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Exercise – *H1N1*

In times of an epidemic, it is important to stick to strict hygienic rules and to keep distance to infected individuals.

An influential pharmaceutical company has decided to develop a ground-breaking device to prevent its users from coming into contact with infected people. You are asked to develop part of the software for its central server. Your program has coordinates of all known infected individuals at its disposal. It is supposed to answer queries whether a given user of the device is able to escape the contaminated area, assuming that all infected individuals stay at their current location. In order to escape, the user must be able to get arbitrarily far from all infected people, without ever coming closer than a given distance d to any of them.

This should not be too hard to do, should it?

Input We consider the situation as seen from above, such that people appear as points in the plane. The input contains several test cases. Each of them is described as follows.

- It starts with a line that contains a single integer n ($2 \leq n \leq 10^5$), denoting the number of infected people in the area.

- The next n lines contain their integer coordinates x y separated by space and so that $|x|, |y| < 2^{24}$.

- The following line contains a single integer m ($1 \leq m \leq 10^5$) denoting the number of users asking for an escape route. These are to be checked one by one separately, that is, they should be considered separate queries. None of them is infected.

- Finally, each of the subsequent m lines describes a user who wants to escape. Each user is specified by three integer coordinates x, y, and d, separated by space and such that $|x|, |y| < 2^{24}$ and $0 \leq d < 2^{49}$. The person is located at position (x, y) and wants to keep distance at least $\sqrt{d}$ from the infected (i.e., $\sqrt{d}$ is still allowed).

The input is terminated by a line containing a single value 0.

Output For every test case the corresponding output appears on a single line consisting of m characters "y" or "n" (one letter per query). Output the letter "y", if there is a way to escape, and "n", otherwise.

Sample Input

```
4
0 0
0 2
2 0
2 2
3
1 1 1
1 1 2
3 1 2
8
0 4
0 2
0 -2
0 -4
2 2
2 0
2 -2
4 0
4
0 0 4
0 0 5
1 1 3
1 1 2
0
```

Sample Output

```
yny
ynny
```