Problem B

A hunter is sitting at his watchpost placed at coordinates (0,0) in the plane and looking for animals to shoot. Each animal is a point in the plane. Additionally, the plane contains barriers; each barrier is a line segment. The hunter sees an animal only if the line from the hunter to the animal does not intersect any of the barriers. Determine which animals are in danger of being shot. You can assume that no two barriers intersect, none of them passes through the point (0,0) or the position of any of the animals, and that no animal is on any of the half-lines starting in $(0,0)$ and passing through the ends of the barriers.

Input and output

The first line contains integers $n, m \leq 100\,000$, the number of animals and the number of barriers. Each of the next n lines contains two integers x and y ($|x|, |y| \leq 100\,000$), giving the coordinates of the animals. Each of the following m lines contains four integers x_1, y_1, x_2, y_2 ($|x_i|, |y_i| \leq 100\,000$), describing the barrier with ends (x_1, y_1) and (x_2, y_2).

Output a single line listing the numbers of animals that can be shot by the hunter, in increasing order; the animals are numbered from 1 in the same order they are given in the input.

Example

Input:

```
3 1
3 3
6 5
0 7
-2 5 2 4
```

Output:

```
1 2
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