

Longest QwQ Subsequence

Time Limit: 2 Second
Memory Limit: 256 MB

Given an array $A = a_1, \dots, a_n$ of n elements that contains k distinct integers ($k \leq n$) and two permutations pl, pr of 1 to k , a QwQ sequence of (A, pl, pr) is defined as below:

- Let w be an array of length k such that w is the set of distinct integers of array A sorted in ascending order. (Hint: You can obtain this using `std::unique` in C++.)
- Let Q_l be an array of length k such that $Q_l[i] = \text{first}(w_{pl_i})$, where $\text{first}(x)$ denotes the index of the first occurrence of x in the array A .
- Let Q_r be an array of length k such that $Q_r[i] = \text{last}(w_{pr_i})$, where $\text{last}(x)$ denotes the index of the last occurrence of x in the array A .
- A QwQ sequence of the array A is a common subsequence of Q_l and Q_r .

Given the array A and the permutations pl and pr , find the longest QwQ subsequence of (A, pl, pr) .

Input

The first line of input contains two integers n and k ($1 \leq k \leq n \leq 2 \times 10^5$) - number of elements in the array and number of distinct elements in the array.

The second line contains n integers a_1, \dots, a_n ($1 \leq a_i \leq 10^9$) - elements of the array. It is guaranteed that the number of distinct elements in the array is equal to k .

The third line contains k integers pl_1, \dots, pl_k ($1 \leq pl_i \leq k$). It is guaranteed that pl is a permutation of 1 to k .

The last line contains k integers pr_1, \dots, pr_k ($1 \leq pr_i \leq k$). It is guaranteed that pr is a permutation of 1 to k .

Output

Output a single integer denoting the length of the longest QwQ subsequence of (A, pl, pr) .

Sample Inputs

```
5 4
3 2 2 1 4
2 1 4 3
4 3 1 2
```

Sample Outputs

```
2
```

Note

In the sample input,

- $w = [1, 2, 3, 4]$

- $Q_l = [2, 4, 5, 1]$
- $Q_r = [5, 1, 4, 3]$

The longest common subsequence of Q_l and Q_r is $[5, 1]$.