## Coloring Tree

You are given a tree with $\mathbf{N}$ nodes with every node being colored. A color is represented by an integer ranging from 1 to $10^{9}$. Can you find the number of distinct colors available in a subtree rooted at the node s?

## Input Format

The first line contains three space separated integers representing the number of nodes in the tree ( $\mathbf{N}$ ), number of queries to answer ( $\mathbf{M}$ ) and the root of the tree.

In each of the next N -1 lines, there are two space separated integers(a b) representing an edge from node a to Node b and vice-versa.
$N$ lines follow: $N+i^{\text {th }}$ line contains the color of the $i^{\text {th }}$ node.

M lines follow: Each line containg a single integer s.

## Output Format

Output exactly $M$ lines, each line containing the output of the $i_{\text {th }}$ query.

## Constraints

$0<=M<=10^{5}$
$1<=\mathrm{N}<=10^{5}$
$1<=$ root <= N
$1<=$ color of the Node $<=10^{9}$

## Example

## Sample Input

```
2 1
```

2
24
23
10
20
20
30
1
2

## Sample Output

3
2

## Explanation

Query 1-Subtree rooted at 1 is the entire tree and colors used are 10202030 , so the answer is 3(10,20 and 30)

Query 2-Subtree rooted at 2 contains color 2020 30, so the answer is 2(20 and 30)

