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Insertion Sort Advanced Analysis

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Insertion Sort is a simple sorting technique which was covered in previous challenges. Sometimes, arrays may be too large for us to wait around for insertion sort to finish. Is there some other way we can calculate the number of times Insertion Sort shifts each elements when sorting an array?

If k_i is the number of elements over which the ith element of the array has to shift, then the total number of shifts will be $k_1 + k_2 + \ldots + k_N$.

Input Format
The first line contains the number of test cases, T. T test cases follow. The first line for each test case contains N, the number of elements to be sorted. The next line contains N integers ($a[1]$, $a[2]$, ..., $a[N]$).

Output Format
Output T lines containing the required answer for each test case.

Constraints
$1 \leq T \leq 15$
$1 \leq N \leq 100000$
$1 \leq a[i] \leq 10000000$

Sample Input

```
2
5
1 1 1 2 2
5
2 1 3 1 2
```

Sample Output

```
0
4
```

Explanation
The first test case is already sorted, therefore there's no need to shift any element. In the second case, it will proceed in the following way.

```
Array: 2 1 3 1 2 -> 1 2 3 1 2 -> 1 1 2 3 2 -> 1 1 2 2 3
Moves:  -       1       -   2        - 1           = 4
```

Submissions: 8046

Max Score: 50

Difficulty: Advanced

Current Buffer (saved locally, editable) ⑂ ⟲

Java 8 ⌄

```
1  import java.io.*;
2  import java.util.*;
3
4  public class Solution {
5
6      public static void main(String[] args) {
7          /* Enter your code here. Read input from STDIN. Print output to STDOUT. Your class should be named
   Solution. */
8      }
9  }
```

Line: 1 Col: 1

⬆ Upload Code as File   ☐ Test against custom input   Run Code   Submit Code

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