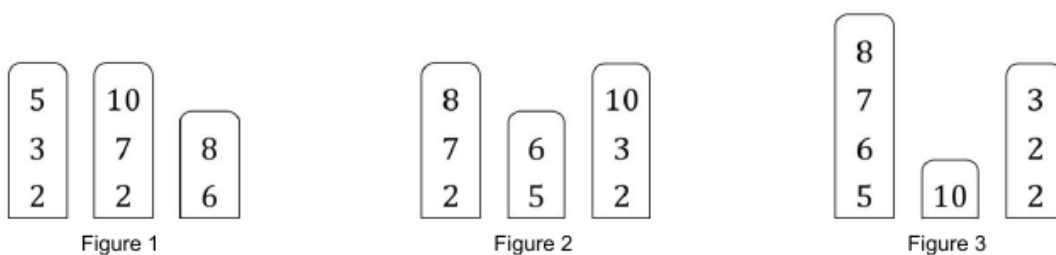


6434 Number Assignment

Given integers, you have to assign these integers into groups such that each group contains at least one element and each integer belongs to exactly one group (let's call this process as number assignment). The cost of a group is defined as the difference between the largest and the smallest element in the group. If the group has only one element, then the cost for that group will be zero. The cost of an assignment is defined as the sum of all groups' cost.

For example, let there be 8 integers: 5, 2, 3, 10, 7, 2, 6 and 8. Let's say that you have to assign these integers into 3 groups. There are plenty of ways to do that and some of those are shown in these three figures below.



The cost of assignment in Figure 1 is: $(5 - 2) + (10 - 2) + (8 - 6) = 3 + 8 + 2 = 13$.

The cost of assignment in Figure 2 is: $(8 - 2) + (6 - 5) + (10 - 2) = 6 + 1 + 8 = 15$.

The cost of assignment in Figure 3 is: $(8 - 5) + 0 + (3 - 2) = 3 + 0 + 1 = 4$.

Apparently the assignment in Figure 3 has the lowest cost among all possible assignments.

Your task is to find the minimum cost of such number assignment.

Input

The first line of input contains an integer T ($T \leq 100$) denoting the number of cases. Each case begins with two integers N and M ($1 \leq M \leq N \leq 100$) denoting the number of integers and the number of groups respectively. The following line contains N integers A_i ($0 \leq A_i \leq 10^9$) each separated by a single space representing the given integers from the problem statement.

Output

For each case, output 'Case # X : Y ', where X is the case number starts from 1 and Y is the minimum cost of the number assignment.

Sample Input

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4
8 3
5 2 3 10 7 2 6 8
5 5
10 1 29 15 6
4 1
105 3 27 86

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10 2
37 290 15 60 4 39 2 8 275 301

Sample Output

Case #1: 4
Case #2: 0
Case #3: 102
Case #4: 84