

1002.Hack of Multiply 2 Divide 2

Input file: standard input
 Output file: standard output
 Time limit: 1 second
 Memory limit: 256 megabytes

Note:There is no dependency between this problem and problem Multiply 2 Divide 2.

Frank_DD has a sequence a of length $n(1 \leq n \leq 10^5, 1 \leq a_i \leq 10^5)$.

For each operation, he selects a number $a_i(1 \leq i \leq n)$ and changes it to $a_i \cdot 2$ or $\lfloor \frac{a_i}{2} \rfloor$.

Frank_DD wants to know the minimum number of operations to change the sequence a to a non-descending sequence.

To help Frank_DD solve this problem, ddy guesses that the number in the result sequence can't be very large, and it will not exceed $2^{127} - 1$, which means that every number in the result sequence can be held in a 128-bit signed integer variable.

Formally, he guesses that for each sequence a that satisfies the constraints, there will always be a way that the number of operations is minimal, and in the result sequence, $a_n < 2^{127}$.

So, he writes a program relying on this idea.

But unfortunately, the idea is wrong, so this program can be hacked.

Now you should construct a sequence to hack the program of ddy. Your solution is considered correct if and only if this sequence satisfies the constraints, and the idea of ddy is wrong to this sequence.

Input

This problem has no input.

Output

The first line contains a single integer $n(1 \leq n \leq 10^5)$ — the length of sequence a .

The second line contains n integers a_1, a_2, \dots, a_n ($1 \leq a_i \leq 10^5$) — the sequence a .

Note

For example, if your output is

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7
6 3 3 4 10 8 2
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We can use at least 4 operations to change the sequence a to a non-descending sequence:

$$a_1 = \lfloor \frac{a_1}{2} \rfloor$$

$$a_5 = \lfloor \frac{a_5}{2} \rfloor$$

$$a_7 = a_7 \cdot 2$$

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In this way, in the result sequence, $a_n = 8 < 2^{127}$. So you will get wrong answer.