## **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 )

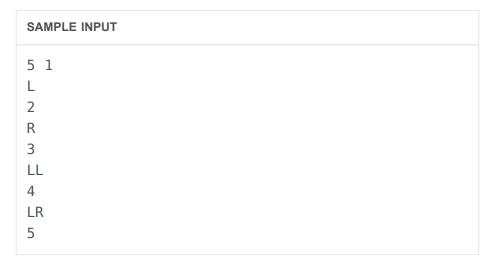
## Output

Print the diameter of the binary tree.

## **Constraints:**

 $1 \le T \le 20$ 

 $1 \le \text{valueofnodes} \le 20$ 



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SAMPLE OUTPUT

4
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