Problem on Array

You are given an array of integers $A_{1..N}$ of N elements.

A function F(i) of A returns the largest index j of array A such that all A_k where $i < k < j$ are smaller than both A_i and A_j. By convention, j = N if i = N. Consider the following example. Let $A_{1..6} = \{5, 2, 3, 6, 4, 5\}$; then, function F(i) for i = 1..6 will return {4, 3, 4, 6, 6, 6}. Notice that:

- For i = 1, the largest j is 4. $A_1 = 5$, $A_4 = 6$, and $A_{2..3} = \{2, 3\}$; therefore, F(1) = 4.
- For i = 2, the largest j is 3. $A_2 = 2$, $A_3 = 3$, and $A_{ø} = \{\ \}$—there are no integer k such that $2 < k < 3$; therefore, F(2) = 3.
- For i = 3, the largest j is 4. $A_3 = 3$, $A_4 = 6$, and $A_{ø} = \{\ \}$; therefore, F(3) = 4.
- For i = 4, the largest j is 6. $A_4 = 6$, $A_6 = 5$, and $A_{5..5} = \{4\}$; therefore, F(4) = 6.
- For i = 5, the largest j is 6. $A_5 = 4$, $A_6 = 5$, and $A_{ø} = \{\ \}$; therefore, F(5) = 6.
- For i = 6, j = 6 (by convention); therefore, F(6) = 6.

A function G(i) of A is defined as **F(i) - i**. Thus, in the previous example, G(i) for i = 1..6 is {3, 1, 1, 2, 1, 0}.

Your task in this problem is to output the largest G(i) and the sum of G(i) for all i given array A. In the previous example, the largest G(i) is 3, while the sum of all G(i) is 3 + 1 + 1 + 2 + 1 + 0 = 8.

As the sum of all G(i) can be very large, you should modulo the output by 1,000,000,007.

Input

Input begins with an integer: T ($1 \le T \le 20$) denoting the number of cases.

Each case contains the following input block: Each case begins with an integer N ($1 \le N \le 500,000$) denoting the array size. The next line contains N integers A_i ($1 \le A_i \le 1,000,000,000$) representing the array's element.

The sum of all N in input is no larger than 1,000,000.

Output

For each case, output in a line "`Case #X: Y Z`" where `X` is the case number (starts from 1), `Y` is the largest G(i), and `Z` is the sum of all G(i) modulo 1,000,000,007 for the respective case.

Examples

input **Example #1**

```
4
6
5 2 3 6 4 5
5
1 2 3 4 5
5
5 4 3 2 1
4
100 130 125 147
```

output

```
Case #1: 3 8
Case #2: 1 4
Case #3: 1 4
Case #4: 2 4
```

explanation

Case 1: This is the example given in the problem statement.

Case 2: F(i) = {2, 3, 4, 5, 5}; G(i) = {1, 1, 1, 1, 0}.

Case 3: F(i) = {2, 3, 4, 5, 5}; G(i) = {1, 1, 1, 1, 0}.

Case 4: F(i) = {2, 4, 4, 4}; G(i) = {1, 2, 1, 0}.