

## Problem C. Coming home

Source file name: C.c, C.cpp, C.java  
 Input: Standard  
 Output: Standard  
 Author(s):

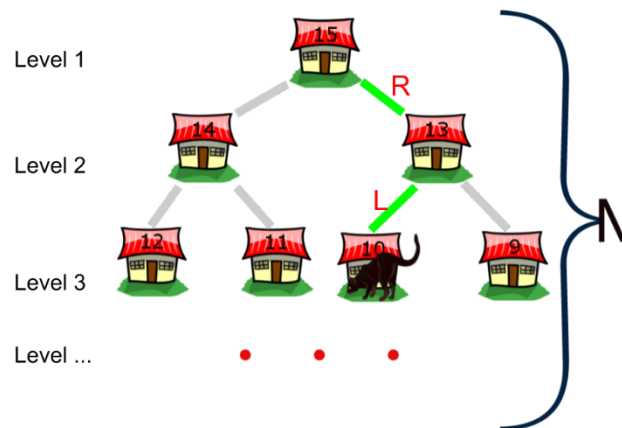
Baker is a very curious cat, this morning he went out of the neighborhood to explore the world, but, when he decided to come home he realized he was lost. Since baker is a very smart cat he remembers the number  $b$  of the house where we live.

Let me explain how the neighborhood where we live is, it is a very exclusive place, organized in  $N$  levels, top levels have more expensive houses also they are farther from the neighborhood entrance and have a lower number. To get to a house you can get to it only from a house with higher number and each house except for those on the top level are connected to two houses, one taking the path to the left and one taking the path to the right, both of them on the next level of the neighborhood. Each house except for the only house in the first level is also connected to a house with a higher number in the previous level. There is no path between any two houses in the same level  $k$ .

Houses are numbered with consecutive numbers from 1 to  $c$  where  $c$  is the total number of houses in the neighborhood. The most exclusive house on each level is located at the right, and the numbering goes from right to left on the levels starting on the higher levels to the lower levels.

The path to get Baker to the house from the entrance is unique and even when Baker is very smart he only understands the commands “Go left” (L) and “Go right” (R) .

Given the number of levels in the neighborhood and the number of the house where Baker lives, you must tell the instructions to Baker in order for him to come home.



In picture you can see Baker neighborhood when the number of levels is 4. Baker lives in the house with number 10. The instructions for Baker to get home from the neighborhood entrance are : “Go Right”, “Go Left” (RL).

### Input

The input contains several test cases. Each test case contains a single line with two numbers  $N$  and  $b$ .

- $1 \leq N \leq 30$
- $1 \leq b \leq 2^N - 1$

## Output

For each test case you must print a single line with the string "Instructions: " without the quotes followed by the instructions baker has to follow. 'R' should be used for a "Go Right" instruction and 'L' should be used for a "Go Left" instruction.

## Example

Input	Output
4 10	Instructions: RL
4 15	Instructions:
6 31	Instructions: LLLLR