Problem E
One Bit

POTYCZKI ALGORYTMICZNE

The 3rd Universal Cup, Stage 40: Potyczki. Limits: 1024 MB, 2 s. *21.06.2025*

You are given a sequence $a_1, a_2, \ldots, a_n$ consisting of non-negative integers. A sequence is called *remarkable* if the binary representations of each two consecutive numbers differ by **at most** one bit*. You can choose any elements of the sequence and change them to any non-negative integers. What is the minimum number of elements that need to be changed to make the given sequence remarkable?

Input

The first line of the input contains an integer n ($1 \leq n \leq 300\,000$), representing the length of the sequence.

The second line of the input contains n integers $a_1, a_2, \ldots, a_n$ ($0 \leq a_i \leq 2^{60} - 1$).

Output

The output should contain a single integer – the minimum number of elements in the sequence $a_1, a_2, \ldots, a_n$ that need to be changed to make this sequence remarkable.

Example

For the input data:	the correct result is:
5 4 0 3 3 10	2

Explanation: We can change, for example, the third and fourth elements, creating the remarkable sequence $[4, 0, 2, 10, 10]$. It can be shown that it is not possible to change only one number to make the sequence remarkable.

*When comparing the binary representations of two numbers of different lengths, we pad the shorter number with zeros at the front to match their lengths. For example, to compare $3_{(10)} = 11_{(2)}$ with $16_{(10)} = 10000_{(2)}$, we pad the first number with zeros at the front, creating the binary sequence 00011. The binary sequences 10000 and 00011 differ in three positions, thus the numbers 3 and 16 differ by three bits.