

11235 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

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

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

Note: A naive algorithm may not run in time!

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
```