Problem E. Divisible by 3

Input file:	standard input
Output file:	standard output
Time limit:	2 seconds
Memory limit:	256 megabytes

For an array $[b_1, b_2, \ldots, b_m]$ of integers, let's define its **weight** as the sum of pairwise products of its elements, namely as the sum of $b_i b_j$ over $1 \le i < j \le m$.

You are given an array of n integers $[a_1, a_2, \ldots, a_n]$, and are asked to find the number of pairs of integers (l, r) with $1 \le l \le r \le n$, for which the weight of the subarray $[a_l, a_{l+1}, \ldots, a_r]$ is divisible by 3.

Input

The first line of the input contains a single integer n ($1 \le n \le 5 \cdot 10^5$) — the length of the array.

The second line contains n integers $a_1, a_2, \ldots, a_n$ ($0 \le a_i \le 10^9$) — the elements of the array.

Output

Output a single integer — the number of pairs of integers (l, r) with $1 \le l \le r \le n$, for which the weight of the corresponding subarray is divisible by 3.

Examples

standard input	standard output
3 5 23 2021	4
5 0 0 1 3 3	15
10 0 1 2 3 4 5 6 7 8 9	20

Note

In the first sample, the weights of exactly 4 subarrays are divisible by 3:

- $\text{weight}([5]) = \text{weight}([23]) = \text{weight}([2021]) = 0$
- $\text{weight}([5, 23, 2021]) = 56703 = 3 \cdot 41 \cdot 461$