Problem H. Find a Caterpillar as a Feature

TimeLimit:	0.5 seconds
MemoryLimit:	256 megabytes

As a programmer, debugging is a big issue for us. There are a bunch of "bugs" we may encounter, e.g., beetles, ladybugs, ants, cockroaches, ... etc. Some of them are extremely deadly for our program, some are harmless.

One day, when Mr. Guan is programming, he somehow finds a bug in his program. He desperately wants to remove it due to the upcoming deadline. When he has no idea how to deal with it, he came up a way: consider it a "feature"! However, a bug can be considered as a feature if it is a caterpillar, and Mr. Guan cannot tell whether a bug is a caterpillar or not. Hence, he needs your help to determine whether the given bug is a caterpillar!

Note that in this task, we use a tree to represent a bug. Since bugs usually appears on trees.

A tree T is a caterpillar if there exists a path P such that every edge of T is incident to at least one vertex of P.

Here are some definitions:

- *A tree is a connected graph without cycles.*

- *A path is a sequence of vertices where each vertex is connected to the next by an edge, and no vertex or edge is repeated*

Input

The first line contains an integer n $(1 \le n \le 2 \times 10^5)$ — the number of vertices.

The next $n-1$ lines each contain two integers u, v $(1 \le u, v \le n)$, describing an undirected edge (u, v).

It is guaranteed that the input graph is a tree.

Output

Print "Yes" if the tree is a caterpillar graph.

Otherwise, print "No".

Examples

standard input	standard output
7 1 2 2 3 3 4 2 5 3 6 3 7	Yes
10 1 2 2 5 5 6 1 3 3 7 7 8 1 4 4 9 9 10	No

Note

In the first test case:

- vertices 1, 2 and 3 form a path P

- edges $(3, 4)$, $(3, 6)$ and $(3, 7)$ are incident to 3, which is a vertex in P

- edge $(2, 5)$ incident to 2, which is also a vertex in P

- since 1, 2 and 3 are in P, edge $(1, 2)$ and $(2, 3)$ are incident to some vertex in P

Thus, this is a caterpillar graph.