

Happiness

You are given an array on N elements $a[1], a[2], a[3], \dots, a[N]$.

Now you will have to answer some queries.

In every query, you will be given an interval, $[l, r]$. For this interval you have to print the total summation of happiness of all the elements of the given array between the interval $[l, r]$.

The happiness of an element $a[i]$ between interval $[l, r]$ is: the number of **sub-array** $[l_j, r_j]$ where the minimum value between $[l_j, r_j]$ is equal to $a[i]$. Here, $l \leq l_j \leq i$ & $i \leq r_j \leq r$.

Now, you have to print the total summation of happiness of all the elements between $[l, r]$.

Input

The first line of the input contains the number of test cases T . The first line of each test case contains two numbers, N & M . N is the number of elements in array a and M is the number of queries you need to perform.

The next line contains N integers, the array a : $a[1], a[2], a[3], \dots, a[N]$.

Next M lines contains two integers, l & r .

Constraints

$$1 \leq T \leq 5$$

$$1 \leq N, M \leq 50000$$

$$1 \leq a[i] \leq 1000000000$$

$$1 \leq l \leq r \leq N$$

Output

For each test case, you need to print the case number on the first line in this format: **Case X:** where X is the case number.

In the next M lines, you need to print the total summation of happiness of all the elements between $[l, r]$ of the given array.

Example

Input:

```
2
5 2
1 3 2 4 3
1 3
2 4
5 2
5 3 7 6 8
1 4
2 5
```

Output:

Case 1:

6

6

Case 2:

10

10

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Used in Eid 2016 contest.

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