



XORSUM

You are given an array V , consisting of N integers V_1, V_2, \dots, V_N .
Your task is to find the result of $\text{XOR } (1 \leq i \leq j \leq N) (V_i + V_j)$.

INPUT

The first line contains integer N – the size of the array. The second line contains N space-separated integers V_1, V_2, \dots, V_N .

OUTPUT

The first line contains the required answer.

SUBTASKS

Subtask	Constraints	Scoring
Subtask 1	$1 \leq N \leq 4 \cdot 10^3, 1 \leq V_i \leq 5 \cdot 10^8$	7 points
Subtask 2	$1 \leq N \leq 10^6, 1 \leq V_i \leq 4 \cdot 10^3$	11 points
Subtask 3	$1 \leq N \leq 10^6, 1 \leq V_i \leq 10^6$	21 points
Subtask 4	$1 \leq N \leq 10^5, 1 \leq V_i \leq 5 \cdot 10^8$	38 points
Subtask 5	$1 \leq N \leq 10^6, 1 \leq V_i \leq 5 \cdot 10^8$	23 points

EXAMPLE

Input	Output
4 3 9 6 6	20

Note:

$$(1, 1) : 3 + 3 = 6$$

$$(1, 2) : 3 + 9 = 12$$

$$(1, 3) : 3 + 6 = 9$$

$$(1, 4) : 3 + 6 = 9$$

$$(2, 2) : 9 + 9 = 18$$

$$(2, 3) : 9 + 6 = 15$$

$$(2, 4) : 9 + 6 = 15$$

$$(3, 3) : 6 + 6 = 12$$

$$(3, 4) : 6 + 6 = 12$$

$$(4, 4) : 6 + 6 = 12$$

$$6 \wedge 12 \wedge 9 \wedge 9 \wedge 18 \wedge 15 \wedge 15 \wedge 12 \wedge 12 \wedge 12 = 20$$