Problem I. Insects

Input file:	*standard input*
Output file:	*standard output*
Time limit:	5 seconds
Memory limit:	512 mebibytes

You have n black ants in your terrarium, and the i-th black ant lives at coordinate (a_i, b_i).

Each day for the next m days, you will buy a new ant for your terrarium. You are only buying white ants, and the i-th white ant that you are buying will live at coordinate (x_i, y_i).

Each day, you feed some of your insects. If you feed an insect, the insect will not be hungry in that day. If the i-th white ant is hungry and the j-th black ant is hungry, and $x_i \geq a_j$ and $y_i \geq b_j$, they will fight. Find, for each day, the smallest number of ants to feed such that there are no fights.

Input

The first line contains one integer n ($1 \leq n \leq 100\,000$): the number of black ants in your terrarium.

Each of the next n lines contains the description of black ants. The i-th of them contain two integers, a_i, b_i ($0 \leq a_i, b_i \leq 100\,000$).

The next line contains one integer m ($1 \leq m \leq 100\,000$): the number of days in which you are going to buy new white ants.

Each of the next m lines contains the description of white ants in the order you buy them, such that the i-th of them contains two integers, x_i, y_i ($0 \leq x_i, y_i \leq 100\,000$).

Note that different ants can live at points with the same coordinates.

Output

Print m integers, such that the i-th of them equals the smallest number of ants that you should feed to avoid fights among the black ants $1, 2, \ldots, n$ and the white ants $1, 2, \ldots, i$.

Example

standard input	standard output
3 0 0 1 1 2 2 4 0 0 1 1 0 0 3 3	1 2 2 3