

BEACONS

After getting lost this morning, you have decided to fix the navigation problem plaguing your city. Your city consists of N intersections (numbered from 1 to N) connected by $N - 1$ bidirectional roads (numbered from 1 to $N - 1$). The i th road connects intersections u_i and v_i , and it is possible to travel between any pair of intersections using some sequence of roads.

There are K beacons in the city (numbered from 1 to K), where the i th beacon is at intersection b_i . When you find yourself lost at an intersection, you ping each beacon to determine your *distance* from that beacon, which is defined as the number of roads on the shortest path between you and that beacon. Using this information, you hope to determine your location. Unfortunately, depending on the placement of the beacons, it may not be possible to determine which intersection you are at!

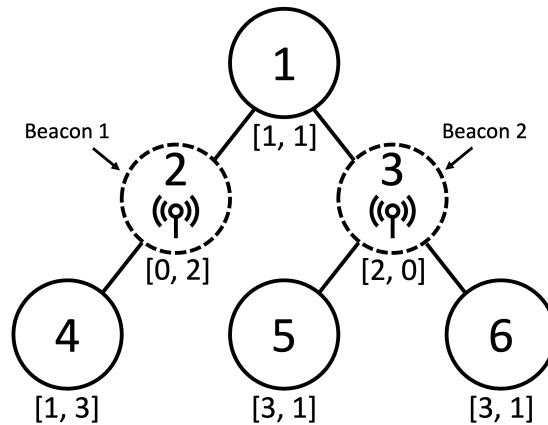


Figure 1: An example city with $N = 6$ intersections and $K = 2$ beacons. The distance from each beacon is written below the intersections. Using the beacons, you cannot determine the difference between intersections 5 and 6. You can fix this by building one more beacon at intersection 5.

You cannot move existing beacons, but you can build more. What is the minimum number of extra beacons you must build so that it is always possible to determine your location?

Subtasks and Constraints

For all subtasks:

- $2 \leq N \leq 200\,000$.
- $0 \leq K \leq N$.
- $1 \leq b_i \leq N$ for all i .
- $b_i \neq b_j$ for all $i \neq j$.
- $1 \leq u_i < v_i \leq N$ for all i .
- It is possible to travel between any pair of intersections using the roads.

Additional constraints for each subtask are given below.

Subtask	Points	Additional constraints
1	5	$K = 0$ and your city is a line. That is, $u_i = i$ and $v_i = i + 1$ for all roads.
2	9	Your city is a line. That is, $u_i = i$ and $v_i = i + 1$ for all roads.
3	19	$N \leq 100$ and the answer is 0 or 1.
4	24	The answer is 0 or 1.
5	22	$K = 0$.
6	21	No additional constraints.

Input

- The first line of input contains the integers N and K .
- The second line of input contains the K integers b_1, \dots, b_K .
- The next $N - 1$ lines of input describe roads. The i th line contains two integers u_i and v_i .

Output

Output a single integer: the minimum number of extra beacons you must build so that it is always possible to determine your location.

Sample Input 1

```
6 2
2 3
1 2
1 3
2 4
3 5
3 6
```

Sample Output 1

```
1
```

Sample Input 2

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

Sample Output 2

```
2
```

Sample Input 3

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

Sample Output 3

```
0
```

Explanation

The first sample case corresponds to the example on the first page.

In the second sample case, there are initially no beacons. You can build 2 beacons, as shown in Figure 2.

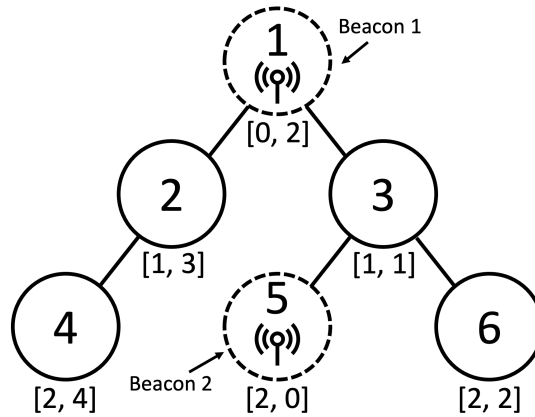


Figure 2: A solution to Sample Input 2.

In the third sample case, no new beacons are needed.

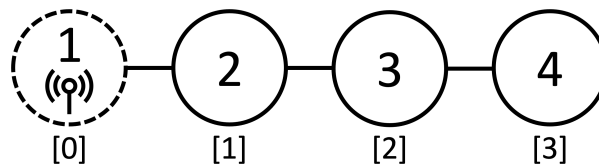


Figure 3: Sample Input 3.