Delightful Ordering

The Kingdom of Exordia has n cities, labeled from 0 to $n-1$. The cities are connected by $n-1$ bidirectional roads such that it is possible to travel between any pair of cities using one or more of these roads.

Queen ERB, the ruler of the kingdom, goes on an incognito tour every year to learn about the everyday life of her citizens. She always travels according to the following rules.

Initially, Queen ERB is at the capital (city 0), which is considered visited. Then, she repeats the following steps:

- If there is at least one unvisited city directly connected to her current city, she travels to the one with the smallest label among them. That city becomes visited.
- Otherwise, if she is in the capital, the tour ends.
- Otherwise, she travels back to the city from which she arrived at her current city for the first time.

The *first-visit sequence* is the sequence of cities in the order they are visited for the first time. Note that it always starts with city 0 and contains every city exactly once.

To improve the traffic in the kingdom, Queen ERB has decided to build exactly one road between a pair of cities that is not directly connected yet. However, her royal guards have already planned their secret escort around her current route, so she wants the first-visit sequence to stay exactly the same after the new road is built.

You are entrusted by the Queen to count the number of ways to build the new road such that the first-visit sequence remains unchanged. Two ways are considered different if the new road connects a different pair of cities. Can you help her?

Input

Each test contains multiple test cases. The first line contains the number of test cases τ ($1 \le \tau \le 10^4$). The description of the test cases follows.

- The first line of each test case contains an integer n ($3 \le n \le 2 \times 10^5$) – the number of cities.
- The i-th of the next $n-1$ lines contains two integers u_i and v_i ($0 \le u_i, v_i < n$, $u_i \ne v_i$) – the cities connected by the i-th road. It is guaranteed that the given roads connect all n cities.

It is guaranteed that the sum of n over all test cases does not exceed 2×10^5.

Output

For each test case, print a single integer – the number of ways.

Sample Input 1	Sample Output 1
2 4 0 2 2 1 2 3 5 0 2 0 3 3 1 3 4	2 3

Sample Explanation

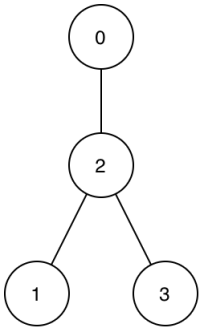


Figure 1: The first test case

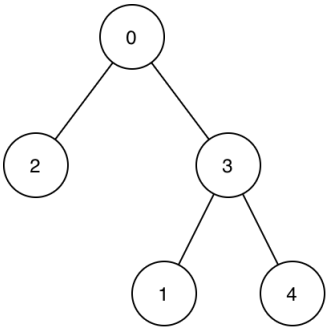


Figure 2: The second test case

In the first test case, Queen ERB visits cities in the following order: $[0, 2, 1, 2, 3, 2, 0]$ so the first-visit sequence is $[0, 2, 1, 3]$. There are 3 pairs of cities that are not directly connected: $(0, 1)$, $(0, 3)$ and $(1, 3)$.

- If the road $(0, 1)$ is built, the new first-visit sequence is $[0, 1, 2, 3]$.
- If the road $(0, 3)$ is built, the new first-visit sequence is $[0, 2, 1, 3]$.
- If the road $(1, 3)$ is built, the new first-visit sequence is $[0, 2, 1, 3]$.

Therefore, there are 2 ways that keep the first-visit sequence unchanged: $(0, 3)$ and $(1, 3)$.

In the second test case, there are 3 ways to build a road without changing the first-visit sequence: $(0, 4)$, $(1, 4)$, $(2, 3)$.