

8165 Justified Jungle

As you probably know, a *tree* is a graph consisting of n nodes and $n-1$ undirected edges in which any two nodes are connected by exactly one path. A *forest* is a graph consisting of one or more trees. In other words, a graph is a forest if every connected component is a tree. A forest is *justified* if all connected components have the same number of nodes.

Given a tree G consisting of n nodes, find all positive integers k such that a justified forest can be obtained by erasing exactly k edges from G . Note that erasing an edge never erases any nodes. In particular when we erase all $n-1$ edges from G , we obtain a justified forest consisting of n one-node components.

Input

The input file contains several test cases, each of them as described below.

The first line contains an integer n ($2 \leq n \leq 1000000$) — the number of nodes in G . The k -th of the following $n-1$ lines contains two different integers a_k and b_k ($1 \leq a_k, b_k \leq n$) — the endpoints of the k -th edge.

Output

For each test case, on a line by itself, should contain all wanted integers k , in increasing order.

Note: Figures depict justified forests obtained by erasing 1, 3 and 7 edges from the tree in the example input.

Sample Input

```
8
1 2
2 3
1 4
4 5
6 7
8 3
7 3
```

Sample Output

```
1 3 7
```

