

# Problem F: Digit Sum

Source file: digitsum.{c, cpp, java}

Input file: digitsum.in

When Grace was in third grade, her elementary school teacher assigned her the following problem:

*What is the smallest possible sum of two numbers that together use the numerals 1, 2, 7, 8, and 9?*

Grace figured out that the answer to this problem is 207 (for example, as  $78 + 129$ ), but when the teacher assigned four pages of similar problems as homework, Grace got bored. It turns out that Grace was a rather advanced third grader, so she decided that it would be more fun to write a computer program to solve such problems. Surely you can do the same!

**Input:** Each problem is described on a single line. The line begins with an integer  $N$ , such that  $2 \leq N \leq 14$ , designating the number of numerals included in the problem. Following that are those  $N$  numerals. There will always be at least 2 numerals that are nonzero. The end of the input is designated by a line containing only the value 0.

**Output:** For each case, output a line with the minimum sum  $S$  that can be achieved. Please keep in mind that by standard convention, the numeral 0 cannot appear as the first digit of either summand.

Example input:	Example output:
5 1 2 7 8 9	207
6 3 4 2 2 2 2	447
9 0 1 2 3 4 0 1 2 3	11257
0	