

Circle Counting

In this problem, you will be given N circles, and M points. You are required to find out that inside how many circles does each of the M points lie. None of the M points will lie on any of the N circle boundaries (they will either lie inside a circle or outside it, but not on the circle).

Input

The 1st line gives the number of test cases T .

Each of the next T test cases has a format as explained below.

The 1st line of each test case contains 2 integers N and M .

Each of next N lines contains 3 integers cx , cy , r . The circle is located at center (cx, cy) and has a radius r .

Each of the following M lines contain 2 integers (x, y) , which indicate that the location of the point.

Output

For each of test case, print M lines, each corresponding to the no of circles inside which the corresponding point lies.

Separate each test case with a blank line.

Example

Input:

```
1
2 3
3 3 2
1 1 2
1 1
2 2
3 3
```

Output:

1
2
1

Sample diagram

□

Constraints

$$T \leq 100$$

$$0 \leq N \leq 500$$

$$0 \leq M \leq 500$$

$$-1000 \leq cx \leq 1000$$

$$-1000 \leq cy \leq 1000$$

$$-1000 \leq x \leq 1000$$

$$-1000 \leq y \leq 1000$$

$$1 \leq r \leq 1000$$