Problem E. Enclose Points

Input file:	*standard input*
Output file:	*standard output*
Time limit:	5 seconds
Memory limit:	256 mebibytes

There are N points and M segments on the xy-plane. Each segment connects two of these points and they don't intersect each other except at the endpoints. You are also given Q points as queries. Your task is to determine for each query point whether you can make a polygon that encloses the query point using some of the given segments. Note that the polygon should not necessarily be convex.

Input

The first line of the input contains three integers N ($2 \leq N \leq 10^5$), M ($1 \leq M \leq 10^5$), and Q ($1 \leq Q \leq 10^5$), which represent the number of points, the number of segments, and the number of queries, respectively. Each of the following N lines contains two integers x_i and y_i ($-10^5 \leq x_i, y_i \leq 10^5$), the coordinates of the i-th point. The points are guaranteed to be distinct, that is, $(x_i, y_i) \neq (x_j, y_j)$ when $i \neq j$. Each of the following M lines contains two integers a_i and b_i ($1 \leq a_i < b_i \leq N$), which indicate that the i-th segment connects the a_i-th point and the b_i-th point. Assume that those segments do not intersect each other except at the endpoints. Each of the following Q lines contains two integers q_{x_i} and q_{y_i} ($-10^5 \leq q_{x_i}, q_{y_i} \leq 10^5$), the coordinates of the i-th query point.

You can assume that, for any pair of query point and segment, the distance between them is at least 10^{-4}.

Output

The output should contain Q lines. Print "`Yes`" on the i-th line if there is a polygon that contains the i-th query point. Otherwise print "`No`" on the i-th line.

Examples

standard input	standard output
4 5 3 -10 -10 10 -10 10 10 -10 10 1 2 1 3 1 4 2 3 3 4 -20 0 1 0 20 0	No Yes No
8 8 5 -20 -20 20 -20 20 20 -20 20 -10 -10 10 -10 10 10 -10 10 1 2 1 4 2 3 3 4 5 6 5 8 6 7 7 8 -25 0 -15 0 0 0 15 0 25 0	No Yes Yes Yes No
8 8 5 -20 -10 -10 -10 -10 10 -20 10 10 -10 20 -10 20 10 10 10 1 2 2 3 3 4 1 4 5 6 6 7 7 8 5 8 -30 0 -15 0 0 0 15 0	No Yes No Yes No