Problem I
Equal Candies

Time limit:4 seconds

Memory limit: 256 Mb

Phidang has an unlimited number of candies, and he wants to deliver them to orphaned children. There are n children in Ho Chi Minh city and all of them are at Phidang's house currently. Phidang knows that some of them already have a few candies from other philanthropists. The i^{th} child has a_i candies. Phidang wants all of them to have the same number of candies in the end, and the number of times he delivers the candies to the children is smallest since they are so crowded, given that at one time, he can only give one child a power of **2** number of candies.

Phidang is wondering that what the smallest number of times he needs to deliver candies to the children is so that all n children have the same amount of candies in the end. It can be proved that under given constraints the result does not exceed 10^{18}.

Input

The first line contains a single integer n $(1 \leq n \leq 10^5)$, which is the number of orphaned children.

The second line contains n integers $a_1, a_2, \ldots, a_n$ $(0 \leq a_i \leq 10^{17})$ where a_i indicates the number of candies the child i^{th} already has.

Output

Output exactly one integer – the smallest number of times Phidang needs to deliver his candies to all children to make the number of candies equal.

Sample Input 1	Sample Output 1
6 6 6 6 6 6 6	0

Sample Input 2	Sample Output 2
2 68 100	1

Sample Input 3	Sample Output 3
4 2 7 23 60	9