

Competitive Programming SS24

Submit until end of contest



Problem: fall (2.0 second timelimit)

Note: This is a problem that is harder to solve than usual. Solve the other problems first before spending too much time on this one.

Fall is approaching and the leaves on the trees¹ are shining in many different bright colors. It's a beautiful day and you decide to go outside and collect leaves in your favorite colors. To do so, you climb up the big old oak in your backyard and want to gather all leaves which hang on the branch you are currently sitting on. You now wonder how many leaves of the same color you will find on your branch.

Input Of course, you model the real tree as a tree graph with node 1 being the trunk of the tree.

The first line consists of two number n, q ($1 \leq n, q \leq 10^5$) the number of nodes on the tree and the number of queries. The next $n - 1$ lines contain two number u, v ($1 \leq u, v \leq n$), the edges in the tree.

Next up, there are n lines, where the i -th line contains a string c , encoding the color of the singular leaf hanging on node i . As a computer science student, you of course encode colors as hexadecimal RGB-values.

Lastly, there are q queries. Each query consists of a single line with a number v ($1 \leq v \leq n$) and a string c , the branch you are sitting on and the color of leaves you want to gather.

Output For each query, output the number of nodes with the respective color which are on node v or branch of it, i.e. the nodes in the subtree of v .

Sample input

```
4 3
1 2
2 3
2 4
#FF0000
#424242
#424242
#00FF00
1 #424242
2 #FF0000
2 #00FF00
```

Sample output

```
2
0
1
```

¹the real trees, not your second favorite graph class

```
6 5
1 2
1 3
3 4
2 5
5 6
#AAAAAA
#BBBBBB
#CCCCCC
#AAAAAA
#AAAAAA
#BBBBBB
1 #AAAAAA
1 #BBBBBB
2 #CCCCCC
3 #DDDDDD
3 #AAAAAA
```

```
3
2
0
0
1
```