

# Statement

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  $X$ , the number of nodes in the tree and value of the root node. The following  $2 \times (T - 1)$  lines contain details of the nodes.

Each node is described by two lines. The first line contains a string and the second contains an integer, which denote the path to the node from root and the value of the node respectively.

The string consists of the characters  $L$  and  $R$  only.  $L$  denotes left child and  $R$  denotes right child.

# Output

Print the diameter of the binary tree.

# Constraints

- $1 \leq T \leq 20$
- $1 \leq \text{value of nodes} \leq 20$

# Sample

Sample Input	Sample Output
5 1	4
L	
2	
R	
3	
LL	
4	
LR	
5	