

Free tour II

After the success of 2nd anniversary (take a look at problem **FTOUR** for more details), this 3rd year, Travel Agent SPOJ goes on with another discount tour.

The tour will be held on *ICPC* island, a miraculous one on the Pacific Ocean. We list **N** places (indexed from 1 to **N**) where the visitors can have a trip. Each road connecting them has an *interest value*, and this value can be *negative* (if there is nothing interesting to view there). Simply, these **N** places along with the roads connecting them form a *tree structure*. We will choose *two places* as the departure and destination of the tour.

Since September is the festival season of local inhabitants, some places are extremely crowded (we call them *crowded places*). Therefore, the organizer of the excursion hopes the tour will visit *at most K crowded places* (too tiring to visit many of them) and of course, the *total number of interesting value* should be maximum.

Briefly, you are given a map of **N** places, an integer **K**, and **M** id numbers of *crowded place*. Please help us to find the optimal tour. Note that we can visit each place only *once* (or our customers easily feel bored), also the departure and destination places *don't need to be different*.

Input

There is exactly one case. First one line, containing 3 integers **N K M**, with $1 \leq N \leq 200000$, $0 \leq K \leq M$, $0 \leq M \leq N$.

Next **M** lines, each line includes an id number of a *crowded place*.

The last (**N** - 1) lines describe (**N** - 1) two-way roads connected **N** places, form **a b i**, with **a, b** is the id of 2 places, and **i** is its *interest value* ($-10000 \leq i \leq 10000$).

Output

Only one number, the maximum total interest value we can obtain.

Example

Input:

```
8 2 3
3
5
7
1 3 1
2 3 10
3 4 -2
4 5 -1
5 7 6
5 6 5
4 8 3
```

Output:

```
12
```

Explanation

We choose 2 and 6 as the departure and destination place, so the tour will be 2 -> 3 -> 4 -> 5 -> 6, total interest value = $10 + (-2) + (-1) + 5 = 12$

* **Added some unofficial cases**