

未找到(<https://vjudge.net/>)

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## E - Farthest Vertex

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Time Limit: 2 sec / Memory Limit: 1024 MiB

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禁止在正在进行的 AtCoder 比赛中使用生成式 AI。请参考下面的规则了解详情。

AtCoder 对于生成式 AI 的规定 - 20251003 版本 (<https://info.atcoder.jp/entry/llm-rules-en>)

注意此规则已于 2025 年 10 月 3 日更新。详情请见这篇文章 (<https://atcoder.jp/posts/1568>)。

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

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

```
N
A1 B1
A2 B2
⋮
AN-1 BN-1
```

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## 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

```
4
5
5
5
4
```

Copy

C++ 20 (gcc 1...

1

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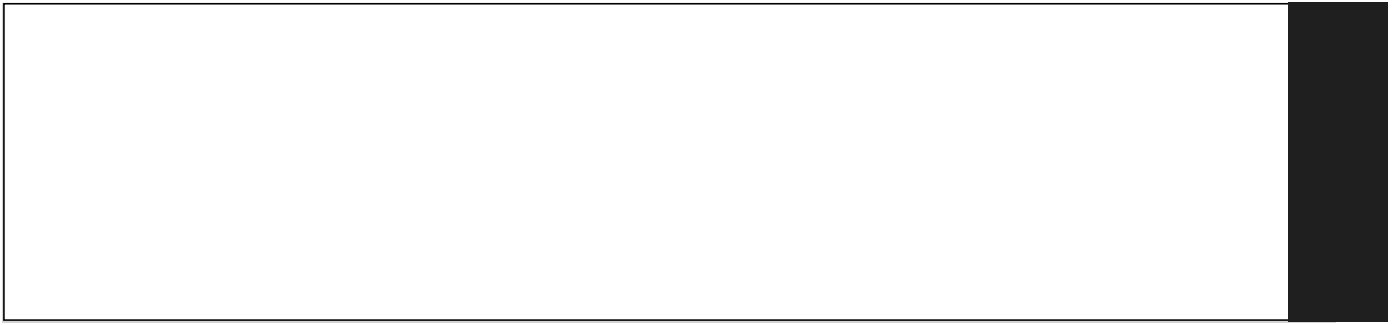
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