

Problem J. Master Zhu and Instability

Input file: *standard input*
Output file: *standard output*
Time limit: 1 second
Memory limit: 512 mebibytes

Consider an array A of length N . The *instability* of A is defined as

$$\sum_{i=1}^{N-1} (|A[i+1] - A[i]|).$$

Master Zhu wants to stabilize an array. In order to do that, he wants to select an integer X and change every element $A[i]$ to $(A[i] \oplus X)$. Here, $u \oplus v$ is the bitwise XOR of u and v .

Find the smallest non-negative integer X Master Zhu must choose to minimize the instability of a given array, and calculate the resulting instability.

Input

The first line of input contains an integer N ($1 \leq N \leq 10^5$). Next line contains N integers $A[i]$, indicating the elements of the array ($0 \leq A[i] < 2^{20}$).

Output

Print a single line containing two integers: the smallest non-negative integer X which must be used in order to reach the minimum possible instability and the resulting instability itself.

Examples

standard input	standard output
3 0 3 0	1 2
3 1 3 1	0 4