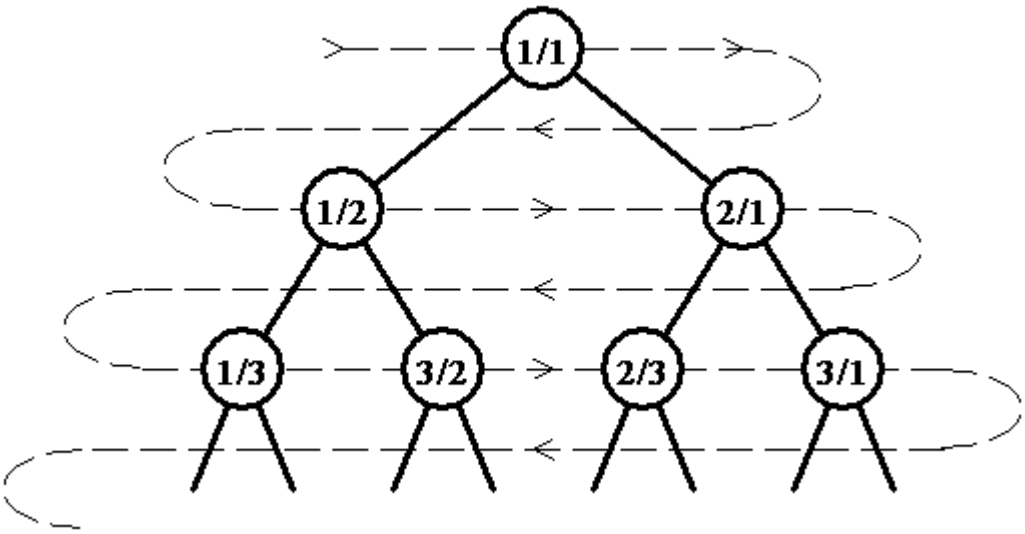
D • A Rational Sequence (Take 3)

An infinite full binary tree labeled by positive rational numbers is defined by:

- The label of the root is `1/1`.
- The left child of label `p/q` is `p/(p+q)`.
- The right child of label `p/q` is `(p+q)/q`.

The top of the tree is shown in the following figure:



A rational sequence is defined by doing a level order (breadth first) traversal of the tree (indicated by the light dashed line). So that:

`F(1) = 1/1, F(2) = 1/2, F(3) = 2/1, F(4) = 1/3, F(5) = 3/2, F(6) = 2/3, …`

Write a program to compute the n^{th} element of the sequence, `F(n)`. Does this problem sound familiar? Well it should! We had variations of this problem at the 2014 and 2015 Greater NY Regionals.

Input

The first line of input contains a single integer ***P***, (**1 ≤ *P* ≤ 1000**), which is the number of data sets that follow. Each data set should be processed identically and independently.

Each data set consists of a single line of input. It contains the data set number, ***K***, and the index, ***N***, of the sequence element to compute (**1 <= *N* <= 2147483647**).

Output

For each data set there is a single line of output. It contains the data set number, ***K***, followed by a single space which is then followed by the numerator of the fraction, followed immediately by a forward slash ('/') followed immediately by the denominator of the fraction. Inputs will be chosen so neither the numerator nor the denominator will overflow an 32-bit ***unsigned*** integer.

Sample Input	Sample Output
4 1 1 2 4 3 11 4 1431655765	1 1/1 2 1/3 3 5/2 4 2178309/1346269