## CSES Problem Set

# Increasing Array Queries



**Time limit:** 1.00 s **Memory limit:** 512 MB

You are given an array that consists of $n$ integers. The array elements are indexed $1, 2, \ldots, n$.

You can modify the array using the following operation: choose an array element and increase its value by one.

Your task is to process $q$ queries of the form: when we consider a subarray from position $a$ to position $b$, what is the minimum number of operations after which the subarray is increasing?

An array is increasing if each element is greater than or equal with the previous element.

### Input

The first input line has two integers $n$ and $q$: the size of the array and the number of queries.

The next line has $n$ integers $x_1, x_2, \ldots, x_n$: the contents of the array.

Finally, there are $q$ lines that describe the queries. Each line has two integers $a$ and $b$: the starting and ending position of a subarray.

### Output

For each query, print the minimum number of operations.

### Constraints

- $1 \le n, q \le 2 \cdot 10^5$
- $1 \le x_i \le 10^9$
- $1 \le a \le b \le n$

### Example

Input:

```
5 3
2 10 4 2 5
```

**Range Queries**

...
Subarray Sum Queries II
Distinct Values Queries
Distinct Values Queries II
Increasing Array Queries
Movie Festival Queries
Forest Queries II
Range Updates and Sums
Polynomial Queries
...

**Your submissions**

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```
3 5
2 2
1 4
```

Output:

```
2
0
14
```