

## F. Spiders

time limit per test: 1 second

memory limit per test: 256 megabytes

input: input.txt

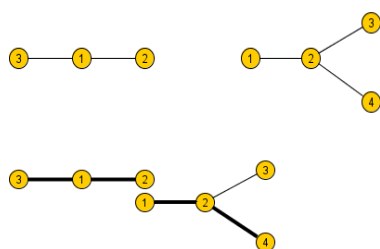
output: output.txt

One day mum asked Petya to sort his toys and get rid of some of them. Petya found a whole box of toy spiders. They were quite dear to him and the boy didn't want to throw them away. Petya conjured a cunning plan: he will glue all the spiders together and attach them to the ceiling. Besides, Petya knows that the lower the spiders will hang, the more mum is going to like it and then she won't throw his favourite toys away. Help Petya carry out the plan.

A spider consists of  $k$  beads tied together by  $k - 1$  threads. Each thread connects two different beads, at that any pair of beads that make up a spider is either directly connected by a thread, or is connected via some chain of threads and beads.

Petya may glue spiders together directly gluing their beads. The length of each thread equals 1. The sizes of the beads can be neglected. That's why we can consider that gluing spiders happens by identifying some of the beads (see the picture). Besides, the construction resulting from the gluing process should also represent a spider, that is, it should have the given features.

After Petya glues all spiders together, he measures the length of the resulting toy. The distance between a pair of beads is identified as the total length of the threads that connect these two beads. The length of the resulting construction is the largest distance between all pairs of beads. Petya wants to make the spider whose length is as much as possible.



The picture two shows two spiders from the second sample. We can glue to the bead number 2 of the first spider the bead number 1 of the second spider. The threads in the spiders that form the sequence of threads of maximum lengths are highlighted on the picture.

### Input

The first input file line contains one integer  $n$  ( $1 \leq n \leq 100$ ) — the number of spiders. Next  $n$  lines contain the descriptions of each spider: integer  $n_i$  ( $2 \leq n_i \leq 100$ ) — the number of beads, then  $n_i - 1$  pairs of numbers denoting the numbers of the beads connected by threads. The beads that make up each spider are numbered from 1 to  $n_i$ .

### Output

Print a single number — the length of the required construction.

### Examples

input

```
1
3 1 2 2 3
```

### → Attention

Package for this problem was not updated by the problem writer or Codeforces administration after we've upgraded the judging servers. To adjust the time limit constraint, solution execution time will be multiplied by 2. For example, if your solution works for 400 ms on judging servers, then value 800 ms will be displayed and used to determine the verdict.

### School Regional Team Contest, Saratov, 2011

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 ACM-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.

### → Submit?

Language: GNU G++11 5.1.0

Choose file:  No file chosen

**Be careful: the problem requires input/output via file(s).**

Submit

### → Last submissions

output
2

input
2
3 1 2 1 3
4 1 2 2 3 2 4

output
4

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

output
7


Submission	Time	Verdict
<a href="#">20968745</a>	Sep/28/2016 16:49	In queue
<a href="#">20968622</a>	Sep/28/2016 16:44	In queue

### → Problem tags

dp greedy trees

No tag edit access

### → Contest materials

- Announcement 
- Tutorial 