2007/2008 ACM International Collegiate Programming Contest
University of Ulm Local Contest

Problem F: Frequent values

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

Input Specification

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

A naive algorithm may not run in time!