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## Commuter Pass

JOI-kun is living in a city with  $N$  stations. The stations are numbered from 1 to  $N$ . There are  $M$  railways numbered from 1 to  $M$ . The railway  $i$  ( $1 \leq i \leq M$ ) connects the station  $A_i$  and the station  $B_i$  in both directions, and the fare is  $C_i$  yen.

JOI-kun is living near the station  $S$ , and goes to the IOI high school near the station  $T$ . He is planning to buy a commuter pass connecting these two stations. When he buys a commuter pass, he needs to choose a route between the station  $S$  and the station  $T$  with minimum cost. Using this commuter pass, he can take any railways contained in a chosen route in any directions without additional costs.

JOI-kun often goes to bookstores near the station  $U$  and the station  $V$ . Therefore, he wants to buy a commuter pass so that the cost from the station  $U$  to the station  $V$  is minimized.

When he moves from the station  $U$  to the station  $V$ , he first choose a route from the station  $U$  to the station  $V$ . Then the fare he has to pay is

- 0 yen if the railway  $i$  is contained in a route chosen when he buys a commuter pass, or
- $C_i$  yen if the railway  $i$  is not contained in a route chosen when he buys a commuter pass.

The sum of the above fare is the cost from the station  $U$  to the station  $V$ .

He wants to know the minimum cost from the station  $U$  to the station  $V$  if he chooses a route appropriately when he buys a commuter pass.

## Task

Write a program which calculates the minimum cost from the station  $U$  to the station  $V$  if he chooses a route appropriately when he buys a commuter pass.

## Input

Read the following data from the standard input.

- The first line of input contains two space separated integers  $N, M$ . This means the city JOI-kun lives in has  $N$  stations and  $M$  railways.
- The second line contains two space separated integers  $S, T$ . This means JOI-kun is planning to buy a commuter pass from the station  $S$  to the station  $T$ .
- The third line contains two space separated integers  $U, V$ . This means JOI-kun wants to minimize the cost from the station  $U$  to the station  $V$ .
- The  $i$ -th line ( $1 \leq i \leq M$ ) of the following  $M$  lines contains three space separated integers  $A_i, B_i, C_i$ . The railway  $i$  connects the station  $A_i$  and the station  $B_i$  in both directions, and the fare is  $C_i$  yen.



## Output

Write one line to the standard output. The output should contain the minimum cost from the station  $U$  to the station  $V$  if he chooses a route appropriately when he buys a commuter pass.

## Constraints

All input data satisfy the following conditions.

- $2 \leq N \leq 100\,000$ .
- $1 \leq M \leq 200\,000$ .
- $1 \leq S \leq N$ .
- $1 \leq T \leq N$ .
- $1 \leq U \leq N$ .
- $1 \leq V \leq N$ .
- $S \neq T$ .
- $U \neq V$ .
- $S \neq U$  or  $T \neq V$ .
- JOI-kun can move from any stations to any other stations taking railways.
- $1 \leq A_i < B_i \leq N$  ( $1 \leq i \leq M$ ).
- For every  $1 \leq i < j \leq M$ , either  $A_i \neq A_j$  or  $B_i \neq B_j$ .
- $1 \leq C_i \leq 1\,000\,000\,000$  ( $1 \leq i \leq M$ ).

## Subtask

### Subtask 1 [16 points]

- $S = U$ .

### Subtask 2 [15 points]

- There is a unique route with minimum cost from the station  $S$  to the station  $T$ .



### Subtask 3 [24 points]

- $N \leq 300$ .

### Subtask 4 [45 points]

- There are no additional constraints.

### Sample Input and Output

Sample Input 1	Sample Output 1
6 6	2
1 6	
1 4	
1 2 1	
2 3 1	
3 5 1	
2 4 3	
4 5 2	
5 6 1	

In this sample input, there is only one route JOI-kun can choose when he buys a commuter pass: Station 1 → Station 2 → Station 3 → Station 5 → Station 6.

In order to minimize the cost from the station 1 to the station 4, he chooses the following route: Station 1 → Station 2 → Station 3 → Station 5 → Station 4. When he chooses this route, the fare he has to pay is

- 2 yen for the railway 5 connecting the station 4 and the station 5, and
- 0 yen for other railways.

Hence the total cost is 2 yen.



Sample Input 2	Sample Output 2
6 5	3000000000
1 2	
3 6	
1 2 1000000000	
2 3 1000000000	
3 4 1000000000	
4 5 1000000000	
5 6 1000000000	

In this sample input, JOI-kun does not use the commuter pass when he moves from the station 3 to the station 6.

Sample Input 3	Sample Output 3
8 8	15
5 7	
6 8	
1 2 2	
2 3 3	
3 4 4	
1 4 1	
1 5 5	
2 6 6	
3 7 7	
4 8 8	

Sample Input 4	Sample Output 4
5 5	0
1 5	
2 3	
1 2 1	
2 3 10	
2 4 10	
3 5 10	
4 5 10	



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Sample Input 5	Sample Output 5
10 15	19
6 8	
7 9	
2 7 12	
8 10 17	
1 3 1	
3 8 14	
5 7 15	
2 3 7	
1 10 14	
3 6 12	
1 5 10	
8 9 1	
2 9 7	
1 4 1	
1 8 1	
2 4 7	
5 6 16	