

VMSS Pre-Windsor P7 - Going Back to the Definitions

Time limit: 1.0s **Memory limit:** 64M

One day, Gary woke up to realize that the foundations of mathematics had been completely restructured overnight.

It turns out that adding two numbers now means writing them side by side; that is, adding the R digit number A and the S digit number B is now defined as:

$$A_1A_2\dots A_R + B_1B_2\dots B_S = A_1A_2\dots A_RB_1B_2\dots B_S$$

For example, $123 + 45 = 12\ 345$, and $45 + 123 = 45\ 123$.

Mr. Ing draws N positive integers on the board, and he asks the class to determine the maximum possible sum of all N integers, provided they can be ordered in any way possible. Gary gets a little nervous when everyone else raises their hands almost instantly, and he needs your help to solve the question.

Input Specification

On the first line will be N ($1 \leq N \leq 10\ 000$). On the next N lines, a single integer N_i ($1 \leq N_i \leq 10^9$) denoting one of the numbers Ing has written upon the board.

Output Specification

The maximum possible sum that can be obtained by adding the N numbers together in any order. Keep in mind that the output will be possibly extremely long and thus may not fit in a 128-bit integer.

Sample Input 1

```
4
1
2
3
4
```

Sample Output 1

```
4321
```

Sample Input 2

4
2
32
555
16

Sample Output 2

55532216