DMOPC '20 Contest 2 P5 - Majority Subarrays

Time limit: 1.2s **Memory limit:** 512M

You are given an array of N positive integers $a_1, a_2, \ldots, a_N$. Find the number of subarrays that have a majority element.

A subarray of length l has a majority element if some number appears strictly greater than $\frac{1}{2}l$ times in the subarray.

Constraints

$1 \leq a_i \leq N$ for all i.

Subtask 1 [5%]

$1 \leq N \leq 100$

Subtask 2 [10%]

$1 \leq N \leq 500$

Subtask 3 [15%]

$1 \leq N \leq 2\,000$

Subtask 4 [20%]

$1 \leq N \leq 10\,000$

Subtask 5 [25%]

$1 \leq N \leq 100\,000$

Subtask 6 [25%]

$1 \leq N \leq 2\,000\,000$

Input Specification

The first line of input contains one integer: N.

The second line of input contains N space-separated integers. The ith of these integers is a_i.

Output Specification

Output one number: the number of subarrays that have a majority element.

Sample Input 1

```
4
1 2 1 3
```

Sample Output 1

```
5
```

Explanation for Sample Output 1

All 4 single-element subarrays have a majority element, and the subarray $[1, 2, 1]$ also has a majority element.

Sample Input 2

```
10
1 3 2 3 1 3 3 2 2 4
```

Sample Output 2

```
25
```