Problem E
Shortest Paths

Time limit: 2 seconds
Memory limit: 2048 megabytes

Problem Description

You are given an undirected graph containing n vertices and m undirected edges, where the vertices are numbered from 1 to n. Every edge in this graph is associated with a weight w_i.

A shortest path from vertex u to vertex v is a path between u and v where no other paths are shorter than it. It is important to note that there can be multiple shortest paths within a graph. For instance, consider a three-node undirected graph with weighted edges: $(1, 2)$ with a weight of 1, $(2, 3)$ with a weight of 1, and $(1, 3)$ with a weight of 2. In this case, there are two shortest paths from vertex 1 to vertex 3: $1 \to 2 \to 3$ and $1 \to 3$.

This problem comprises two types of questions falling into the following categories:

1. Determine the length of the shortest path from vertex 1 to vertex 2.
2. Calculate the count of shortest paths from vertex 1 to vertex 2. Output the answer modulo $10^9 + 7$.

Note that the edges weights are always positive in this problem.

Input Format

The first line of the input contains three integers n, m and *type*. *type* denotes the type of questions: $type = 1$ denotes the first type while $type = 2$ denotes the second type. Each of the following m lines contains three integers u_i, v_i and w_i, where the i-th line denotes that there is an undirected edge from vertex u_i to v_i in the graph.

Output Format

For $type = 1$, output the length of the shortest path from vertex 1 to vertex 2. For $type = 2$, output the count of shortest paths from vertex 1 to vertex 2 modulo $10^9 + 7$. **In any type of the question**, if vertex 2 is unreachable from vertex 1, output `-1` instead.

Technical Specification

- $2 \leq n \leq 2 \times 10^5$
- $0 \leq m \leq 2 \times 10^5$
- $1 \leq type \leq 2$
- $1 \leq u_i, v_i \leq n$ and $u_i \neq v_i$ for $i = 1, 2, \ldots, m$
- $1 \leq w_i \leq 10^8$ for $i = 1, 2, \ldots, m$

Scoring

1. (4 points) $type = 1$, $1 \leq n \leq 1000$ and $0 \leq m \leq 1000$.
2. (5 points) $type = 1$.
3. (4 points) $type = 2$, $1 \leq n \leq 1000$ and $0 \leq m \leq 1000$.
4. (2 points) $type = 2$.

Sample Input 1

```
7 8 1
1 6 1
6 3 2
1 4 2
4 3 1
3 5 3
5 2 4
3 7 1
7 2 6
```

Sample Output 1

```
10
```

Sample Input 2

```
7 8 2
1 6 1
6 3 2
1 4 2
4 3 1
3 5 3
5 2 4
3 7 1
7 2 6
```

Sample Output 2

```
4
```

Sample Input 3

```
156156 0 2
```

Sample Output 3

```
-1
```

Sample Input 4

```
4 6 1
1 3 5
3 2 4
3 2 5
2 4 7
1 2 100
3 4 10
```

Sample Output 4

```
9
```