Darts

Input file:	`standard input`
Output file:	`standard output`
Time limit:	1 second
Memory limit:	256 megabytes

You wake up with a blur. The freshers' party just ended yesterday, and one of the better games there was darts.

You were on the organizing committee, but had some issues with getting a real dartboard, so you had set out to make one of your own. You got n rectangular sheets of paper of various sizes and joined them at the corner, keeping them aligned with each other. Then this whole thing was stuck to the wall with glue. That is, if the length of a sheet stuck on the wall is y and the width is x, then it had its bottom-left corner at $(0, 0)$ and the top-right corner at (x, y), with the sides aligned with the x and y axes.

There were q darts that were thrown by random freshers enjoying the party. You realize that by the end of the day you have to announce whose dart hit any sheet on the board and whose didn't. You consider a dart to have hit a sheet even if it punctures the sheet at a boundary point, just to be generous.

Your hardworking colleagues have already given you the coordinates of the darts. It is now up to you to solve the problem.

Input

The first line of the input contains two space-separated integers N, Q, where $1 \leq N, Q \leq 3 \times 10^5$.

N represents the number of sheets of paper used to make the dartboard and Q represents the number of darts thrown at it.

In the next N lines, the i^{th} line (where $1 \leq i \leq N$) contains two space-separated integers representing x_i and y_i where $0 \leq x_i \leq 10^9$ and $0 \leq y_i \leq 10^9$ denote the width and the length of the i^{th} sheet of paper.

In the next Q lines, the i^{th} line (where $1 \leq i \leq Q$) contains two space-separated integers representing X_i and Y_i where $0 \leq X_i \leq 10^9$ and $0 \leq Y_i \leq 10^9$ denote the coordinates of the i^{th} dart.

Output

Print Q lines, where the i^{th} line contains

1. -1, if the i^{th} dart didn't hit the board, and

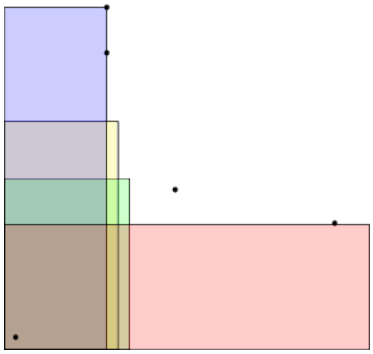
2. The width and the length of any sheet of paper that the dart hit, if it did at all.

Example

standard input	standard output
4 5 10 20 11 15 9 30 32 11 15 14 29 11 9 26 9 30 1 1	-1 32 11 9 30 9 30 32 11

Note

For the first test case, the dart board looks like this:



Here the sheets are yellow, green, blue and red, and can be seen to be overlapping. The black dots are the positions of the darts.