7402 Colorful Tree

As we all know, frogs live on trees and have different colors.

N frogs are living on a tree. The tree consists of N nodes with node 1 as the root, each frog occupies a node.

Frogs have different colors, and can change colors as they like. On each day, all the frogs living on a certain sub-tree will change its color. The root of the sub-tree, and the color they change to, is given to the frog king.

As the frog king, sometimes he may wonder, how many different colors of frog are there in a certain sub-tree? It turns to you to solve the problem for the king.

Input

First line contains an integer T, which indicates the number of test cases.

Every test case begins with an integers N, which is the numbers of nodes in the tree.

The following $N-1$ lines describe the edges of the tree, and every line is formatted as 'u v', which indicates there is a edge between node u and node v.

The next line contains N intergers, c_1, c_2, $\cdots$, c_N, and c_i is the initial color of the frog living at node i.

Then a number M follows, which indicates the number of queries, and following M lines describe the quries as format bellow.

operation	format	description
modify color	`0` u c	change the color of all frogs in the sub-tree rooted at node u to c
query	`1` u	query how many **different** colors of frog are there in the sub-tree rooted at node u

Restrictions:

- $1 \leq T \leq 100$.
- For 85% data, $1 \leq N, M \leq 1000$.
- for 100% data, $1 \leq N, M \leq 10^5$.
- for every node, $1 \leq c_i \leq N$.
- for every edge, $1 \leq u, v \leq N$.
- for every query, $1 \leq u, c \leq N$.

Output

For every test case, you should output '`Case #`x`:`' first, where x indicates the case number and counts from 1.

Then for each query operation, output the number of different colors.

Sample Input

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

Sample Output

```
Case #1:
5
4
2
1
```