



PLURIDISCIPLINAR CONTEST PROSOFT@NT

March 2016

## PROBLEMS

### Programming task grade IX

#### Problem 2- valentin

100 points

Valentin and Valentina are twins. On their birthday their parents gave them a sequence of  $n$  integer numbers. Valentin decided to keep just some elements of the sequence, in such a way that their sum is maximized and even more, the sum is an even number, since being a good brother he wants to give Valentina half of the sum.

Focusing on the problem, he wants to answer two questions:

1. What is the maximum even sum of a subsequence?
2. How many distinct subsequences of maximum even sum exist?

#### Input data

The file **valentin.in** contains on the first line the natural number  $v$ . For all input tests, the number  $v$  can have only the value 1 or 2.

The second line of the file contains the natural number  $n$ . Next line contains  $n$  elements of the sequence, integers separated by spaces.

#### Output data

If the value of  $v$  is 1, only the first requirement should be solved. In this case, in the output file **valentin.out** write one integer number that is the maximum even sum of a subsequence.

If the value of  $v$  is 2, only the second requirement should be solved. In this case, in the output file **valentin.out** write one natural number that is the number of subsequences of maximum even sum.

#### Constraints

- $1 \leq n \leq 600\,000$ ;
- $-1\,000\,000\,000 \leq \text{sequence elements} \leq 1\,000\,000\,000$ ;
- the maximum sum can be negative;
- a subsequence contains at least one element;
- two subsequences are considered different if they are distinct in at least a position of an element;
- for all input data the results will fit into `long long` type (C/C++), or `int64` type (Pascal) ;
- for 50% of the tests the value of  $v=1$ , for other 50% of tests the value of  $v=2$ ;
- for 30% of tests the value of  $n \leq 21$
- for 45% of tests the value of  $n \leq 1000$
- for 60% of tests the value of  $n \leq 50000$
- elements of a subsequence are not necessarily from consecutive positions in the initial sequence

#### Example 1

valentin.in	valentin.out	Clarification
1 4 3 -3 0 -3	0	$v=1$ , the first requirement is solved, that is: the maximum even sum of a subsequence is 0 .

#### Example 2

valentin.in	valentin.out	Clarification
2 4 3 -3 0 -3	5	$v=2$ , the second requirement is solved, that is: there are 5 subsequences with maximum even sum: 1. $(a_1, a_2) \rightarrow 3-3=0$ 2. $(a_1, a_2, a_3) \rightarrow 3-3+0=0$ 3. $(a_1, a_3, a_4) \rightarrow 3+0-3=0$ 4. $(a_1, a_4) \rightarrow 3-3=0$ 5. $(a_3) \rightarrow 0=0$

Maximul execution time/test: 0,5 seconds

Memory limit: total available memory: 32 MB from which 16 MB is for the stack

Maximum source code limit: 10 KB