Southeastern European Regional Programming Contest
Bucharest, Romania
October 23, 1999

## Problem C
The Sum of Products

Input File: C.DAT
Program Source File: C.PAS or C.C or C.CPP

A traveller, exploring the unknown country, reached the cave that was closed. Near the cave he saw the wall where was written:

If you want to enter the cave, step on the big stone in front of the door. The board with numbers will appear: $a_1$, $a_2$, ..., $a_n$, where $n < 30$ and the length of numbers is no more than **100**. You must create a list of numbers $b_1$, $b_2$, ... , $b_n$, where

$$b_i = \sum_{(k_1,k_2,\ldots k_i)} a_{k_1} * a_{k_2} * \ldots * a_{k_i} \ , \ 1 \le k_1 < k_2 < \ldots < k_i \le n$$

and write them on the board because these numbers are clues for the entrance.

For example, if $n = 3$, then

$b_1 = a_1 + a_2 + a_3$,
$b_2 = a_1*a_2 + a_1*a_3 + a_2*a_3$,
$b_3 = a_1 * a_2 * a_3$

If you'll find and write these numbers correctly, the door will open. Help the traveler to enter the cave.

The input file contains a sequence of numbers. Each line contains one number. The number $n$ is written in the first line. Next $n$ lines contain numbers $a_i$. Input data are guaranteed correct.

The result of the program is on standard output. The output file consists of $n$ lines, The $i$ - th line contains the sum of digits in number $b_i$ and the number $b_i$ itself, separated with one space. A simple example is illustrated in figure 1.

| input | output |
|---|---|
| 4<br>1<br>2<br>3<br>4 | 1 10<br>8 35<br>5 50<br>6 24 |

Figure 1. Input and output samples