

Contest Duration: 2025-10-18(Sat) 23:30 (<http://www.timeanddate.com/worldclock/fixedtime.html?iso=20251018T2130&p1=248>) - 2025-10-19(Sun) 01:10 (<http://www.timeanddate.com/worldclock/fixedtime.html?iso=20251018T2310&p1=248>) (local time) (100 minutes)

[Back to Home \(/home\)](#)

[Top \(/contests/abc428\)](#)

[Tasks \(/contests/abc428/tasks\)](#)

[Clarifications \(/contests/abc428/clarifications\)](#) [Results ▾](#)

[Standings \(/contests/abc428/standings\)](#)

[Virtual Standings \(/contests/abc428/standings/virtual\)](#) [Editorial \(/contests/abc428/editorial\)](#)

[Discuss \(<https://codeforces.com/blog/entry/147512>\)](#)



/

E - Farthest Vertex

[Editorial \(/contests/abc428/tasks/abc428_e/editorial\)](#)

Time Limit: 2 sec / Memory Limit: 1024 MiB

Score : 475 points

Problem Statement

There is a tree with N vertices numbered 1 to N . The i -th edge connects vertices A_i and B_i .

Define the distance between vertices u and v as the number of edges in the path with endpoints at vertices u and v . (This path is uniquely determined.)

Solve the following problem for $v = 1, 2, \dots, N$.

- Among vertices $1, 2, \dots, N$, output the number of the vertex that has the maximum distance from vertex v . If there are multiple vertices that satisfy the condition, output the vertex with the largest number.

Constraints

- $2 \leq N \leq 5 \times 10^5$
- $1 \leq A_i < B_i \leq N$
- The graph given in the input is a tree.
- All input values are integers.

Input

2026-01-02 (Fri)
05:31:54 +11:00

The input is given from Standard Input in the following format:

```
N  
A1 B1  
A2 B2  
⋮  
AN-1 BN-1
```

Output

Output N lines. The i -th line should contain the answer for $v = i$.

Sample Input 1

[Copy](#)

```
3  
1 2  
2 3
```

[Copy](#)

Sample Output 1

[Copy](#)

```
3  
3  
1
```

[Copy](#)

The vertex with the maximum distance from vertex 1 is vertex 3.

The vertices with the maximum distance from vertex 2 are vertices 1 and 3. Among them, vertex 3, which has the larger number, is the answer.

The vertex with the maximum distance from vertex 3 is vertex 1.

Sample Input 2

[Copy](#)

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

[Copy](#)

Sample Output 2

[Copy](#)

[Copy](#)

4

5

5

5

4

'#telegram)

?url=https%3A%2F%2Fcoder.jp%2Fcontests%2Fabc428%2Ftasks%2Fabc428_e%3Flang%3Den&title=E%20-

[Rule \(/contests/abc428/rules\)](#) [Glossary \(/contests/abc428/glossary\)](#)

[Terms of service \(/tos\)](#) [Privacy Policy \(/privacy\)](#) [Information Protection Policy \(/personal\)](#) [Company \(/company\)](#)

[FAQ \(/faq\)](#) [Contact \(/contact\)](#)

Copyright Since 2012 ©AtCoder Inc. (<http://atcoder.co.jp>) All rights reserved.