Elegant Permuted Sum

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You will be given **n** integers $\mathbf{A_1A_2A_3...A_n}$. Find a permutation of these **n** integers so that summation of the absolute differences between adjacent elements is maximized.

Suppose **n = 4** and the given integers are **4 2 1 5**. The permutation **2 5 1 4** yields the maximum summation. For this permutation **sum = abs(2-5) + abs(5-1) + abs(1-4) = 3+4+3 = 10**.

Of all the **24** permutations, you won't get any summation whose value exceeds **10**. We will call this value, **10**, the *elegant permuted sum*.

Input

The first line of input is an integer **T** (**T** < 100) that represents the number of test cases. Each case consists of a line that starts with **n** (1 < **n** < 51) followed by n non-negative integers separated by a single space. None of the elements of the given permutation will exceed 1000.

Output

For each case, output the case number followed by the *elegant permuted summation*.

Example

Input:
3
4 4 2 1 5
4 1 1 1 1
2 10 1

Output:
Case 1: 10
Case 2: 0
Case 3: 9