C. Civilization

time limit per test: 1 second
memory limit per test: 256 megabytes

Andrew plays a game called "Civilization". Dima helps him.

The game has n cities and m bidirectional roads. The cities are numbered from 1 to n. Between any pair of cities there either is a single (unique) path, or there is no path at all. A path is such a sequence of distinct cities $v_1, v_2, ..., v_k$, that there is a road between any contiguous cities v_i and v_{i+1} $(1 \le i < k)$. The length of the described path equals to $(k - 1)$. We assume that two cities lie in the same region if and only if, there is a path connecting these two cities.

During the game events of two types take place:

1. Andrew asks Dima about the length of the longest path in the region where city x lies.
2. Andrew asks Dima to merge the region where city x lies with the region where city y lies. If the cities lie in the same region, then no merging is needed. Otherwise, you need to merge the regions as follows: choose a city from the first region, a city from the second region and connect them by a road so as to minimize the length of the longest path in the resulting region. If there are multiple ways to do so, you are allowed to choose any of them.

Dima finds it hard to execute Andrew's queries, so he asks you to help him. Help Dima.

Input

The first line contains three integers n, m, q $(1 \le n \le 3 \cdot 10^5; 0 \le m < n; 1 \le q \le 3 \cdot 10^5)$ — the number of cities, the number of the roads we already have and the number of queries, correspondingly.

Each of the following m lines contains two integers, a_i and b_i $(a_i \ne b_i; 1 \le a_i, b_i \le n)$. These numbers represent the road between cities a_i and b_i. There can be at most one road between two cities.

Each of the following q lines contains one of the two events in the following format:

- $1\ x_i$. It is the request Andrew gives to Dima to find the length of the maximum path in the region that contains city x_i $(1 \le x_i \le n)$.
- $2\ x_i\ y_i$. It is the request Andrew gives to Dima to merge the region that contains city x_i and the region that contains city y_i $(1 \le x_i, y_i \le n)$. Note, that x_i can be equal to y_i.

Output

For each event of the first type print the answer on a separate line.

Examples

input Copy

```
6 0 6
2 1 2
2 3 4
2 5 6
2 3 2
2 5 3
1 1
```

output Copy

```
4
```

Codeforces Round 260 (Div. 1)
Finished
Practice

→ Virtual participation

Virtual contest is a way to take part in past contest, as close as possible to participation on time. It is supported only ICPC mode for virtual contests. If you've seen these problems, a virtual contest is not for you - solve these problems in the archive. If you just want to solve some problem from a contest, a virtual contest is not for you - solve this problem in the archive. Never use someone else's code, read the tutorials or communicate with other person during a virtual contest.

Start virtual contest

→ Clone Contest to Mashup

You can clone this contest to a mashup.

Clone Contest

→ Submit?

Language: GNU G++20 13.2 (64 bit, win

Choose file: Choose File No file chosen

Submit

→ Last submissions

Submission	Time	Verdict
318373410	May/04/2025 22:32	Accepted
318372761	May/04/2025 22:22	Accepted
318372672	May/04/2025 22:21	Wrong answer on test 3

→ Problem tags

dfs and similar | dp | dsu | ternary search | trees | *2100

No tag edit access

→ Contest materials

- Codeforces Round #260
- Tutorial