Maze

Description

Kyaru and Pecorine are trapped in a maze.

There are n ring-shaped walls in the maze. If the entire maze is regarded as a two-dimensional plane, then each wall is a circle on it. Each two walls do not intersect or overlap, nor are they tangent, but one may contain the other. Kyaru and Pecorine were in two different places, and their positions do not coincide with these circles.

Kyaru would like to know how many walls they would have to destroy if they wanted to meet? Suppose that they can meet at any location.

Input

The first line contains an integer n , indicating the number of the walls.

In the following n lines, each line contains three integers, x, y and r , sparated by spaces, indicating a wall centering at (x, y) , and the radius of which is r units.

The next line contains an integer q , indicating the number of queries.

In the following q lines, each line contains 4 integers, a, b, c and d , saparated by spaces. In this case, Kyaru is at (a, b) and Pecorine is at (c, d) .

Output

For each query output one line, an integer indicating the number of the walls that they have to destroy at least.

Sample Input/Output

Input 1

```
3
0 0 1
0 0 2
4 0 1
2
0 0 4 0
0 0 0 4
```

Output 1

```
3
2
```

Input 2

```
3
0 0 1
```

```
3 0 1
2 0 4
1
0 0 3 0
```

Output 2

```
2
```

Constraint

$1 \leq n, q \leq 3000$, the absolute value of each integer in the input data is less than 10^9 .