Sushi Restaurant Reviews

Kazu is a blogger / computer scientist, specializing in the critique of Japanese restaurants. This month, he wants to visit all the Japanese restaurants in the Vancouver area, to see which one offers the best sushi.

There are **N** Japanese restaurants in Vancouver, numbered **0** to **N - 1**. However, only **M** of them offer "real" sushi. Kazu can choose to start at any restaurant. There are **N - 1** roads in Vancouver, each connecting exactly two restaurants. It is possible to reach every restaurant from any restaurant using these roads. It takes Kazu exactly 1 minute to travel along any road.

In computer science, a road network with this structure is called a **tree/graph.** One property that is true for ***all trees*** is that there is exactly one path that does not repeat any roads between any two points in the tree. (no multiple edges / cycles)

What is the minimal length of time that Kazu needs to spend on travelling on roads to visit all the real sushi restaurants?
(Make sure your program passes all test cases.)

Input Specification

- The first line of input contains 2 integers, N and M.
  (2 ≤ M ≤ N ≤ 100,000)
- The second line of input contains M distinct integers indicating the Japanese restaurants which offer real sushi.
- The next N - 1 lines contain 2 integers each. The i^{th} line contains a_i and b_i $(0 \leq a_i, b_i \leq N - 1)$, representing a path between the two restaurants numbered a_i and b_i.

Output Specification

- Your program should output one line, containing one integer - the minimum amount of time Kazu needs to spend travelling on roads in order to visit all Japanese restaurants that offer real sushi, in minutes.

Sample Input 1

```
8 2
5 2
0 1
0 2
2 3
4 3
6 1
1 5
7 3
```

Sample Output 1

```
3
```

Explanation for output1

The path between 5 and 2 goes through 5 -> 1 -> 0 -> 2, which uses 3 roads.

Sample Input 2

```
8 5
0 6 4 3 7
0 1
0 2
2 3
4 3
6 1
1 5
7 3
```

Sample Output 2

```
7
```

Explanation for output2

If Kazu begins at restaurant 6, he will only need to use 7 roads.
One possible path that he can take is:
6 -> 1 -> 0 -> 2 -> 3 -> 7 -> 3 -> 4
Notice that he doesn’t need to visit restaurant 5, since it is not a Japanese restaurant that offers real sushi.