CODEFORCES
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HOME   TOP   CATALOG   CONTESTS   GYM   PROBLEMSET   GROUPS   RATING   EDU   API   CALENDAR   HELP

ℹ Reminder: in case of any technical issues, you can use the lightweight website m1.codeforces.com, m2.codeforces.com, m3.codeforces.com.   ✕

PROBLEMS   SUBMIT CODE   MY SUBMISSIONS   STATUS   HACKS   ROOM   STANDINGS   CUSTOM INVOCATION

C. Copil Copac Draws Trees

time limit per test: 3 seconds
memory limit per test: 256 megabytes
input: standard input
output: standard output

Copil Copac is given a list of $n - 1$ edges describing a tree of n vertices. He decides to draw it using the following algorithm:

- Step 0: Draws the first vertex (vertex 1). Go to step 1.
- Step 1: For every edge in the input, in order: if the edge connects an already drawn vertex u to an undrawn vertex v, he will draw the undrawn vertex v and the edge. After checking every edge, go to step 2.
- Step 2: If all the vertices are drawn, terminate the algorithm. Else, go to step 1.

A reading is defined as the number of times Copil Copac performs step 1.

Find the number of readings needed by Copil Copac to draw the tree.

Input

Each test contains multiple test cases. The first line of input contains a single integer t ($1 \le t \le 10^4$) — the number of test cases. The description of test cases follows.

The first line of each test case contains a single integer n ($2 \le n \le 2 \cdot 10^5$) — the number of vertices of the tree.

The following $n - 1$ lines of each test case contain two integers u_i and v_i ($1 \le u_i, v_i \le n$, $u_i \ne v_i$) — indicating that (u_i, v_i) is the i-th edge in the list. It is guaranteed that the given edges form a tree.

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

Output

For each test case, output the number of readings Copil Copac needs to draw the tree.

Example

```
input
2
6
4 5
1 3
1 2
3 4
1 6
7
5 6
2 4
2 7
1 3
1 2
4 5
```

```
output
2
3
```

Note

In the first test case:

Codeforces Round 875 (Div. 2)
Contest is running
02:06:17
Contestant
⭐

→ Submit?

Language: GNU G++17 7.3.0 ▾
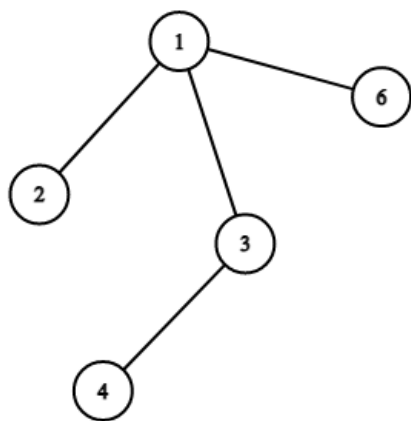Choose file: [Choose File] No file chosen

Be careful: there is 50 points penalty for submission which fails the pretests or resubmission (except failure on the first test, denial of judgement or similar verdicts). "Passed pretests" submission verdict doesn't guarantee that the solution is absolutely correct and it will pass system tests.

[Submit]

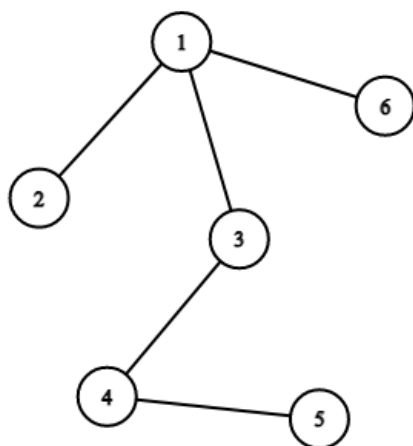**→ Score table**

	Score
Problem A	472
Problem B	707
Problem C	1178
Problem D	1650
Problem E	2356
Problem F	2828
Successful hack	100
Unsuccessful hack	-50
Unsuccessful submission	-50
Resubmission	-50

* If you solve problem on 00:18 from the first attempt

After the first reading, the tree will look like this:

After the second reading:

Therefore, Copil Copac needs 2 readings to draw the tree.