Shortest Path

Given a graph and two nodes A and B, determine the length of the shortest path between A and B.

Input

The first line of the input contains the number N, the number of nodes and the number M, the number of edges. Each of the following M lines, describe one of the edges. The last line contains two numbers A and B.

Output

Output a single number, the distance between nodes A and B. If A and B are not connected, print -1.

Limits

There are 4 test groups, each worth 25 points.

- In group 1, it holds $1 \leq N \leq 10$, $0 \leq M \leq 10$.
- In group 2, it holds $1 \leq N \leq 100$, $0 \leq M \leq 100$.
- In group 3, it holds $1 \leq N \leq 1\,000$, $0 \leq M \leq 1\,000$.
- In group 4, it holds $1 \leq N \leq 100\,000$, $0 \leq M \leq 10\,000$.

Examples

Input	Output
5 5 0 1 1 2 2 3 3 4 1 4 0 3	3