

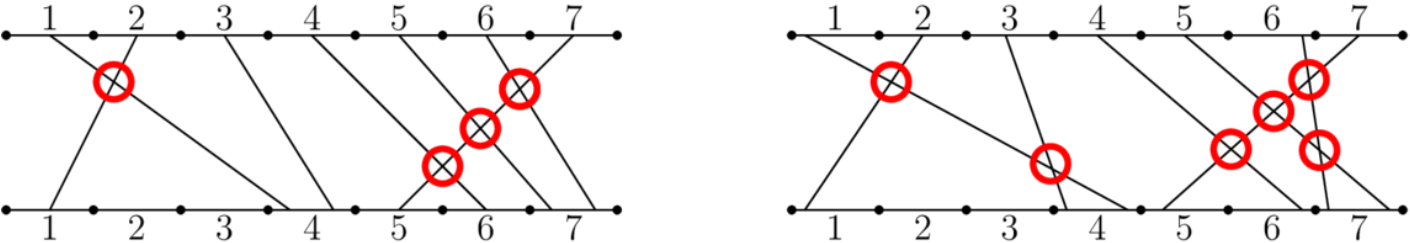
H2. Maximum Crossings (Hard Version)

time limit per test: 1 second
memory limit per test: 256 megabytes

The only difference between the two versions is that in this version $n \leq 2 \cdot 10^5$ and the sum of n over all test cases does not exceed $2 \cdot 10^5$.

A *terminal* is a row of n equal segments numbered 1 to n in order. There are two terminals, one above the other.

You are given an array a of length n . For all $i = 1, 2, \dots, n$, there should be a straight wire from some point on segment i of the top terminal to some point on segment a_i of the bottom terminal. You can't select the endpoints of a segment. For example, the following pictures show two possible wirings if $n = 7$ and $a = [4, 1, 4, 6, 7, 7, 5]$.



A *crossing* occurs when two wires share a point in common. In the picture above, crossings are circled in red.

What is the **maximum** number of crossings there can be if you place the wires optimally?

Input

The first line contains an integer t ($1 \leq t \leq 1000$) — the number of test cases.

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

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

The sum of n across all test cases does not exceed $2 \cdot 10^5$.

Output

For each test case, output a single integer — the **maximum** number of crossings there can be if you place the wires optimally.

Example

input	Copy
4 7 4 1 4 6 7 7 5 2 2 1 1 1 3 2 2 2	
output	Copy
6 1 0 3	

Note

The first test case is shown in the second picture in the statement.

In the second test case, the only wiring possible has the two wires cross, so the answer is 1.

In the third test case, the only wiring possible has one wire, so the answer is 0.

Codeforces Round 790 (Div. 4)

Finished

Practice

Virtual participation

Virtual contest is a way to take part in past contest, as close as possible to participation on time. It is supported only ICPC mode for virtual contests. If you've seen these problems, a virtual contest is not for you - solve these problems in the archive. If you just want to solve some problem from a contest, a virtual contest is not for you - solve this problem in the archive. Never use someone else's code, read the tutorials or communicate with other person during a virtual contest.

Start virtual contest

Clone Contest to Mashup

You can clone this contest to a mashup.

Clone Contest

Submit?

Language: GNU G++20 13.2 (64 bit, win)

Choose file: Choose File No file chosen

Submit

Last submissions

Submission	Time	Verdict
303040552	Jan/26/2025 17:05	Accepted
302953476	Jan/25/2025 23:25	Accepted
302951240	Jan/25/2025 22:45	Accepted
265690409	Jun/14/2024 01:40	Accepted
231258689	Nov/04/2023 03:31	Accepted
231134488	Nov/03/2023 17:28	Time limit exceeded on test 3

Problem tags

data structures divide and conquer

sortings *1500

No tag edit access

Contest materials

Announcement (en)

Tutorial (en)