

Shifting

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

You are given a sequence of n numbers, a_1, a_2, \dots, a_n . In a *move*, you can choose an index $1 \leq i \leq n - 1$ and replace a_i, a_{i+1} by $a_i + a_{i+1}, 0$ or $0, a_i + a_{i+1}$.

In other words, you can replace the sequence $a_1, a_2, \dots, a_i, a_{i+1}, \dots, a_n$ by one of

1. $a_1, a_2, \dots, a_i + a_{i+1}, 0, \dots, a_n$ or
2. $a_1, a_2, \dots, 0, a_i + a_{i+1}, \dots, a_n$.

Find the minimum number of moves that you will need to transform the original sequence a_1, a_2, \dots, a_n into a sequence a'_1, a'_2, \dots, a'_n which satisfies $\gcd(a'_1, a'_2, \dots, a'_n) > 1$, or report that no such sequence of moves exists.

Input

The first line contains a single integer $1 \leq n \leq 10^5$.

The second line contains n space-separated integers, the i^{th} of them being $0 \leq a_i \leq 10^6$. It is guaranteed that there exists at least one non-zero a_i .

Output

In a single line, print a single integer, the minimum number of moves or -1 if there is no sequence of moves that satisfies the problem conditions.

Example

standard input	standard output
5 1 2 3 4 5	2

Note

$\gcd(a_1, a_2, \dots, a_n)$ is the largest integer g which divides a_i for each $1 \leq i \leq n$. It is defined if at least one non-zero a_i .

You are permitted to choose the same pair of indices more than once as well.

In the sample input, we can perform the operation on 1, 2 and 4, 5.