

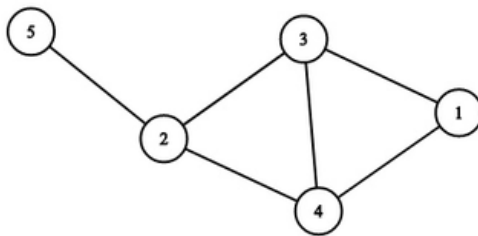


F. The Maximum Subtree

time limit per test: 2 seconds
memory limit per test: 256 megabytes
input: standard input
output: standard output

Assume that you have k one-dimensional segments s_1, s_2, \dots, s_k (each segment is denoted by two integers — its endpoints). Then you can build the following graph on these segments. The graph consists of k vertexes, and there is an edge between the i -th and the j -th vertexes ($i \neq j$) if and only if the segments s_i and s_j intersect (there exists at least one point that belongs to both of them).

For example, if $s_1 = [1, 6]$, $s_2 = [8, 20]$, $s_3 = [4, 10]$, $s_4 = [2, 13]$, $s_5 = [17, 18]$, then the resulting graph is the following:



A tree of size m is good if it is possible to choose m one-dimensional segments so that the graph built on these segments coincides with this tree.

You are given a tree, you have to find its good subtree with maximum possible size. Recall that a subtree is a connected subgraph of a tree.

Note that you have to answer q independent queries.

Input

The first line contains one integer q ($1 \leq q \leq 15 \cdot 10^4$) — the number of the queries.

The first line of each query contains one integer n ($2 \leq n \leq 3 \cdot 10^5$) — the number of vertices in the tree.

Each of the next $n - 1$ lines contains two integers x and y ($1 \leq x, y \leq n$) denoting an edge between vertices x and y . It is guaranteed that the given graph is a tree.

It is guaranteed that the sum of all n does not exceed $3 \cdot 10^5$.

Output

For each query print one integer — the maximum size of a good subtree of the given tree.

Example

input	Copy
<pre> 1 10 1 2 1 3 1 4 2 5 2 6 3 7 3 8 4 9 4 10 </pre>	
output	Copy
<pre> 8 </pre>	

Note

Educational Codeforces Round 74 (Rated for 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

→ Practice

You are registered for practice. You can solve problems unofficially. Results can be found in the contest status and in the bottom of standings.

→ Clone Contest to Mashup

You can clone this contest to a mashup.

Clone Contest

→ Submit?

Language: GNU G++11 5.1.0

Choose file: 选择文件 未选择任何文件

Submit

→ Problem tags

dfs and similar dp graphs trees

No tag edit access

→ Contest materials

- Announcement #1 (en)
- Announcement #2 (ru)

In the first query there is a good subtree of size 8. The vertices belonging to this subtree are 9, 4, 10, 2, 5, 1, 6, 3.

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