# J Just another pachinko-like machine

Input: Standard Input
Output: Standard Output

Like pachinko? Here is another one. It's not exactly a traditional pachinko, but it's also a let-the-ball-hit-things game.

In the machine, there are n non-overlapping non-vertical bars, shown below. Here non-overlapping means for every pair of bars, the two segments do not intersect, do not have common end-point, and do not partially overlap (they may overlap when projected to x-axis, though).
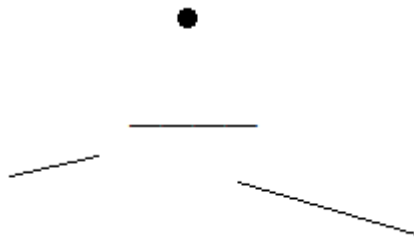
At the i-th step, the ball will be transferred to (x_i, y_i), then start to fall vertically, hopefully it'll hit a bar and earn some scores. A ball who hit the i-th bar will earn a score of s_i. If the ball directly drops on the floor (with y=0), it will not score.

The most interesting part of the machine is: **if the i-th bar is hit during this step, it will disappear at that moment and re-appear after d_i steps**. For example, if a bar with $d_i=3$ is hit in the 5-th step, then it'll be missing during step 6 and 7, and will re-appear in step 8.

Input

There will be at most 5 test cases. Each test case begins with one integer n ($1<=n<=10^5$), the number of bars. Each of the next lines contains 5 integers x1, y1, x2, y2, s, d ($0<=x1<x2<=10^9$, $1<=y1,y2<=200000$, $1<=s<=1000$, $1<=d<=5$), describing one bar. No two bars can have any common point (i.e. no intersection, can't touch each other etc).

The next line contains b ($1<=b<=10^5$), the number of balls. In the next b lines, the i-th line describes the ball appear in the i-th step. Each line contains two integers (x', y'), that means the ball will appear at $(x_i,y_i)=$(x' XOR a, y' XOR a), where a is the current score before the ball falls (which will be zero at the beginning of each test case). It is guaranteed that x_i and y_i are non-negative integers and will not be precisely on a bar.

Output

For each test case, print the case number in the first line and the scores after each step. There should be one empty line after each test case.

Sample Input

```
2
0 4 4 4 1 4
2 2 6 2 9 1
5
3 5
2 4
11 15
9 9
16 26
3
0 6 10 7 1 5
2 4 8 3 10 5
4 2 6 2 100 5
4
5 7
4 6
14 12
106 104
```

Output for Sample Input

```
Case 1:
1
10
10
19
20

Case 2:
1
11
111
111
```

Explanation for Sample 1

Step 1:
ball (3,5) will hit the first bar, score=1

Step 2:
ball (3,5) will hit the second bar, score=9

Step 3(bar 2 appear again):
ball (1,5) will hit the ground, score=0

Step 4:
ball (3,3) will hit the second bar, score=9

Step 5(bar 1&2 appear again):
ball (3,9) will hit the first bar again, score=1

Problemsetter: Rujia Liu, Special Thanks: Md. Mahbubul Hasan