

Is connected?

Given a directed graph which contains n vertices (indexed from 1 to n) and m edges. Given q queries and each queries contains two integers a and b . For each queries, determine if there is an edge from a to b .

Input

The first line contains three integers n, m, q ($n, m, q \leq 10^5$)

Each line in the next m lines contains two integers u and v **which is an edge from v to u .**

Each line in the next q lines contains two integers a and b ($1 \leq a, b \leq n$).

Output

For each query, output "Y" if there is a edge exists, otherwise output "N" (without the quote) in a single line.

Example

Input:

```
3 4 2
1 2
1 3
2 3
3 1
1 3
1 2
```

Output:

```
Y
N
```