Problem J. Justified Jungle

Input file:	*standard input*
Output file:	*standard output*
Time limit:	6 seconds
Memory limit:	512 mebibytes

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 first line contains an integer n ($2 \le n \le 1\,000\,000$) — the number of nodes in G. The k-th of the following $n-1$ lines contains two different integers a_k and b_k ($1 \le a_k, b_k \le n$) — the endpoints of the k-th edge.

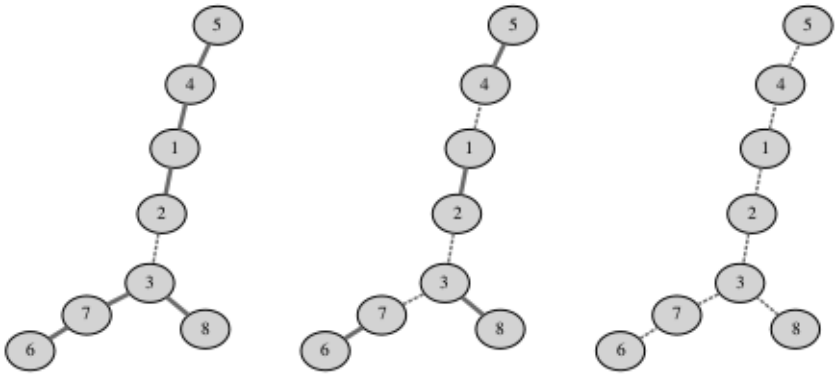
Output

The first line should contain all wanted integers k, in increasing order.

Example

standard input	standard output
8 1 2 2 3 1 4 4 5 6 7 8 3 7 3	1 3 7

Note



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