

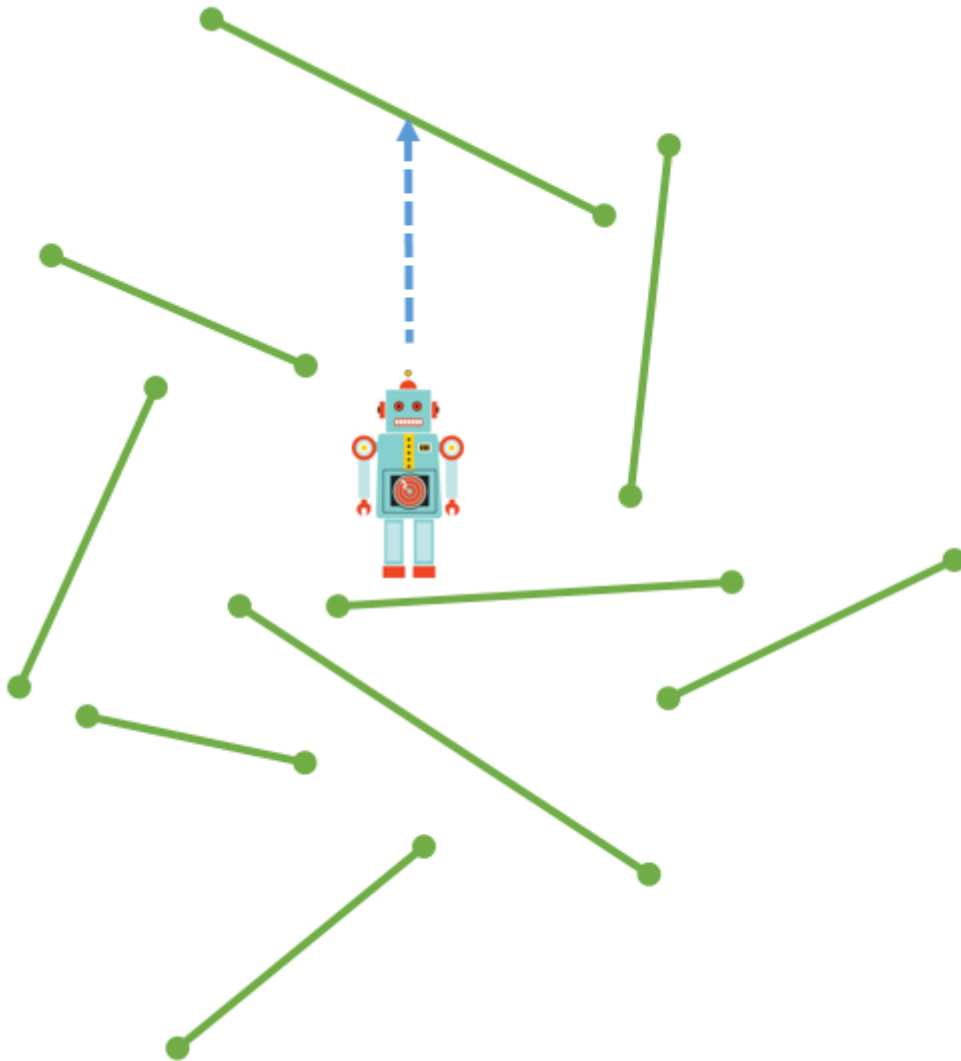
CG2020 3-2 Which Wall are You Looking at

本学期 PA3 评分规则与前两次不同，详见网络学堂课程公告。

Description (描述)

Andy is a robot staying in a mysterious 2D space. There are a lot of walls surrounding him. These walls in 2D space are just lots of non-overlapping segments. Our poor Andy is not equipped with any advanced eyes, so he can only see things which are vertical above him. The wall hit by his sight line is the wall he can see. Andy may stand at several possible positions in this space. Can you help him to tell which wall is in front of his view?

二维机器人 Andy 处于一个神秘的空间当中。它的周围有许许多多二维世界的墙，也就是一条条互不相交的线段。我们可怜的 Andy 还只是一个比较初级的机器人，他只会沿着垂直向上的方向看，而被它的视线击中的墙，就是它所看见的墙。Andy 可能会出现在各种各样的地方。你能不能帮帮它，告诉它看见了那一面墙呢？



Input (输入)

The first line consists of two integers delimited by a space, $n > 0$, $m > 0$. n is the number of total segments, m is the number of all positions of the robot Andy.

The k -th of the following n lines gives the k -th segment:

$(x_k, y_k), (u_k, v_k)$ $k = 1, 2, \dots, n$

x_k, y_k, u_k, v_k here are integers and are all delimited by spaces.

The j -th of the following m lines gives the j -th possible position of Andy:

(x_j, y_j) $j = 1, 2, \dots, m$

Both x_j and y_j here are integers and are delimited by a space.

首行包含两个正整数 $n > 0$, $m > 0$ 。 n 表示输入线段的总数。 m 表示机器人 Andy 所在位置的总数。两个数以空格分隔。

随后 n 行中的第 k 行给出第 k 个线段:

$(x_k, y_k), (u_k, v_k)$ $k = 1, 2, \dots, n$

这里, x_k, y_k, u_k, v_k 均为整数, 且四个整数以空格分隔。

随后 m 行中的第 j 行给出机器人 Andy 的第 j 个的位置:

(x_j, y_j) $j = 1, 2, \dots, m$

这里, x_j, y_j 均为整数, 两个整数以空格分隔。

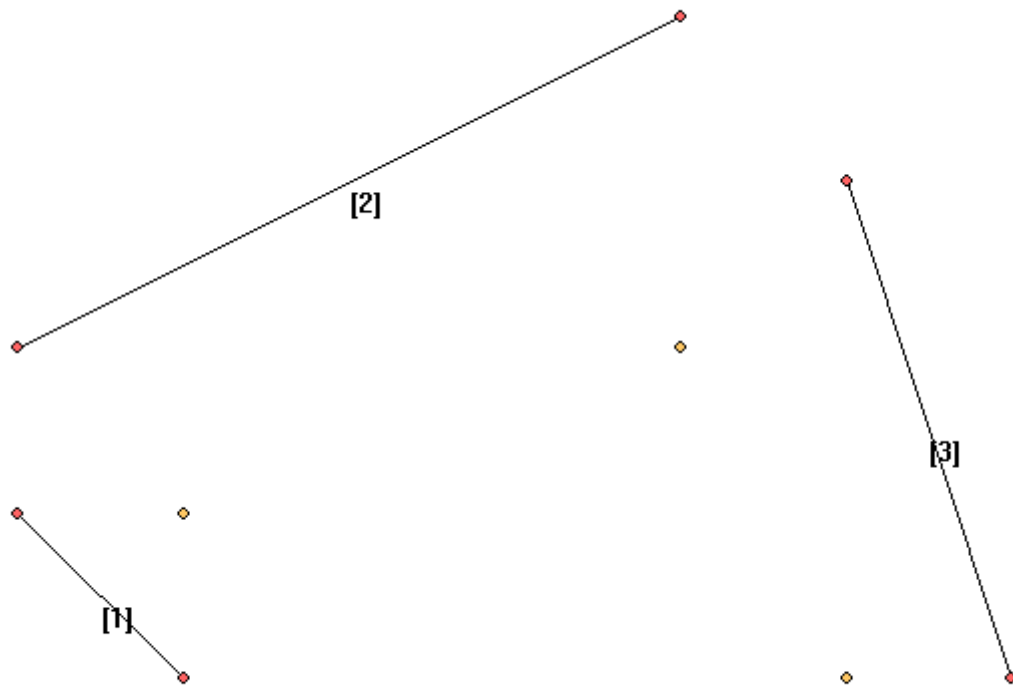
Output (输出)

For each possible position of Andy, print the index of the wall in front of his view. Recall that his view is vertically upwards. If Andy sees nothing in his vertical view, print 'N'.

对于每个 Andy 的位置, 输出它垂直向上的视线所击中的那一面墙的标号。如果看不到任何一面墙的话, 则输出字符 N。

Sample Input (输入样例)

```
3 3
2 1 1 2
1 3 5 5
6 4 7 1
5 3
2 2
6 1
```



Sample Output (输出样例)

```
2
2
3
```

Limitation (限制)

- $0 < n \leq 10^4$
- $0 < m \leq 10^5$
- Each coordinate of the points is an integer from $(-10^6, 10^6)$. There are no duplicated points.
- There will be no intersection between any walls, and the walls will not connect with any other at their end points, either.
- If Andy is vertically looking at the exact end point of one specific wall, print the index of this wall
- If Andy is located exactly on one of the walls(end points included), print the index of this wall
- Time Limit: 0.2 sec
- Space Limit: 256 MB
- $0 < n \leq 10^4$
- $0 < m \leq 10^5$
- 所有点的坐标均为范围 $(-10^6, 10^6)$ 内的整数，且没有重合点
- 所有的墙均不相交，并且没有任何重合的端点
- 若 Andy 的垂直视线刚好处于某一面墙的端点上，则输出这面墙的标号即可
- 若 Andy 处于某一面墙上（在表示墙的线段的端点上也指在这面墙上），则输出这面墙的标号即可
- 时间限制：0.2 sec
- 空间限制：256 MB

提示 (Hint)

- 06. Point Location

UI powered by Twitter Bootstrap (<http://getbootstrap.com/>).
Tsinghua Online Judge is designed and coded by Li Ruizhe.
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