

DMOPC '17 Contest 3 P6 - Mimi and Scarf

Mimi knitted a scarf for herself. This scarf can be seen as N patches of wool knitted together. Unfortunately, something went very wrong and the scarf ended up as a tree instead of a simple path. The i^{th} patch is coloured with colour c_i , where the colours are numbered. Mimi doesn't want to have to knit another scarf, so she plans on choosing a path in this tree. Particularly, she wants the longest possible scarf.

Additionally, Mimi has poor taste: she abhors stripes and does not want anything resembling a striped pattern in her scarf. As such, the path which she selects cannot contain any subpath P of length larger or equal to a given value K where $c_{P_1} = c_{P_3} = c_{P_5} = \dots$ and $c_{P_2} = c_{P_4} = c_{P_6} = \dots$ where P_i is the i^{th} node in subpath P from one of P 's endpoints. Note that in this problem, the length of a subpath/path is the number of nodes it contains.

Find the length of the longest possible scarf Mimi can get given this constraint.

Constraints

For all subtasks, $1 \leq c_i \leq N$.

Subtask 1 [15%]

$$2 \leq N \leq 1\,000$$
$$2 \leq K \leq N$$

Subtask 2 [15%]

$$2 \leq N \leq 200\,000$$
$$K = N$$

Subtask 3 [70%]

$$2 \leq N \leq 200\,000$$
$$2 \leq K \leq N$$

Input Specification

The first line of input will contain 2 space-separated integers: N and K .

The next line of input will contain N space-separated integers: c_1, c_2, \dots, c_N , indicating that the colour of patch i is c_i .

The next $N - 1$ lines of input will each contain 2 integers, a and b , indicating that there is an edge between a and b ($1 \leq a, b \leq N$).

Output Specification

A single integer, the length of the longest possible path which satisfies the constraint. In this problem, the length of a path is the number of nodes it contains.

Sample Input 1

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

Sample Output 1

```
4
```

Explanation for Sample 1

The best scarf Mimi can get is the one with patches 7, 1, 2, 5 (there are three other valid paths of the same length other than this path). Note that even though the path from patch 6 to patch 7 has a longer length, it is invalid since it contains the subpath from 1 to 3.

Sample Input 2

```
12 4
1 1 1 1 2 2 3 1 3 3 1 2
1 5
5 2
5 3
6 1
6 4
4 10
10 11
11 12
4 7
9 8
7 8
```

Sample Output 2

