

Mirko has recently been visited by **extraterrestrials** from planet **X3**, where everyone's name is a positive integer. **All residents** of the planet **know each other**. Two X3-ians calculate the strength of their friendship by converting their names to binary, aligning them one under the other, and writing a digit in each column: 0 if the two binary digits in that column are equal, 1 if they differ. The binary result is then converted back to the decimal system.

For example, the friendship value of 19 and 10 equals 25:

$$\begin{array}{r} 10011 \\ 01010 \\ \hline 11001 \end{array} \quad = \quad \begin{array}{r} 19 \\ 10 \\ 25 \end{array}$$

The **value of a planet** in the Universe is defined as the sum of all friendship values. Mirko has asked you to help him compute the value of planet X3!

INPUT

The first line of input contains the positive integer **N** (the number of residents of planet X3, $1 \leq N \leq 1\,000\,000$). The next **N** lines contain the names of residents - positive integers smaller than 1 000 000, one per line.

OUTPUT

The only line of output must contain the value of planet X3.

SAMPLE TESTS

input	input	input
2	3	5
19	7	9
10	3	13
output	5	1
25	output	9
	12	6
		output
		84

Second sample description: The friendship value of residents 1 and 2 equals 4, for residents 1 and 3 it equals 2, and for residents 2 and 3 it equals 6. The solution is $4 + 2 + 6 = 12$.