Permuting and adding up

Time Limit 1 second

Given a positive integer number *N*, your task is to find how many different numbers exist that have the same digits as *N* and the sum of all these numbers.
As an example, if *N* = 120 then there are 6 numbers : 012, 021, 102, 120, 201 and 210. The sum of these numbers is 12 + 21 + 102 + 120 + 201 + 210 = 666.

Input

The first line of input contains a single number *T* the number of test cases. The next *T* $1 \le T \le 10^4$ lines contain a single positive integer number *N* $0 \le N \le 10^{11}$.

Output

For each test case your program should print a single line with two integers separated by space. The first number represents the number of different numbers that exist with the same digits as *N*, the second number contains the sum of all these numbers.

Example

Input	Output
2 120 112	6 666 3 44