제 6 회
대학생
프로그래밍
경시대회

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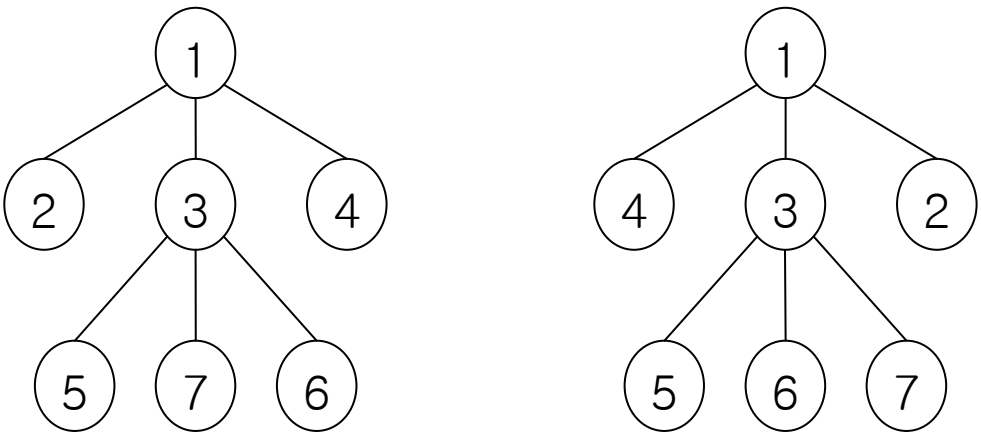
문제 H
Tree Labeling

We consider a tree $T=(V,E)$ where V is a set of vertices and E is a set of edges. A vertex adjacent to v is called a *neighbor* of v in T, and we denote the set of neighbors of v in T by $N(v)$. A *labeling* of a tree T is defined as a one-to-one and onto function $f:V\rightarrow\{1,2,\cdots,|V|\}$. For two labeling f and g, if $f(u)=g(v)$ and $\{f(u')\,|\,u'\in N(u)\}=\{g(v')\,|\,v'\in N(v)\}$, then we say that v and g are *equivalent*, or f is *equivalent to* g. Note that basically a labeling f of T is equivalent to f itself. The figure below shows two equivalent labeling; you can easily check the equivalency.



Your task is to devise and implement an efficient algorithm for counting the number of equivalent labeling to a labeling f of T when you are given a tree T and a labeling f. Since f is equivalent to f itself, you must not miss f itself when counting equivalent labeling of f.

Input

Your program is to read from standard input. The input consists of T ($1 \le T \le 20$) test cases. The number T of test cases is given in the first line of the input. Each test case consists of the number N ($1 \le N \le 1000$) of vertices of an input tree in the first line. Each of following N-1 lines contains two integers $1 \le i, j \le N$, which represents an edge of our input tree connecting vertex i and vertex j. The (N + 1)-st line contains N integers representing a labeling, that is, the ith number of (N+1)-st line means the label of vertex i. All the integers are separated by a single space.

Output

Your program is to write to standard output. Print exactly one line for each test case with the number of equivalent labeling.

Sample Input **Output for the Sample Input**

Sample Input	Output for the Sample Input
2 9 2 8 1 2 2 3 3 4 4 5 5 6 4 7 2 9 1 9 2 6 3 7 4 5 8 7 1 5 2 5 5 7 6 7 3 6 4 6 7 1 6 2 5 3 4	6 8