

# Max-Min Difference in an Interval

Consider an array of integers,  $A = [a_0, a_1, \dots, a_{n-1}]$ . Let  $\max(b, e)$  and  $\min(b, e)$  be the respective maximum and minimum values in the inclusive range between index  $b$  and  $e$ .

Given  $A$ , perform  $q$  queries where each query consists of two integers,  $low$  and  $high$ . For each query, find and print the number of  $(b, e)$  pairs that satisfy the following:

- $0 \leq b \leq e < n$
- $low \leq \max(b, e) - \min(b, e) \leq high$ .

## Input Format

The first line contains two space-separated integers describing the respective values of  $n$  (the size of array  $A$ ) and  $q$  (the number of queries).

The second line contains  $n$  space-separated integers describing the respective values of  $a_0, a_1, \dots, a_{n-1}$ .

Each line  $j$  of the  $q$  subsequent lines contains two space-separated integers describing the respective values of  $low_j$  and  $high_j$  for the  $j^{th}$  query.

## Constraints

- $1 \leq n \leq 5 \times 10^5$
- $n \times q \leq 2 \times 10^6$
- $1 \leq a_i \leq 10^9$
- $1 \leq low_j \leq high_j \leq 10^9$  for  $0 \leq j < q$

## Output Format

Print  $q$  lines where each line  $j$  is the number of possible pairs for the  $j^{th}$  query.

## Sample Input 0

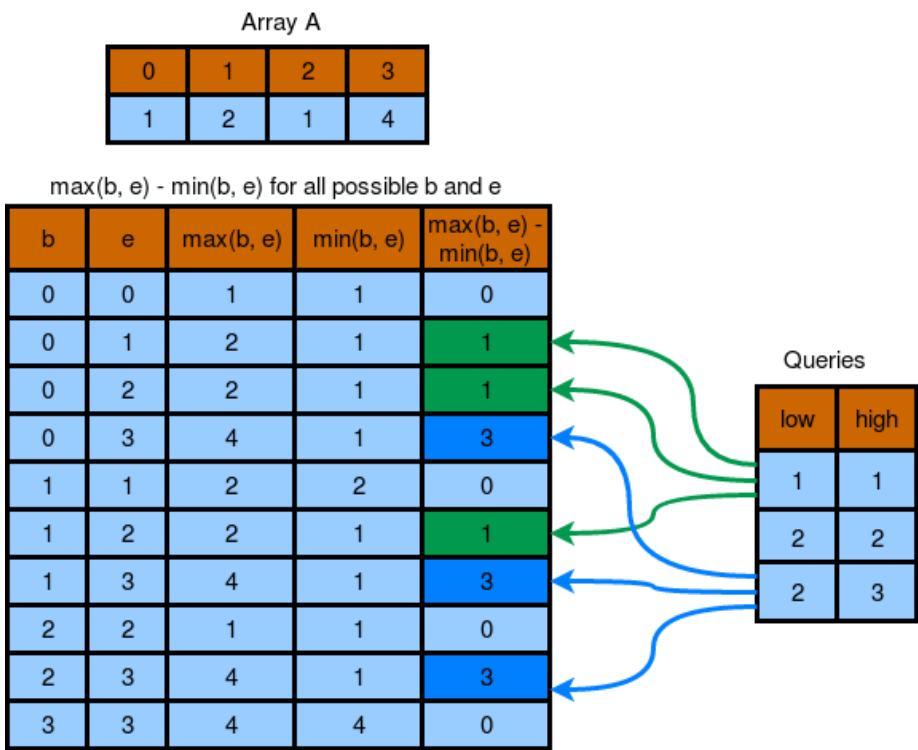
```
4 3
1 2 1 4
1 1
2 2
2 3
```

## Sample Output 0

```
3
0
3
```

Explanation 0

The diagram below breaks down the possible pairs for each query on  $A = [1, 2, 1, 4]$ :



As you can see, the first query has **3** pairs, the second has **0** pairs, and the third has **3** pairs.