# CCO '12 P2 - The Hungary Games

**Time limit:** 1.0s **Memory limit:** 1G

#### Canadian Computing Competition: 2012 Stage 2, Day 1, Problem 2

Welcome to the Hungary Games! The streets of Budapest form a twisted network of one-way streets. You have been forced to join a race as part of a "Reality TV" show where you race through these streets, starting at the *Szechenyi* thermal bath (*s* for short) and ending at the Tomb of *Gul Baba* (*t* for short).

Naturally, you want to complete the race as quickly as possible, because you will get more promotional contracts the better you perform. However, there is a catch: any person who is smart enough to take a shortest s-t route will be thrown into the Palvolgyi cave system and kept as a national treasure. You would like to avoid this fate, but still be as fast as possible. Write a program that computes a strictly-second-shortest s-t route.

Sometimes the strictly second-shortest route visits some nodes more than once; see Sample Input 2 for an example.

#### **Input Specification**

The first line will have the format N M, where N is the number of nodes in Budapest and M is the number of edges. The nodes are  $1,2,\ldots,N$ ; node 1 represents s; node N represents t. Then there are M lines of the form A B L, indicating a one-way street from A to B of length L. You can assume that  $A \neq B$  on these lines, and that the ordered pairs (A,B) are distinct.

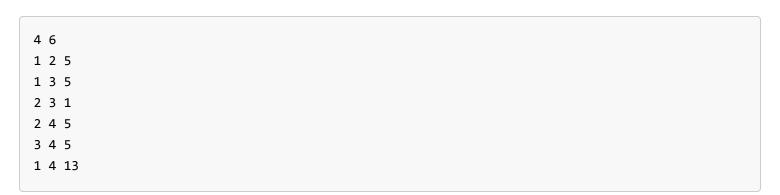
#### **Output Specification**

Output the length of a strictly-second-shortest route from s to t. If there are less than two possible lengths for routes from s to t, output -1.

#### Limits

Every length L will be a positive integer between 1 and  $10\,000$ . For 50% of the test cases, we will have  $2 \le N \le 40$  and  $0 \le M \le 1000$ . All test cases will have  $2 \le N \le 20\,000$  and  $0 \le M \le 100\,000$ .

### Sample Input 1



## **Output for Sample Input 1**

11

## **Explanation for Sample Output 1**

There are two shortest routes of length 10 (1 o 2 o 4, 1 o 3 o 4) and the strictly-second-shortest route is 1 o 2 o 3 o 4 with length 11.

## **Sample Input 2**

2 2

1 2 1

2 1 1

## **Output for Sample Input 2**

3

## **Explanation for Sample Output 2**

The shortest route is  $1 \to 2$  of length 1, and the strictly-second route is  $1 \to 2 \to 1 \to 2$  of length 3.