

Problem E. Tree Paths

Input file: *standard input*
Output file: *standard output*
Time limit: 7 seconds
Memory limit: 512 mebibytes

There is a tree of N vertices numbered 1 to N . A path is a sequence of distinct vertices (v_1, \dots, v_k) such that $k \geq 1$, $v_i v_{i+1}$ is an edge for all $1 \leq i \leq k - 1$, and $v_1 \leq v_k$.

Count the number of paths such that the vertices v_1, \dots, v_k form a contiguous range, or more formally, the set $\{v_1, \dots, v_k\} = \{a, a + 1, \dots, b\}$ for some integers $a \leq b$.

Input

The first line contains an integer N ($1 \leq N \leq 50\,000$). The next $N - 1$ lines contain the edges of the tree. The i -th of these lines contains two space-separated integers u_i and v_i ($1 \leq u_i, v_i \leq N$) denoting that $u_i v_i$ is an edge. It is guaranteed that the given graph is a tree.

Output

On a single line output the desired number of paths.

Example

standard input	standard output
3 1 2 1 3	5

Note

The paths are (1), (2), (3), (1, 2), and (2, 1, 3).