Problem H: Escape the Maze

Time limit: 1s; Memory limit: 256 MB

Jeremy is attending an event from his company and he will play a game. Which has a maze and players need to escape. He's having a maze's map on his hand.

The maze has N rooms numbered from 1 to N. His initial position is room 1, the exit at room N.
There are M undirected ways, each way connects 2 rooms. Jeremy needs 1 unit of time to go through any of them (he doesn't need time to in and out the rooms).

A system will be in charge to add several ways in some points of time (in the start moment). Jeremy can go through these ways right after it is placed.

For example, the initial status of maze is described with the following map and a way from room 2 to room 5 will be put at the 3rd minute:
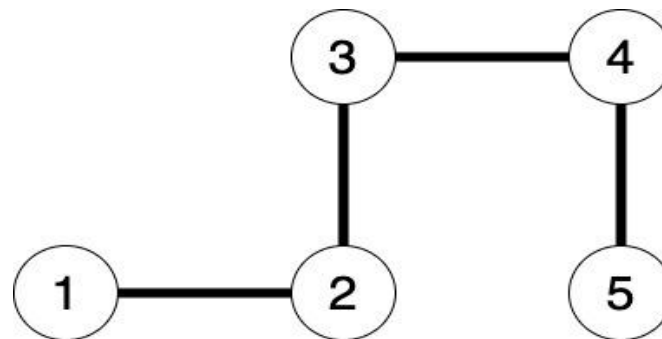
 An optimal schedule will be describe bellow:
- In the first minute, Jeremy moves from room 1 to room 2.
- In the second minute, Jeremy stays in room 2.
- At the beginning of the 3rd minute, the system puts the way from room 2 to room 5. Jeremy will immediately go through this way and reach room 5 - the destination.
 The answer is 3 minutes.

Determine the minimum number of minutes Jeremy needs to complete the game.

Input

The first line of the input contains three integers N, M ($2 \leq N \leq 10^5, 0 \leq M \leq 2 \times 10^5$) - the number of rooms, the number of ways and the number of signal rooms respectively.

The next M lines. The i-th line contains two integers u_i and v_i ($1 \leq u_i, v_i \leq N$) denoting that the i-th way connecting the u_i and v_i room.

The $(M + 2)$-th line contains a single number K ($0 \leq K \leq 2 \times 10^5$) - The number of edges will be added.

The next K lines. The i-th line contains three integers t_i, u_i and v_i ($1 \leq t_i \leq 10^9, 1 \leq u_i, v_i \leq N$) denoting that the i-th way added at time t_i which connects the u_i and v_i room.

Output

Only one integer - the shortest time. Output -1 if Jeremy can not complete the game.

Sample

Input	Output
5 4 1 2 3 4 2 3 5 4 1 3 2 5	3
4 3 3 1 1 2 2 3 1 10 1 4	10

Explanation:

The first test case is described in the above example.

In the second test case, Jeremy doesn't need to take any moving and go to room 4 right after the way was placed..