F. Town Planning

Fluffy the Squirrel has been put in charge of a town. This town has ***N*** settlements, with ***N-1*** bidirectional roads connecting one settlement to another. It is possible to get from some settlement to any other settlement using these roads.

In order to collect acorns more easily, Fluffy has decided to close some settlements. When a settlement is closed, all roads adjacent to it are also closed. Fluffy wants to split the remaining settlements into exactly ***K*** mini-towns. Each remaining settlement will be part of one and only one mini-town. It is possible to travel between any two settlements which are part of the same mini-town, and impossible to travel between any two settlements which are part of different mini-towns.

Roe the Deer suggests that Fluffy closes exactly one path of settlements, that is, a sequence of distinct settlements $s_0, s_1, s_2, \ldots, s_j$ such that there exists a *direct* road connecting s_i to s_{i+1} for all $i = 0, 1, 2, \ldots, j-1$. Fluffy can close a path of any length (even if it only contains one settlement). Fluffy wonders: how many ways can he achieve his objective?

(Note: A path is different if and only if they contain different sets of nodes. For example, 1-2-3-4 and 4-3-2-1 are the same path, but 1-2-3-4 and 1-2-3 are different paths.)

Input Format

- The first line contains two integers **N** and **K** denoting the number of settlements and number of mini-towns, respectively.
- The next ***N-1*** lines contain two integers ***a*** and ***b*** denoting a road between settlements ***a*** and ***b***.

Output Format

An integer denoting the number of different paths Fluffy can close to make exactly ***K*** mini-towns.

Constraints

In all test cases, $1 \leq N, K \leq 100,000$ and $1 \leq a,\ b \leq N$.

Subtask 1 (20 points) : $1 \leq N, K \leq 500$
Subtask 2 (60 points) : $1 \leq N, K \leq 5,000$

Subtask 3 (220 points) : No additional constraints apply

Sample Input 1

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

Sample Output 1

```
1
```

Explanation 1

There is only one way to achieve this: close settlement 1 (a path of length 1). This divides the remaining settlements into 3 mini-towns, {2}, {3}, {4}. Removing any other path of settlements leaves only 1 mini-town.

Sample Input 2

```
6 2
1 2
2 3
2 4
3 5
3 6
```

Sample Output 2

```
8
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Explanation 2

The 8 paths are 1-2, 1-2-3-6, 1-2-3-5, 4-2, 4-2-3-6, 4-2-3-5, 3-5 and 3-6. For example, by closing path 1-2, we are left with {4} and {3, 5, 6} as mini-towns, giving 2 mini-towns as required.