A. Power Grid Inspection

Time Limit: $2\mathtt{s}$

Memory Limit: $512\mathtt{MB}$

The power grid of the Flea Kingdom consists of n nodes and $n-1$ power lines, with nodes labeled as $1, 2, \ldots, n$. All the nodes are connected (the $n-1$ power lines forms a tree).

Volt and Ohm both start at node 1. In each second, **either** Volt or Ohm can move along a power line to an adjacent node. To inspect the power grid, every node must be visited **at least once** by **either** Volt or Ohm.

To maintain communication, the distance between them must never exceed k at any time. The distance between the two is defined as the minimum number of moves required for Volt to reach Ohm's position.

Now, Volt wants to determine the minimum number of seconds required for them to complete the inspection while satisfying the constraint. It can be proven that the task is always possible under the given conditions.

Input Format

The first line contains two positive integers, n and k.

The next $n-1$ lines each contain two positive integers, u and v, representing a power line connecting node u and node v.

Output Format

Output a single non-negative integer representing the minimum time required to inspect the power grid.

Sample 1

input

```
4 1
1 2
1 3
3 4
```

output

```
5
```

explanation

The optimal strategy is as follows:

- At second 1, Volt moves from node 1 to node 2.
- At second 2, Volt moves from node 2 back to node 1.
- At second 3, Ohm moves from node 1 to node 3.
- At second 4, Volt moves from node 1 to node 3.
- At second 5, Ohm moves from node 3 to node 4.

It is easy to see that their distance always remains within 1.

Sample 2

input

```
5 4
1 2
1 3
2 4
3 5
```

output

```
4
```

explanation

The optimal strategy is as follows:

- At second 1, Volt moves from node 1 to node 2.
- At second 2, Volt moves from node 2 to node 4.
- At second 3, Ohm moves from node 1 to node 3.
- At second 4, Ohm moves from node 3 to node 5.

Since $k = 4$, there is actually no restriction on their distance.

Sample 3–5

See the download attachment for details.

Constraints and Limits

For all test cases, it is guaranteed that $1 \leq k < n \leq 10^6$.

Subtask ID	$n \leq$	Points
1	18	8
2	500	12
3	2000	16
4	2×10^5	24
5	10^6	40