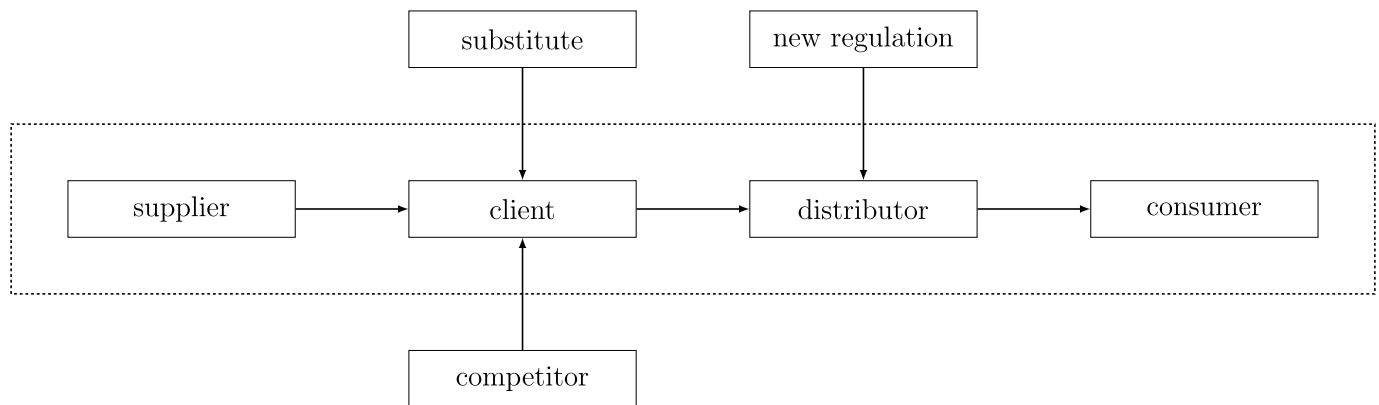


# UTS Open '15 #5 - Distribution Channel



*Distribution channels are often very confusing.*

After acquiring enough funding and finally finishing the development for her product, Mrs. Evans wants to release it to the local market. However, the Canadian Competition Act prevents her from choosing the cheapest way to connect her stores.

In order to spend the least amount of money and abide to the Canadian Competition Act, she must find the **second cheapest way** to connect her stores.

Mrs. Evans hopes to open  $N$  ( $1 \leq N \leq 50\,000$ ) stores and there are  $M$  ( $1 \leq M \leq 100\,000$ ) possible connections between her stores. The  $i^{\text{th}}$  connection connects station  $a_i$  to station  $b_i$  with a cost of  $c_i$ . She can only choose  $N - 1$  connections.

If it is impossible for her to do this, output  $-1$ .

**N.B. The time limit is rather strict for certain slow languages like Python and Java. C++ is recommended for this question.**

## Partial Marks

For 25% of the marks, you may assume that  $N \leq 5\,000$ ,  $M \leq 10\,000$ .

For 50% of the marks, you may assume that  $N \leq 10\,000$ ,  $M \leq 50\,000$ .

## Input Format

The first line will contain  $N$ , and  $M$ . The  $i^{\text{th}}$  of the next  $M$  lines will contain  $a_i$ ,  $b_i$ , and  $c_i$ , where ( $1 \leq a_i, b_i \leq N$ ,  $a_i \neq b_i$ ,  $1 \leq c_i \leq 10\,000$ ).

## Output Format

A single line containing the second cheapest way to connect her stores.

## Sample Input 1

```
3 3
1 2 1
2 3 2
3 1 3
```

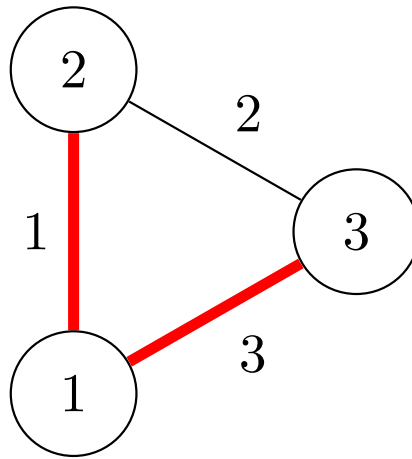
## Sample Output 1

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4

## Explanation

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Mrs. Evans chooses the following connections for a total cost of 4:

- $1 \rightarrow 2$  with cost 1
- $1 \rightarrow 3$  with cost 3

## Sample Input 2

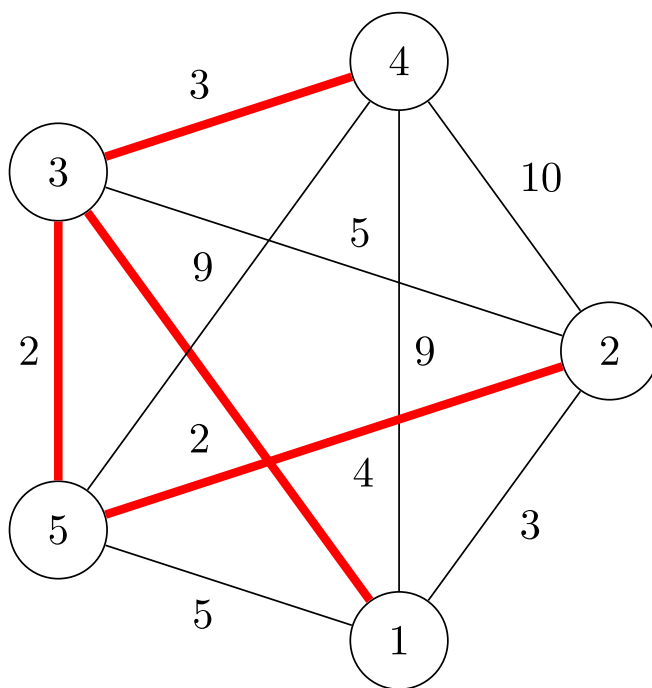
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5 10  
2 3 5  
1 5 5  
1 2 3  
1 3 2  
5 3 2  
4 3 3  
4 5 9  
4 2 10  
5 2 4  
4 1 9

## Sample Output 2

11

## Explanation



Mrs. Evans chooses the following connections for a total cost of 11:

- $1 \rightarrow 3$  with cost 2
- $3 \rightarrow 5$  with cost 2
- $3 \rightarrow 4$  with cost 3
- $2 \rightarrow 5$  with cost 4