Problem F. Geometrical problem

Time limit 1000 ms
Mem limit 262144 kB

Polycarp loves geometric progressions — he collects them. However, as such progressions occur very rarely, he also loves the sequences of numbers where it is enough to delete a single element to get a geometric progression.

In this task we shall define geometric progressions as finite sequences of numbers $a_1, a_2, ..., a_k$, where $a_i = c \cdot b^{i-1}$ for some real numbers c and b. For example, the sequences [2, -4, 8], [0, 0, 0], [199] are geometric progressions and [0, 1, 2, 3] is not.

Recently Polycarp has found a sequence and he can't classify it. Help him to do it. Determine whether it is a geometric progression. If it is not, check if it can become a geometric progression if an element is deleted from it.

Input

The first line contains an integer n ($1 \le n \le 10^5$) — the number of elements in the given sequence. The second line contains the given sequence. The numbers are space-separated. All the elements of the given sequence are integers and their absolute value does not exceed 10^4.

Output

Print `0`, if the given sequence is a geometric progression. Otherwise, check if it is possible to make the sequence a geometric progression by deleting a single element. If it is possible, print `1`. If it is impossible, print `2`.

Sample 1

Input	Output
4 3 6 12 24	0

Sample 2

Input	Output
4 -8 -16 24 -32	1

Sample 3

Input	Output
4 0 1 2 3	2