Binary Tree

Given a binary tree which has T nodes, you need to find the diameter of that binary tree. The diameter of a tree is the number of nodes on the longest path between two leaves in the tree.

Input:
First line contains two integers, T and X, number of nodes in the tree and value of the root.
Next $2 \times (T - 1)$ lines contain details of nodes.
Each detail of node contains two lines. First lines contains a string and second line contains an integer, which denotes the path of the node and the value of the node respectively.

String consists of only L or R. L denotes left child and R denotes right child. (Look at the sample explanation for more details)

Output:
Print the diameter of the binary tree.

Constraints:
$1 \leq T \leq 20$
$1 \leq valueofnodes \leq 20$

SAMPLE INPUT

```
5 1
L
2
R
3
LL
4
LR
5
```

SAMPLE OUTPUT

```
4
```