

# Frequent values

You are given a sequence of  $n$  integers  $a_1, a_2, \dots, a_n$  in non-decreasing order. In addition to that, you are given several queries consisting of indices  $i$  and  $j$  ( $1 \leq i \leq j \leq n$ ). For each query, determine the most frequent value among the integers  $a_i, \dots, a_j$ .

## Input Specification

The input consists of several test cases. Each test case starts with a line containing two integers  $n$  and  $q$  ( $1 \leq n, q \leq 100000$ ). The next line contains  $n$  integers  $a_1, \dots, a_n$  ( $-100000 \leq a_i \leq 100000$ , for each  $i \in \{1, \dots, n\}$ ) separated by spaces. You can assume that for each  $i \in \{1, \dots, n-1\}$ :  $a_i \leq a_{i+1}$ . The following  $q$  lines contain one query each, consisting of two integers  $i$  and  $j$  ( $1 \leq i \leq j \leq n$ ), which indicate the boundary indices for the query.

The last test case is followed by a line containing a single  $0$ .

## Output Specification

For each query, print one line with one integer: The number of occurrences of the most frequent value within the given range.

## Sample Input

```
10 3
-1 -1 1 1 1 1 3 10 10 10
2 3
1 10
5 10
0
```

## Sample Output

```
1
4
3
```

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*A naive algorithm may not run in time!*