1006.Maex

Input file:	standard input
Output file:	standard output
Time limit:	3 seconds
Memory limit:	128 megabytes

You are given a rooted tree consisting of n vertices numbered from 1 to n, and the root is vertex 1.

Vertex i has a natural number weight a_i, and **no two different vertexes have the same weight**.

Define $b_u = MEX\{x|\exists v \in subtree\,(u)\,, x = a_v\}$.

Unfortunately, a_i are not given. Please find out the maximum possible $\sum_{i=1}^{n} b_i$.

The **MEX** of a set is the minimum non-negative integer that doesn't belong to the set.

Input

The first line contains one integer $T\,(1 \leq T \leq 10)$, indicating the number of test cases.

For each test case:

The first line contains one integer $n\left(1 \leq n \leq 5 \cdot 10^5\right)$, indicating the number of nodes.

In the following $n-1$ lines, each line contains two interger $u, v\,(1 \leq u, v \leq n)$, indicating an edge (u, v) of the tree.

A guarantee is that forming trees.

Output

For each test case: One line with an integer, indicating the maximum possible $\sum_{i=1}^{n} b_i$.

Example

standard input	standard output
3 5 1 2 3 2 1 5 4 1 3 1 2 2 3 1	8 6 1