

[HOME](#) [TOP](#) [CATALOG](#) [CONTESTS](#) [GYM](#) [PROBLEMSET](#) [GROUPS](#) [RATING](#) [EDU](#) [API](#) [CALENDAR](#) [HELP](#)
[PROBLEMS](#) [SUBMIT CODE](#) [MY SUBMISSIONS](#) [STATUS](#) [HACKS](#) [ROOM](#) [STANDINGS](#) [CUSTOM INVOCATION](#)

## B. Begginer's Zelda

time limit per test: 1 second  
 memory limit per test: 256 megabytes  
 input: standard input  
 output: standard output

You are given a tree<sup>†</sup>. In one *zelda-operation* you can do follows:

- Choose two vertices of the tree  $u$  and  $v$ ;
- Compress all the vertices on the path from  $u$  to  $v$  into one vertex. In other words, all the vertices on path from  $u$  to  $v$  will be erased from the tree, a new vertex  $w$  will be created. Then every vertex  $s$  that had an edge to some vertex on the path from  $u$  to  $v$  will have an edge to the vertex  $w$ .

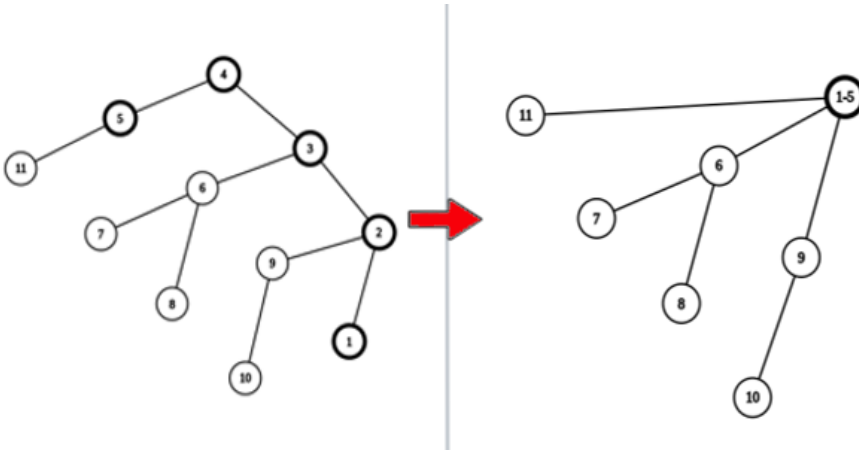


Illustration of a zelda-operation performed for vertices 1 and 5.

Determine the minimum number of zelda-operations required for the tree to have only one vertex.

<sup>†</sup> A tree is a connected acyclic undirected graph.

### Input

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

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

$i$ -th of the next  $n - 1$  lines contains two integers  $u_i$  and  $v_i$  ( $1 \leq u_i, v_i \leq n, u_i \neq v_i$ ) — the numbers of vertices connected by the  $i$ -th edge.

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  $10^5$ .

### Output

For each test case, output a single integer — the minimum number of zelda-operations required for the tree to have only one vertex.

### Example

input

Copy

```
4
4
1 2
1 3
3 4
9
3 1
3 5
3 2
```

### Codeforces Round 915 (Div. 2)

Finished

Practice



### → Virtual participation

Virtual contest is a way to take part in past contest, as close as possible to participation on time. It is supported only ICPC mode for virtual contests. If you've seen these problems, a virtual contest is not for you - solve these problems in the archive. If you just want to solve some problem from a contest, a virtual contest is not for you - solve this problem in the archive. Never use someone else's code, read the tutorials or communicate with other person during a virtual contest.

Start virtual contest

### → Clone Contest to Mashup

You can clone this contest to a mashup.

Clone Contest

### → Submit?

Language: Python 3.8.10  
 Almost always, if you send a solution on PyPy, it works much faster

Choose file: Choose File No file chosen

Submit

### → Last submissions

Submission	Time	Verdict
<a href="#">271077555</a>	Jul/17/2024 21:57	Accepted


### → Problem tags

greedy trees \*1100

No tag edit access

### → Contest materials

- Announcement (en)
- Tutorial (en)

5 6  
6 7  
7 8  
7 9  
6 4  
7  
1 2  
1 3  
2 4  
4 5  
3 6  
2 7  
6  
1 2  
1 3  
1 4  
4 5  
2 6

**output**

Copy

1  
3  
2  
2

**Note**

In the first test case, it's enough to perform one zelda-operation for vertices 2 and 4.

In the second test case, we can perform the following zelda-operations:

1.  $u = 2, v = 1$ . Let the resulting added vertex be labeled as  $w = 10$ ;
2.  $u = 4, v = 9$ . Let the resulting added vertex be labeled as  $w = 11$ ;
3.  $u = 8, v = 10$ . After this operation, the tree consists of a single vertex.

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The only programming contests Web 2.0 platform

Server time: Jul/18/2024 22:46:31<sup>UTC+5.5</sup> (j3).

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