input The first line contains the number of test cases $t \leq 10$. Each test case starts with your position (2 floats) and the point you are aiming at (2 floats) in the first line followed by a line that contains the number of balloons $n \leq 100000$. The following n lines each contain the center c (2 floats) and radius r (1 float) of a balloon. All balloons are perfect circles and there are no obstacles in the room. Balloons may overlap.

Hint: The dot product of two vectors is the cosine of the angle between them.

Output For each testcase output a line with the number of balloons you would pop if you pull the trigger.

Sample input

```
2
0 4 10 4
5
5 7 1
2 4 1
5 4 1
8 4 1
5 1 1
2 6 10 0
4
1 7 1
4 5 1
7 4 1
8 1 1
```

Sample output

```
3
2
```

