G. Coprime Segment

time limit per test: 1 second
memory limit per test: 1024 megabytes

Given an array of n integers a_i. Let's say that a segment of this array $a[l..r]$ $(1 \le l \le r \le n)$ is good if the GCD of all numbers on this segment is 1. Your task is to find the shortest good segment.
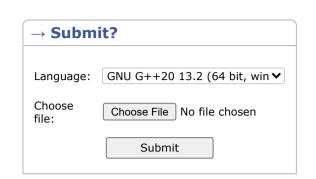
Input

The first line contains an integer n $(1 \le n \le 10^5)$. The second line contains integers a_i $(1 \le a_i \le 10^{18})$.

Output

Print one number, the minimum length of a good segment. If there is no good segment, print -1.

Example

input	Copy
5
4 6 9 3 6	
output	Copy
3	