# Problem B. Up and Down



| | |
|---|---|
| Small input<br>7 points | Solve B-small |
| Large input<br>11 points | Solve B-large |

## Problem

You are given a sequence of distinct integers **A** = [$A_1$, $A_2$, ..., $A_N$], and would like to rearrange it into an *up and down* sequence (one where $A_1 < A_2 < ... < A_m > A_{m+1} > ... > A_N$ for some index **m**, with m between 1 and **N** inclusive).

The rearrangement is accomplished by swapping two ***adjacent*** elements of the sequence at a time. Predictably, you are particularly interested in the minimum number of such swaps needed to reach an *up and down* sequence.

## Input

The first line of the input gives the number of test cases, **T**. **T** test cases follow. Each test case begins with a line containing a single integer: **N**. The next line contains **N** ***distinct*** integers: $A_1$, ..., $A_N$.

## Output

For each test case, output one line containing "Case #x: y", where x is the test case number (starting from 1) and y is the minimum number of swaps required to rearrange **A** into an *up and down* sequence.

## Limits

$1 \le T \le 100$.
$1 \le A_i \le 10^9$
The $A_i$ will be pairwise distinct.

## Small dataset

$1 \le N \le 10$.

## Large dataset

$1 \le N \le 1000$.

## Sample

| Input | Output |
|---|---|
| 2<br>3<br>1 2 3<br>5<br>1 8 10 3 7 | Case #1: 0<br>Case #2: 1 |

In the first case, the sequence is already in the desired form (with **m**=**N**=3) so no swaps are required.

In the second case, swapping 3 and 7 produces an *up and down* sequence (with **m**=3).


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