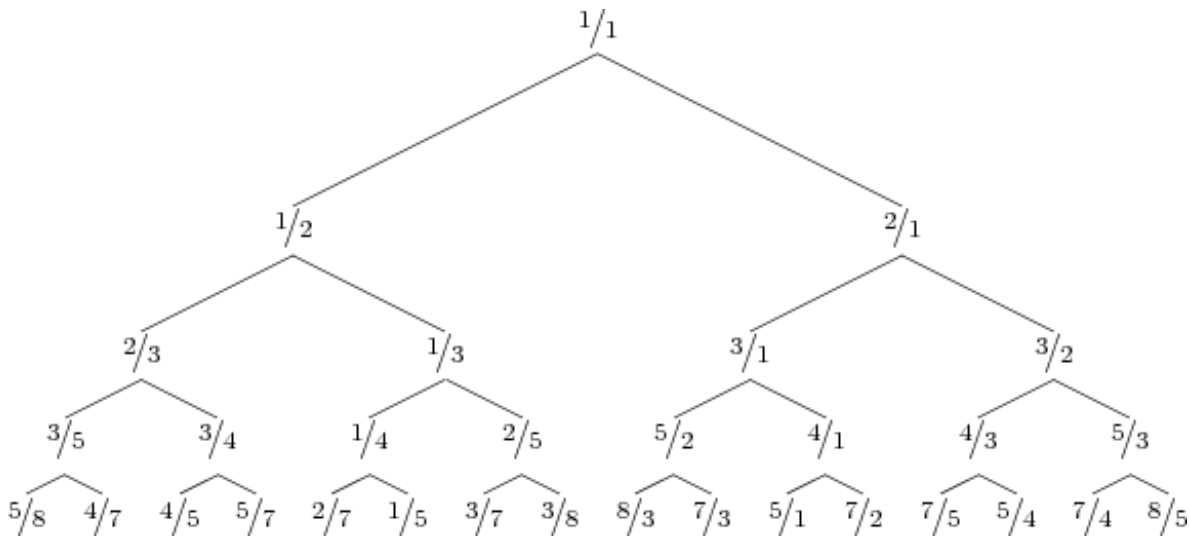# Bird tree

Bird tree

The Bird tree[1] is an infinite binary tree, whose first 5 levels look as follows:

It can be defined as follows:

This is a *co-recursive* definition in which both occurrences of *bird* refer to the full (infinite) tree. The expression *bird* + 1 means that 1 is added to every fraction in the tree, and 1⁄*bird* means that every fraction in the tree is inverted (so $^a\!/_b$ becomes $^b\!/_a$).

Surprisingly, the tree contains every positive rational number exactly once, so every reduced fraction is at a unique place in the tree. Hence, we can also describe a rational number by giving directions (L for left subtree, R for right subtree) in the Bird tree. For example, $^2\!/_5$ is represented by LRR. Given a reduced fraction, return a string consisting of L's and R's: the directions to locate this fraction from the top of the tree.

Input

On the first line a positive integer: the number of test cases, at most 100. After that per test case:

- one line with two integers *a* and *b* ($1 \le a,b \le 10^9$), separated by a '/'. These represent the numerator and denominator of a reduced fraction. The integers *a* and *b* are not both equal to 1, and they satisfy gcd(*a*,*b*) = 1.

For every test case the length of the string with directions will be at most 10 000.

Output

Per test case:

- one line with the string representation of the location of this fraction in the Bird tree.

Sample in- and output

Input	Output
3	L
1/2	LRR
2/5	RLLR
7/3	

[1]Hinze, R. (2009). The Bird tree. J. Funct. Program., 19:491–508.