

# BREAKING BARS

You and your friend would like to share a bar of chocolate. The bar has  $N$  pieces (numbered from 1 to  $N$  from left to right), the  $i$ th of which has an integer flavour  $a_i$ .

You and your friend are going to break the bar between two adjacent pieces. This will form two segments (one for you and one for your friend), each with an integer number of pieces.

The two of you enjoy eating a variety of flavours, and define the *deliciousness* of a segment to be the number of different flavours that it contains. The *total deliciousness* obtained by breaking the bar into two segments is the sum of the deliciousnesses of the segments.

What is the maximum total deliciousness that you can achieve by breaking the bar with your friend?

## Subtasks and Constraints

For all subtasks:

- $2 \leq N \leq 100\,000$ .
- $1 \leq a_i \leq N$  for all  $i$ .

Additional constraints for each subtask are given below.

Subtask	Points	Additional constraints
1	20	$N \leq 1000$ .
2	25	$a_i \leq 2$ for all $i$ . Furthermore, each flavour appears at least twice.
3	15	Each flavour forms a continuous portion of the bar. That is, if $a_i = a_j$ and $i < j$ , then $a_i = a_{i+1} = \dots = a_j$ .
4	40	No additional constraints.

## Input

- The first line of input contains the integer  $N$ .
- The second line of input contains  $N$  integers describing the flavours of the bar's pieces. They are  $a_1, a_2, \dots, a_N$ .

## Output

Output a single integer, the maximum total deliciousness that you can achieve by breaking the bar with your friend.

**Sample Input 1**

5  
5 4 1 5 3

**Sample Output 1**

5

**Sample Input 2**

7  
4 4 5 3 3 5 6

**Sample Output 2**

6

**Sample Input 3**

3  
3 3 3

**Sample Output 3**

2

**Explanation**

In the first sample case, you can break the bar between the first and second pieces so that the two segments have deliciousnesses of 1 and 4. This gives a total deliciousness of 5:

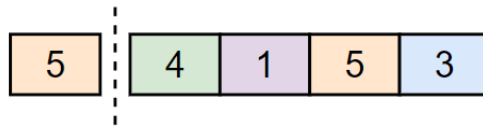


Figure 1: Sample Case 1

In the second sample case, you can break the bar between the fourth and fifth pieces so that the two segments both have a deliciousness of 3. This gives a total deliciousness of 6:

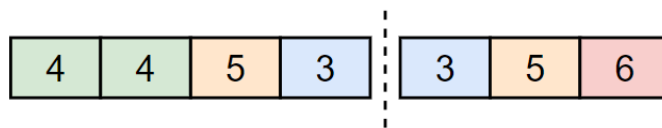


Figure 2: Sample Case 2

In the third sample case, you can break the bar between the second and third pieces so that the two segments both have a deliciousness of 1. This gives a total deliciousness of 2:

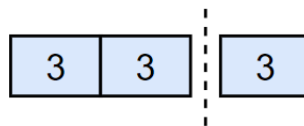


Figure 3: Sample Case 3