Ice-cream Obsession 2

Time Limit	Memory Limit
1 second	128 MB

Statement

After Tommy tells you in extensive detail how and why he likes ice cream so much, you have been thoroughly convinced to sign up to as many ice-cream tasting events in your city as possible.

Your country has N cities (numbered 1 to N) and M bidirectional roads between them of varying length. Over the course of the next P days, there will be an ice cream tasting event on each day. The ith such event is located at city a_i. Note that $M \leq N + 10$.

You plan to be at every single ice cream tasting event, by starting in city a_1, travelling to city a_2, and so on, until you end up at city a_P. Since this is quite a far distance, you want to determine the minimum total distance you need to travel.

Input

- The first line of input contains the integers N, M and P.
- The next M lines contain three integers: u, v, w, meaning there is a bidirectional road connecting cities u and v of length w.
- The next line contains P integers: $a_1 \ \ldots \ a_P$

Output

Output a single integer; the shortest total path length. As this number can be quite large, make sure you store your answer as a 64-bit integer.

Sample Input 1

```
5 5 7
1 2 1
1 3 2
2 4 2
3 4 3
4 5 1
3 1 4 1 5 4 3
```

Sample Output 1

```
16
```

Constraints

- $1 \leq N, M \leq 10^5$
- $1 \leq P \leq 10^5$
- $1 \leq w \leq 10^4$
- $M \leq N + 10$
- $1 \leq a_i \leq N$
- The graph has no self-edges.
- There exists at least one path between any two cities.

Subtasks

Number	Points	Other constraints
1	15	$N, P \leq 1000$
2	25	$M = N - 1$. That is, the cities form a tree.
3	25	$M \leq N$
4	35	No other constraints