FRIENDSHIP!!!

Q[b] has recently been visited by **extraterrestrials** from planet **Quan_Lank** , where everyone's name is a positive integer. **All residents** of the planet **know each other**. Two Quan_Lank-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:

1 0 0 1 1 = 19

0 1 0 1 0 = 10

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1 1 0 0 1 = 25

The **value of a planet** in the Universe is defined as the sum of all friendship values. Q[b] has asked you to help him compute the value of planet Quan_Lank!

INPUT

The first line of input contains the positive integer N (the number of residents of planet Quan_Lank , 1<=N<=10^6).
The next N lines contain the names of residents - positive integers smaller than 10^6, one per line.

OUTPUT

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

SAMPLE

Input
2
19
10
Output
25

Input

3
7
3
5

Output
12

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.