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:

1232123432154123221

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 $T \leq 12$, denoting the number of test cases.

Each case starts with a line containing an integer N ($1 \le N \le 10^5$) 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	Case 1: 9
10	Case 2: 7
1 2 3 4 5 4 3 2 1 10	Case 3: 1
14	
1 2 3 2 1 2 3 4 3 2 1 5 4 1	
5	
1 2 3 4 5	

Note

Dataset is huge, use faster I/O methods.