

# Jeanie's Route



Byteland has  $N$  cities (numbered from  $1$  to  $N$ ) and  $N - 1$  bidirectional roads. It is guaranteed that there is a route from any city to any other city.

Jeanie is a postal worker who must deliver  $K$  letters to various cities in Byteland. She can start and end her delivery route in any city. Given the destination cities for  $K$  letters and the definition of each road in Byteland, find and print the minimum distance Jeanie must travel to deliver all  $K$  letters.

**Note:** The letters can be delivered in any order.

## Input Format

The first line contains two space-separated integers,  $N$  (the number of cities) and  $K$  (the number of letters), respectively.

The second line contains  $K$  space-separated integers describing the delivery city for each letter.

Each line  $i$  of the  $N - 1$  subsequent lines contains  $3$  space-separated integers describing a road as  $u_i v_i d_i$ , where  $d_i$  is the distance (length) of the bidirectional road between cities  $u_i$  and  $v_i$ .

## Constraints

- $2 \leq K \leq N \leq 10^5$
- $1 \leq d_i \leq 10^3$
- *Byteland is a weighted undirected acyclic graph.*

## Output Format

Print the minimum distance Jeanie must travel to deliver all  $K$  letters.

## Sample Input

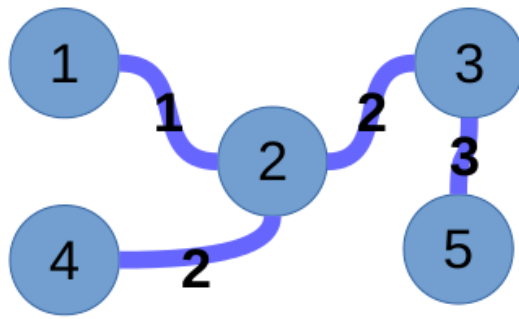
```
5 3
1 3 4
1 2 1
2 3 2
2 4 2
3 5 3
```

## Sample Output

```
6
```

## Explanation

Jeanie has  $3$  letters she must deliver to cities  $1$ ,  $3$ , and  $4$  in the following map of Byteland:



One of Jeanie's optimal routes is  $3 \xrightarrow{2} 2 \xrightarrow{1} 1 \xrightarrow{1} 2 \xrightarrow{2} 4$ , for a total distanced traveled of  $2 + 1 + 1 + 2 = 6$ . Thus, we print **6** on a new line.