1421 – Wavio Sequence

Wavio is a sequence of integers. It has some interesting properties:

1. Wavio is of odd length i.e. **L = 2*n + 1**.
2. The first **(n+1)** integers of Wavio sequence make a strictly increasing sequence.
3. The last **(n+1)** integers of Wavio sequence make a strictly decreasing sequence.
4. No two adjacent integers are same in a Wavio sequence.

For example **1, 2, 3, 4, 5, 4, 3, 2, 1** is an Wavio sequence of length **9**. But **1, 2, 3, 4, 5, 4, 3, 2, 2** is not a valid wavio sequence. In this problem, you will be given a sequence of integers. You have to find the length of the longest Wavio sequence which is a **subsequence** of the given sequence. Consider the given sequence as:

1 2 3 2 1 2 3 4 3 2 1 5 4 1 2 3 2 2 1

Here the longest Wavio sequence is: **1 2 3 4 5 4 3 2 1**. So, the output will be **9**.

Input

Input starts with an integer **T (≤ 12)**, denoting the number of test cases.

Each case starts with a line containing an integer **N ($1 \leq N \leq 10^5$)** denoting the number of elements in the sequence. The next line contains **N** space separated integers between **-10^8** to **10^8**, that form the sequence.

Output

For each case, print the case number and the length of the maximum possible Wavio sequence.

Sample Input	Output for Sample Input
3 10 1 2 3 4 5 4 3 2 1 10 14 1 2 3 2 1 2 3 4 3 2 1 5 4 1 5 1 2 3 4 5	Case 1: 9 Case 2: 7 Case 3: 1

Note

Dataset is huge, use faster I/O methods.