

Match Troubles

Pranav and Yuvi love to play football. During a match, the opponent team asked them a problem. Unfortunately, they are not that smart. To help them keep their reputation, solve the problem for them!

Problem Statement

You are given an array A , containing n positive integers. You have to count the number of tuples of indices (i, j, k, l) such that $A_i * A_j * A_k * A_l$ is a **perfect square**. Please note that i, j, k, l must be distinct from each other.

Input Format

Input consists of two lines.

The first line contains, n – the number of elements in the array A

The second line contains n space separated integers $A_1, A_2, A_3 \dots, A_n$ – the elements of A

Output Format

Output a single integer, k – the answer to the problem

Since the answer can get large, print the answer % $10^9 + 7$.

Constraints

$$1 \leq n \leq 10^5$$

$$1 \leq A_i \leq 300$$

Time Limit: 1s

Memory Limit: 256MB

Sample I/O

Sample Input 1

4

1 1 2 2

Sample Output 1

24

Explanation

Since, $1*1*2*2 = 4$ and 4 is a perfect square. We can pick indices 1,2,3,4 in any order giving us, $4! = 24$ tuples.

Sample Input 2

4

1 1 2 3

Sample Output 2

0

Explanation

None of the tuples (i, j, k, l) result in $A[i] \cdot A[j] \cdot A[k] \cdot A[l]$ as a perfect square.

Sample Input 3

5

4 4 4 4 4

Sample Output 3

120