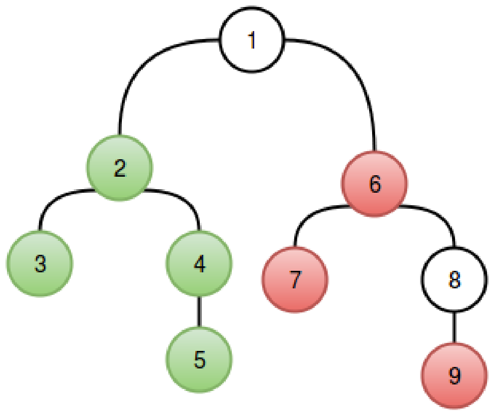
# Self-Driving Bus

HackerRank

Treeland is a country with $n$ cities and $n-1$ roads. There is exactly *one* path between any two cities.

The ruler of Treeland wants to implement a self-driving bus system and asks tree-loving Alex to plan the bus routes. Alex decides that each route must contain a subset of *connected* cities; a subset of cities is *connected* if the following two conditions are true:

1. There is a path between every pair of cities which belongs to the subset.
2. Every city in the path must belong to the subset.




In the figure above, $\{2,3,4,5\}$ is a *connected* subset, but $\{6,7,9\}$ is not (for the second condition to be true, $8$ would need to be part of the subset).

Each self-driving bus will operate within a *connected segment* of Treeland. A connected segment $[L,R]$ where $1 \le L \le R \le n$ is defined by the connected subset of cities $S = \{x \mid x \in Z \text{ and } L \le x \le R\}$.

In the figure above, $[2,5]$ is a connected segment that represents the subset $\{2,3,4,5\}$. Note that a single city can be a segment too.

Help Alex to find number of connected segments in Treeland.

**Input Format**

The first line contains a single positive integer, $n$. The $n-1$ subsequent lines each contain two positive space-separated integers, $a_i$ and $b_i$, describe an edge connecting two nodes in tree $T$.

**Constraints**

- $1 \le n \le 2 \times 10^5$
- $1 \le a_i, b_i \le n$

**Subtasks**

- For $25\%$ score: $1 \le n \le 2 \times 10^3$
- For $50\%$ score: $1 \le n \le 10^4$

### Output Format

Print a single integer: the number of segments $[L, R]$, which are connected in tree $T$.

### Sample Input

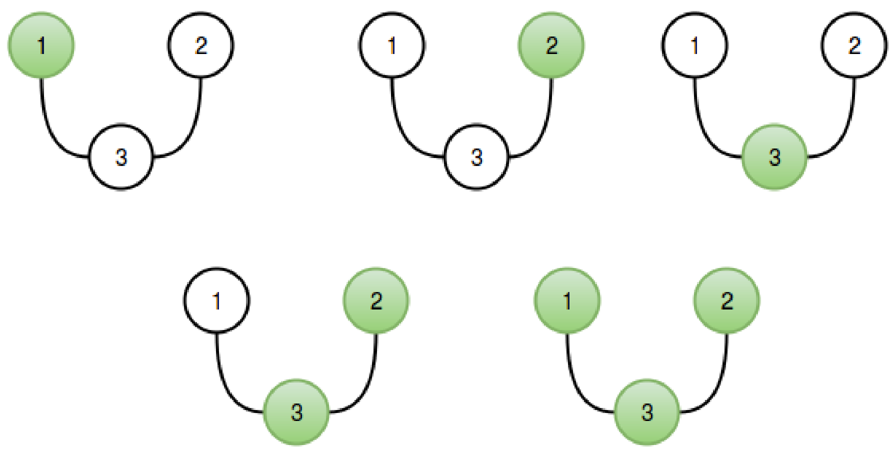
```
3
1 3
3 2
```

### Sample Output

```
5
```

### Explanation

The connected *segments* for our test case are: $[1, 1]$, $[2, 2]$, $[3, 3]$, $[2, 3]$, and $[1, 3]$. These *segments* can be represented by the respective subsets: $\{1\}$, $\{2\}$, $\{3\}$, $\{2, 3\}$, and $\{1, 2, 3\}$.




Note: $[1, 2]$ is not a connected segment. It represents the subset $\{1, 2\}$ and the path between $1$ and $2$ goes through $3$ which is not a member of the subset.