Task: Diversity

Zoran is a Zookeeper at the Zagreb Zoo. He is currently conducting scientific research on the relationship between visitor satisfaction and the way animals are presented throughout the zoo.

A visitor's walk through the entire zoo can be viewed as a sequence of N habitats each containing a certain species of animal. The i-th habitat initially contains animals of species a_i, and visitors are expected to observe the habitats in order.

Zoran started experimenting with the order in which the animals were presented. He then proceeded to ask questions about visitor satisfaction during their visit. It turned out that the visitors are most satisfied when the *total diversity* of their walk is as small as possible.

Here, the *diversity* of a sequence of habitats is defined as the number of different animal species one can observe in these habitats, whereas the *total diversity* of a sequence of habitats is defined as the sum of diversities over all of its contiguous subsequences.

For example, the diversity of a sequence $(1, 1, 2)$ is 2 because there are two distinct animal species in that sequence. Meanwhile, the total diversity of that sequence is 8 because its contiguous subsequences (1), (1), (2), $(1, 1)$, $(1, 2)$ and $(1, 1, 2)$ have diversities equal to 1, 1, 1, 1, 2 and 2 respectively.

Zoran knows which animal species currently occupies which habitat. Before he reorganizes the zoo, he would like you to answer Q **independent** queries. In the i-th query, he wants to know the **smallest** possible **total diversity** of the contiguous subsequence starting from the l_i-th and ending at the r_i-th habitat that he can achieve by **reordering** the animals living in these habitats.

Input

The first line contains two integers N and Q from the task description.

The second line contains N space-separated integers a_1, a_2, ..., a_N. The i-th of these integers represents the animal species occupying the i-th habitat.

Each of the next Q lines contains two integers l_i and r_i ($1 \le l_i \le r_i \le N$) describing a single query.

Note that all queries are independent of each other, i.e. you should answer them under the assumption that the i-th habitat is initially occupied by the animal species a_i.

Output

The i-th line of output should contain a single integer representing the answer to the i-th query.

Scoring

Subtask	Score	Constraints
1	4	$1 \le N \le 11$, $1 \le a_i \le 300\,000$, $Q = 1$, $l_1 = 1$, $r_1 = N$
2	10	$1 \le N \le 300\,000$, $1 \le a_i \le 11$, $Q = 1$, $l_1 = 1$, $r_1 = N$
3	8	$1 \le N \le 300\,000$, $1 \le a_i \le 23$, $Q = 1$, $l_1 = 1$, $r_1 = N$
4	16	$1 \le N \le 300\,000$, $1 \le a_i \le 1\,000$, $Q = 1$, $l_1 = 1$, $r_1 = N$
5	26	$1 \le N \le 300\,000$, $1 \le a_i \le 300\,000$, $Q = 1$, $l_1 = 1$, $r_1 = N$
6	36	$1 \le N \le 300\,000$, $1 \le a_i \le 300\,000$, $1 \le Q \le 50\,000$

Examples

input	input	input
3 1	4 2	5 3
1 2 3	1 1 1 1	1 2 1 3 2
1 3	1 2	2 5
	2 4	1 3
output		3 4
	output	
10		**output**
	3	
	6	16
		8
		4

Clarification of the first example: In any ordering, the diversity of every contiguous subsequence is equal to the number of its elements. Hence, the answer to the query is $1 + 1 + 1 + 2 + 2 + 3 = 10$.

Clarification of the second example: In any ordering, every contiguous subsequence has diversity equal to 1. Thus, for each query, the answer is the number of contiguous subsequences contained in the given contiguous subsequence.

Clarification of the third example: In the first query, an optimal ordering is $(1, 2, 2, 3)$, which has total diversity equal to $1 + 1 + 1 + 1 + 2 + 1 + 2 + 2 + 2 + 3 = 16$. In the second query, an optimal ordering is $(1, 1, 2)$, which has total diversity equal to $1 + 1 + 1 + 1 + 2 + 2 = 8$. In the third query, an optimal ordering is $(1, 3)$, which has total diversity equal to $1 + 1 + 2 = 4$.