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B. Sponsor

time limit per test: 1 second memory limit per test: 256 megabytes input: standard input output: standard output

OIJ, a giant company, plans to sponsor CPL this year. The amount of money they will invest is equal to the maximum points that can be scored in the following problem.

- Given the number of Instagram followers of n teams in the CPL, you are allowed to choose any $i(1 \le i \le n-1)$ teams of your choice among them.
- Let the number of instagram followers of i teams you chose be a_1,a_2,a_3,\ldots,a_i and the followers of rest of the teams be b_1,b_2,\ldots,b_{n-i} .
- · Then points are calculated using the formula

$$\circ f(a_1, a_2, a_3, \ldots, a_i) + f(b_1, b_2, \ldots, b_{n-i})$$

• where $f(d_1,d_2,\ldots,d_m)$ = $d_1\oplus d_2\oplus\ldots d_{m-1}\oplus d_m$ and \oplus represents the bitwise XOR operator

Your task is to find the amount of money that OIJ will sponsor. You will need to use **long long** as answer can be out of bound of int.

Input

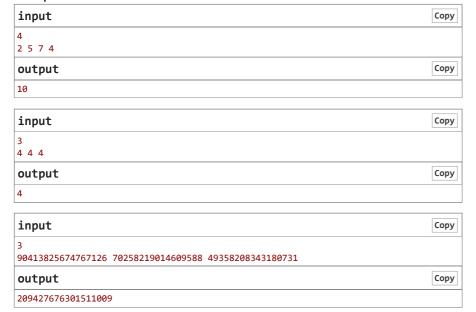
The first line contains a single integer $n(2 \le n \le 10^5)$ — the number of teams in the CPL

The second line contains n integers c_1, c_2, \ldots, c_n $(1 \le c_j \le 10^{18})$ — number of instagram followers of each team.

Output

Print the amount of money that will be sponsored by OIJ, that is the maximum possible points one can score. You will need to use **long long** as the answer can be out of bound of int.

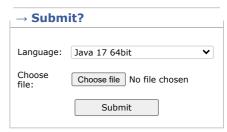
Examples



Note

In the first sample, the maximum possible points one can score is 10 and is obtained by choosing 2 teams with followers 2 and 5, so now using the formula, points will be equal to f(2,5)+f(7,4) = (2 \oplus 5) + (7 \oplus 4) = 7 + 3 = 10.





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In the second sample, the maximum possible points one can score is 4, obtained by choosing any one of the teams.

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