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Points: 25 Rank: 183204

Self-Driving Bus 🔖

H by gorbunovdv

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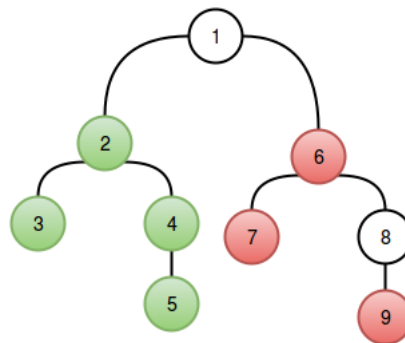
In the figure above, $\{2, 3, 4, 5\}$ is a *connected* subset, but $\{6, 7, 9\}$ is not (for the second condition to be true, 8 would need to be part of the subset).

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

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

- $1 \leq n \leq 2 \times 10^5$

- $1 \leq a_i, b_i \leq n$

Subtasks

- For 25% score: $1 \leq n \leq 2 \times 10^3$

- For 50% score: $1 \leq n \leq 10^4$

Output Format

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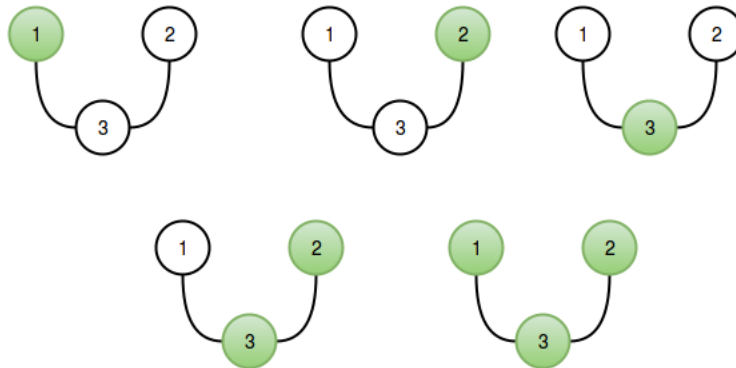
Sample Input

```
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.

f   y   in

Submissions:77

Max Score:100
Difficulty: Advanced

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More

Current Buffer (saved locally, editable)   ⅄ ⟳   Java 7   ⌄   ⤢   ⚙

```java
1  import java.io.*;
2  import java.util.*;
3  import java.text.*;
4  import java.math.*;
5  import java.util.regex.*;
6
7  public class Solution {
8
9      public static void main(String[] args) {
10         /* Enter your code here. Read input from STDIN. Print output to STDOUT. Your class should be named Solution. */
11     }
12 }
```

Line: 1 Col: 1

⬆ Upload Code as File   ☐ Test against custom input   Run Code   Submit Code

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