

# Enumeration of rationals

It is well known that rational numbers form a countable set. Hence the set of rational numbers in the open interval  $(0,1)$  also form a countable set.

Here we enumerate the rationals in  $(0,1)$  in the following fashion. First, every rational is expressed in the lowest terms : ie, as  $p/q$  where  $p$  and  $q$  are positive integers with no common factor other than one. Then we sort the fractions in the ascending order of  $p+q$ . In case of a tie, the smaller fraction comes first.

The first few terms in this enumeration are  $1/2, 1/3, 1/4, 2/3, 1/5, 1/6, 2/5...$

Given a natural number  $N$ , find the numerator and denominator of the  $N$ th term in the enumeration.

## Input

The first line of the input contains  $T$  ( $\leq 1000$ ), the number of test cases. This is followed by  $T$  lines, each containing an integer  $N$  ( $\leq 10^{11}$ ).

## Output

For each value of  $N$ , output separated by space the numerator and denominator (in lowest terms) of the  $N$ th fraction in the enumeration

## Example

**Input:**

2  
3  
6

**Output:**

1 4  
1 6