1987. Nested Segments

Time limit: 1.0 second
Memory limit: 64 MB

You are given n segments on a straight line. For each pair of segments it is known that they either have no common points or all points of one segment belong to the second segment.

Then m queries follow. Each query represents a point on the line. For each query, your task is to find the segment of the minimum length, to which this point belongs.

Input

The first line contains an integer n that is the number of segments ($1 \leq n \leq 10^5$). i'th of the next n lines contains integers a_i and b_i that are the coordinates of endpoints of the i'th segment ($1 \leq a_i < b_i \leq 10^9$). The segments are ordered by non-decreasing a_i, and when $a_i = a_j$ they are ordered by decreasing length. All segments are distinct. The next line contains an integer m that is the number of queries ($1 \leq m \leq 10^5$). j'th of the next m lines contains an integer c_j that is the coordinate of the point ($1 \leq c_j \leq 10^9$). The queries are ordered by non-decreasing c_j.

Output

For each query output the number of the corresponding segment on a single line. If the point does not belong to any segment, output "-1". The segments are numbered from 1 to n in order they are given in the input.

Sample

input	output
3 2 10 2 3 5 7 11 1 2 3 4 5 6 7 8 9 10 11	-1 2 2 1 3 3 3 1 1 1 -1

Problem Author: Mikhail Rubinchik, idea by Nikita Pervukhin
Problem Source: Open Ural FU Championship 2013