

D. Two Paths

time limit per test: 2 seconds
memory limit per test: 64 megabytes

As you know, Bob's brother lives in Flatland. In Flatland there are n cities, connected by $n - 1$ two-way roads. The cities are numbered from 1 to n . You can get from one city to another moving along the roads.

The «Two Paths» company, where Bob's brother works, has won a tender to repair two paths in Flatland. A path is a sequence of different cities, connected sequentially by roads. The company is allowed to choose by itself the paths to repair. The only condition they have to meet is that the two paths shouldn't cross (i.e. shouldn't have common cities).

It is known that the profit, the «Two Paths» company will get, equals the product of the lengths of the two paths. Let's consider the length of each road equals 1, and the length of a path equals the amount of roads in it. Find the maximum possible profit for the company.

Input

The first line contains an integer n ($2 \leq n \leq 200$), where n is the amount of cities in the country. The following $n - 1$ lines contain the information about the roads. Each line contains a pair of numbers of the cities, connected by the road a_i, b_i ($1 \leq a_i, b_i \leq n$).

Output

Output the maximum possible profit.

Examples

| input | Copy |
|------------------------|------|
| 4 1 2 2 3 3 4 | |
| output | Copy |
| 1 | |

| input | Copy |
|---|------|
| 7 1 2 1 3 1 4 1 5 1 6 1 7 | |
| output | Copy |
| 0 | |

| input | Copy |
|--------------------------------------|------|
| 6 1 2 2 3 2 4 5 4 6 4 | |
| output | Copy |
| 4 | |

→ Attention

The 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, a solution execution time will be multiplied by 2. For example, if your solution works for 400 ms on judging servers, then the value 800 ms will be displayed and used to determine the verdict.

Codeforces Beta Round 14 (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: GNU G++23 14.2 (64 bit, ms) ▼

Choose file: No file chosen

Submit

→ Last submissions

| Submission | Time | Verdict |
|---------------------------|-------------------|----------|
| 326392006 | Jun/28/2025 12:50 | Accepted |



| | | |
|---------------------------|----------------------|--------------------------------------|
| 326391617 | Jun/28/2025 12:47 | Time limit exceeded on test 37 |
|---------------------------|----------------------|--------------------------------------|

→ **Problem tags**

dfs and similar dp graphs
shortest paths trees two pointers
*1900

No tag edit access

→ **Contest materials**

- Announcement 
- Tutorial 

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