

# The Grahamonacci Sum

The Grahamonacci Sum is defined by the following:

Given a number of up to 6 digits, the Grahamonacci sum is the sum of all numbers consisting of 1 digit, 2 digits, .... all the way up to  $n$  digits, where  $n$  being the length of the integer. For example:

The Grahamonacci Sum of the integer 123 is going to be

$1 + 2 + 3 + 12 + 23 + 123$ , which will sum up to 164.

For integers with zeros in them, you can eliminate the zeros that are in front of any non-zero numbers. For example:

The Grahamonacci Sum of the integer 101 is going to be

$1 + 1 + 10 + 1 + 101$ , which will sum up to 114

You don't need to count numbers that are backwards i.e 32 and 21 in the number 123.

## Input:

The input file will contain on its first line a number ranging between 1 and 10 inclusively. This number is the number of integers you must compute. Following that are the actual numbers that you will need to find the Grahamonacci sums for. The numbers will never start with 0 and will range between  $1 \leq x \leq 999999$ . The amount of digits will range between  $1 \leq n \leq 6$ . Input file will be named 'input.txt'.

## Output:

Your output will consist of all the individual numbers in a sum, separated by a single '+', with an '=' denoting the end of the sum, and the actual sum coming right after the equals sign. Each sum will be separated by a newline character. Output file will be named 'output.txt'.

## Sample Input:

```
10
1
15
101
123
4567
5000
201020
100000
100100
999999
```

## Sample Output:

$$1 = 1$$

$$1+5+15 = 21$$

$$1+1+10+1+101 = 114$$

$$1+2+3+12+23+123 = 164$$

$$4+5+6+7+45+56+67+456+567+4567 = 5780$$

$$5+50+500+5000 = 5555$$

$$2+1+2+20+1+10+2+20+201+10+102+20+2010+102+1020+20102+1020+201020 = 225665$$

$$1+10+100+1000+10000+100000 = 111111$$

$$1+1+10+1+10+100+1+10+100+1001+10+100+10010+100+100100 = 111555$$

$$9+9+9+9+9+9+9+99+99+99+99+99+999+999+999+999+9999+9999+9999+99999+99999+999999 = 1234539$$