# Martian War (martianwar)

Recent studies have shown that there is indeed intelligent life on Mars. The problem is that now humanity is at war with the Martians! Our best bet for survival is to strike first.

On Mars there is a complex railroad system of $N$ cities connected by $M$ bidirectional railroads. Earth has called upon the best bomber there is, mister RANDy, to strike down those railroads. Because he is a maniac, he only has one bomb left, so he can only strike down a single one of those railroads.

RANDy will only target strategic railroads. A railroad is strategic if and only if there exists a pair of cities $(x, y)$ such that you can reach $x$ from $y$ before the bombing, and after bombing the given railroad you can no longer reach $x$ from $y$.

The Martians are starting to pick up on our plan, so they are now constructing $Q$ additional railroads. After the construction of each new railroad, RANDy wants to know how many strategic railroads there are. RANDy now asks you to help him find the answer he seeks.

> ☞ Among the attachments of this task you may find a template file `martianwar.*` with a sample incomplete implementation.

## Input

The first line contains three integers $N$, $M$ and $Q$: the number of cities on the Martian surface, the number of railroads connecting those cities, and the number of additional railroads that the Martians will be constructing.

The next $M$ lines each contain two integers $x$ and $y$, meaning that there is a bidirectional railroad between cities $x$ and $y$.

The next $Q$ lines each contain two integers $x$ and $y$, meaning that the Martians are constructing a railroad from city $x$ to city $y$.

## Output

The output will contain $Q$ lines, where the $i$-th line will contain a single number $s$, representing the number of strategic railroads after the Martians have constructed the first $i$ new railroads.

## Constraints

- $2 \leq N \leq 250\,000$.
- $0 \leq M \leq 250\,000$.
- $1 \leq Q \leq 250\,000$.
- $1 \leq x, y \leq N$.
- The graph is not guaranteed to be connected.

## Scoring

Your program will be tested against several test cases grouped in subtasks. In order to obtain the score of a subtask, your program needs to correctly solve all of its test cases.

– **Subtask 1** (0 points) Examples.

– **Subtask 2** (30 points) $N, M, Q \leq 1000$.

– **Subtask 3** (40 points) $N, M, Q \leq 100\,000$.

– **Subtask 4** (30 points) No additional limitations.

## Examples

| input | output |
|---|---|
| 5 4 2<br>5 1<br>3 2<br>2 5<br>4 2<br>1 2<br>5 3 | 2<br>1 |
| 6 5 2<br>5 1<br>3 2<br>2 5<br>4 2<br>1 2<br>4 3<br>6 5 | 0<br>1 |

## Explanation

In the **first sample case** there are 5 nodes and initially 4 railroads. After adding the link 1–2, the only strategic links are 2–3 and 2–4. After adding the link 3–5, only the 2–4 link is strategic.

In the **second sample case** there are 6 nodes, and node 6 is not connected. After adding the 3–4 link there are no strategic links. After adding the link 5–6, there is only one strategic link, the 5–6 link.