

Problem I. Streetlights

Input file: *standard input*
Output file: *standard output*
Time limit: 5 seconds
Memory limit: 1024 mebibytes

There are N streetlights along the straight road. The initial height of the i -th streetlight is a positive integer A_i ($1 \leq i \leq N$).

You are trying to install an electric wire between two streetlights. To install an electric wire between the streetlights i and j ($j > i$), the following conditions must be satisfied:

- $A_i = A_j$,
- For every $i < k < j$, $A_k < A_i$.

The city may adjust the height of a streetlight Q times. Each adjustment is given as a pair of positive integers (x, h) , which indicates that the height of x -th streetlight was adjusted to h . In other words, $A_x = h$.

Before the updates, and also after each update, find the number of pairs $1 \leq i < j \leq N$ such that you can install an electric wire between streetlights i and j .

Input

The first line contains two integers N and Q ($2 \leq N \leq 100\,000$, $1 \leq Q \leq 250\,000$).

The next line contains N integers A_1, A_2, \dots, A_N ($1 \leq A_i \leq 10^9$).

Each of the next Q lines contains two integers x and h , denoting that $A_x = h$ after the query ($1 \leq x \leq N$, $1 \leq h \leq 10^9$). It is guaranteed that h is different from the height of the x -th streetlight immediately prior to the requested update.

Output

Output $Q + 1$ lines. On the i -th line ($1 \leq i \leq Q + 1$), output the number of pairs you can install an electric wire between after processing the first $i - 1$ update queries.

Example

<i>standard input</i>	<i>standard output</i>
6 2	3
4 2 2 2 4 6	2
4 6	2
6 4	