
DSA Lab 11 Set 1 | Traffic

Input file: `standard input`
Output file: `standard output`
Time limit: 3 seconds
Memory limit: 1024 megabytes

The State Roadway Authority plans to expand the roadways to add more lanes to the current roads connecting different cities in the state. The cost of the expansion for every roadway may be different. However, as this is a costly operation, in order to minimise the total cost, the authority is considering to expand a limited number of roadways such that the total expansion cost is minimised while still connecting all cities in the state. However, there is one particular road which is the busiest road and the authority definitely plans to expand this road. With this constraint, the network needs to be built so as to include this particular road in the network, while still satisfying the requirement of minimising the cost and connectivity among cities. Your task is to find the network satisfying these requirements and return the total cost of building this network.

Input

The first line contains two space-separated integers C R , indicating the number of cities numbered 1 to C and R roads connecting these cities, directly or indirectly.

The next R lines contain three integers(space-separated) in each line c_1 c_2 e , indicating a road between cities c_1 and c_2 with cost of expansion e (in million INR)

The last line contains two integers a and b which denote the busiest road (a, b) of the network.

Constraints:

$$1 \leq R \leq \frac{C*(C-1)}{2}$$

$$1 \leq c_1, c_2, a, b \leq C$$

$$1 \leq e \leq 1000$$

$$\text{Basic: } 2 \leq C \leq 20$$

$$\text{Advanced: } 2 \leq C \leq 500$$

Note 1: If an edge (x, y) is in the list, there will not be an edge (y, x) in the list as that is implied.

Note 2: The edge (a, b) is guaranteed to be in the list of edges specified.

Note 3: There are no self-edges (x, x) and no edges are repeated in the list.

Output

The integer value denoting the total cost (in million INR) to build the required road network.

Examples

standard input	standard output
5 5 1 2 3 1 3 2 2 4 1 3 4 5 3 5 4 3 4	12
6 7 1 2 1 1 3 3 1 6 1 2 4 2 3 4 2 3 6 8 4 5 3 3 4	9

Note

Explanation 1: With the road (3,4) required in the network, the suitable network would be $\{(1,3), (2,4), (3,4), (3,5)\}$ with the total cost of 12 units.

Explanation 2: With the road (3,4) required in the network, the suitable network would be $\{(1,2), (2,4), (1,6), (3,4), (4,5)\}$ with the total cost of 9 units.