E. 23 Kingdom

time limit per test: 4 seconds
memory limit per test: 256 megabytes

The *distance* of a value x in an array c, denoted as $d_x(c)$, is defined as the largest gap between any two occurrences of x in c.

Formally, $d_x(c) = \max(j - i)$ over all pairs $i < j$ where $c_i = c_j = x$. If x appears only once or not at all in c, then $d_x(c) = 0$.

The *beauty* of an array is the sum of the distances of each distinct value in the array. Formally, the beauty of an array c is equal to $\sum\limits_{1 \le x \le n} d_x(c)$.

Given an array a of length n, an array b is *nice* if it also has length n and its elements satisfy $1 \le b_i \le a_i$ for all $1 \le i \le n$. Your task is to find the maximum possible beauty of any nice array.

Input

Each test contains multiple test cases. The first line contains the number of test cases t ($1 \le t \le 10^4$). The description of the test cases follows.

The first line of each test case contains a single integer n ($1 \le n \le 2 \cdot 10^5$) — the length of array a.

The second line of each test case contains n integers $a_1, a_2, \ldots, a_n$ ($1 \le a_i \le n$) — the elements of array a.

It is guaranteed that the sum of n over all test cases does not exceed $2 \cdot 10^5$.

Output

For each test case, output a single integer representing the maximum possible beauty among all nice arrays.

Example

input Copy

```
4
4
1 2 1 2
2
2 2
10
1 2 1 5 1 2 2 1 1 2
8
1 5 2 8 4 1 4 2
```

output Copy

```
4
1
16
16
```

Note

In the first test case, if $b = [1, 2, 1, 2]$, then $d_1(b) = 3 - 1 = 2$ and $d_2(b) = 4 - 2 = 2$, resulting in a beauty of $2 + 2 = 4$. It can be proven that there are no nice arrays with a beauty greater than 4.

In the second test case, both $b = [1, 1]$ and $b = [2, 2]$ are valid solutions with a beauty of 1.

In the third test case, if $b = [1, 2, 1, 4, 1, 2, 1, 1, 1, 2]$ with $d_1(b) = 9 - 1 = 8$, $d_2(b) = 10 - 2 = 8$, and $d_4(b) = 0$, resulting in a beauty of 16.

Codeforces Round 1024 (Div. 2)
Finished
Practice

→ Virtual participation

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Start virtual contest

→ Clone Contest to Mashup

You can clone this contest to a mashup.

Clone Contest

→ Submit?

Language: GNU G++23 14.2 (64 bit, ms

Choose file: Choose File No file chosen

Submit

→ Last submissions

Submission	Time	Verdict
321884359	May/29/2025 10:52	Accepted

→ Problem tags

data structures greedy ternary search two pointers *2200

No tag edit access

→ Contest materials

- Announcement (en)
- Tutorial (en)

The only programming contests Web 2.0 platform
Server time: May/29/2025 14:54:49^{UTC+7} (n2).
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