IOI Training Camp 2017 Practice Test 1

Cat In A Tree

Jimma the cat lives in a tree that has N nodes. She will demarcate her territory by "marking" some of the tree nodes. Marked nodes may not be closer to each other than distance D. Find the maximum number of nodes that she can mark.
The nodes are numbered from 1 to N.

Input

First line has two integers, N and D.
Then follows $N-1$ lines, the i-th of which contains two integers: u and v. This means that there is an edge between the nodes u and v ($1 \leq u, v \leq N$).

Output

Output should contain one integer: the maximum number of nodes that can be marked.

General Constraints

Unless otherwise mentioned, the following constraints are met throughout all subtasks:

- $1 \leq D \leq N \leq 2 * 10^5$

Subtasks

Subtask 1 (10 Points):

- $1 \leq n \leq 20$

Subtask 2 (20 Points):

- $1 \leq n \leq 200$

Subtask 3 (20 Points):

- $1 \leq n \leq 2000$

Subtask 4 (50 Points):

- Original constraints.

Sample Input 1

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

Sample Output 1

```
2
```

Sample Input 1

```
3 1000
2 1
3 1
```

Sample Output 1

```
1
```

Limits

Time: 2 seconds

Memory: 256 MB