# IOI Training Camp 2018 Final Test 3

## Two Good Walks

You are given a connected undirected graph $G = (V, E)$. $|V| = N$ and the nodes are numbered from 1 to $N$. $|E| = M$. In a walk, you start from a vertex and keep following some edges. In a Good walk, you do not repeat edges. That is, if you have gone through an edge before, you do not use it again. In particular, if $(u, v)$ is an edge which you had traversed from $u$ to $v$ earlier, you cannot traverse it again in a Good walk, even if you want to do it from $v$ to $u$.

You are given $Q$ queries of the form $(u, v)$. You need to find whether there are at most two Good walks between $u$ and $v$. If there are strictly more than two good walks, output -1. Otherwise, output the number of good walks between these two vertices.

### Input

The first line of the input contains three integers, $N$, $M$ and $Q$.
The i-th of the next $M$ lines contain two integers each: $u, v$, denoting that there is an edge between those two vertices.
The i-th of the next $Q$ lines contain two integers each: $u, v$, denoting a query.

### Output

You should print $Q$ lines, one for each query and each line containing a single integer.
If the number of Good walks is greater than two, print -1. Else, print the number of Good walks.

### General Constraints

Unless otherwise mentioned, the following constraints are met throughout all subtasks:

- $2 \leq N \leq 10^5$
- $1 \leq M \leq 2 * 10^5$
- $1 \leq Q \leq 10^5$
- The input graph will be connected.
- There are no self-loops or multi-edges in the input.
- The two vertices in a query will not be the same.

### Subtasks

**Subtask 1 (9 Points)**:

- $N = M$

**Subtask 2 (12 Points)**:

- If you remove any one edge from the input graph, the graph will still remain connected.

**Subtask 3 (79 Points)**:

- No further constraints.

**Sample Input 1**

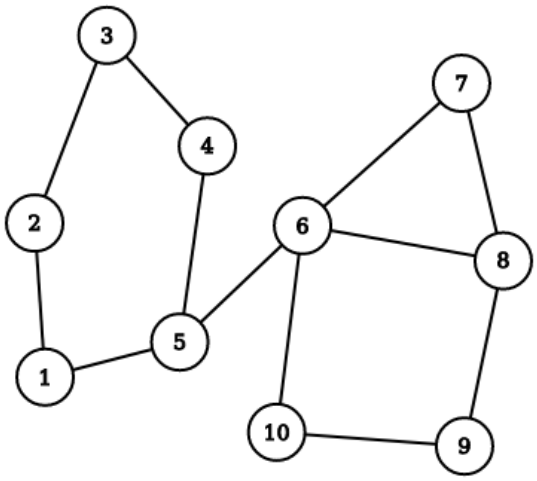
```
10 12 5
1 2
2 3
3 4
4 5
5 1
6 7
7 8
8 9
9 10
10 6
6 8
5 6
1 4
2 5
6 9
1 10
4 9
```

**Sample Output 1**

```
2
2
-1
-1
-1
```

**Explanation**

The given graph is:




The first query is (1, 4). There are only two good walks between 1 and 4: 1 - 2 - 3 - 4 and 1 - 5 - 4. This is not greater than 2, and hence the answer is 2.
The second query is (2, 5). There are only two good walks between 2 and 5: 2 - 3 - 4 - 5 and 2 - 1 - 5. This is not greater than 2, and hence the answer is 2.
The third query is (6, 9). There are five good walks between 6 and 9. 6 - 10 - 9, 6 - 7 - 8 - 9, 6 - 8 - 9, 6 - 7 - 8 - 6 - 10 - 9 and 6 - 8 - 7 - 6 -10 - 9 . This is greater than 2, and hence the answer is -1.

## Limits

Time: 3 seconds

Memory: 512 MB