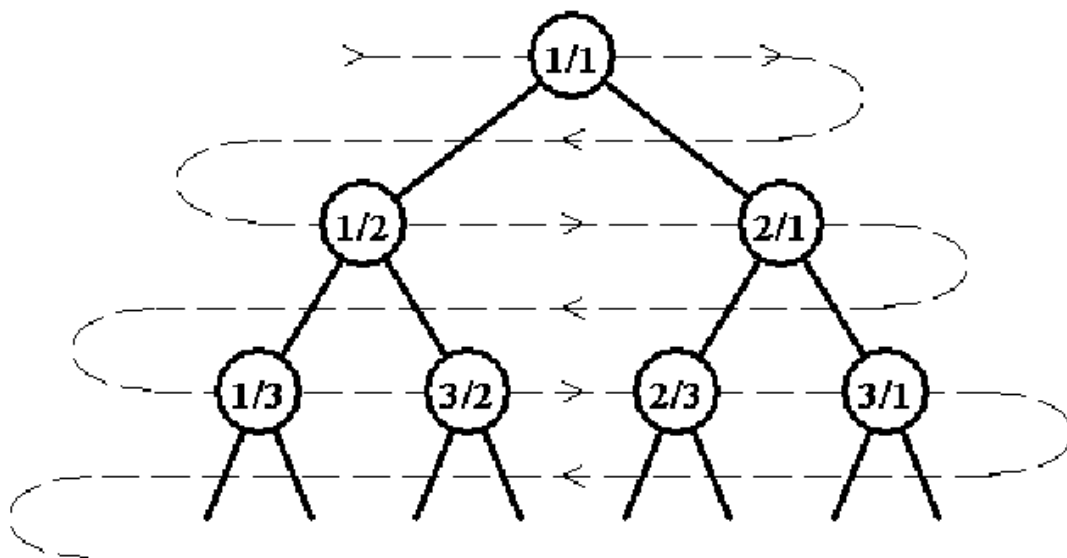


## 7096 A Rational Sequence

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:

$$F(1) = 1/1, F(2) = 1/2, F(3) = 2/1, F(4) = 1/3, F(5) = 3/2, F(6) = 2/3, \dots$$

Write a program which takes as input a rational number,  $p/q$ , in lowest terms and finds the next rational number in the sequence. That is, if  $F(n) = p/q$ , then the result is  $F(n + 1)$ .

### Input

The first line of input contains a single integer  $P$ , ( $1 \leq P \leq 1000$ ), 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,  $K$ , which is then followed by a space, then the numerator of the fraction,  $p$ , followed immediately by a forward slash (/), followed immediately by the denominator of the fraction,  $q$ . Both  $p$  and  $q$  will be relatively prime and  $0 \leq p, q \leq 2147483647$ .

### 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 such that neither the numerator nor the denominator will overflow a 32-bit integer.

**Sample Input**

```
5
1 1/1
2 1/3
3 5/2
4 2178309/1346269
5 1/10000000
```

**Sample Output**

```
1 1/2
2 3/2
3 2/5
4 1346269/1860498
5 10000000/9999999
```