dynamic_inversion

You are given a permutation {1,2,3,...,n}. Remove m of them one by one, and output the number of inversion pairs *before* each removal. The number of inversion pairs of an array A is the number of ordered pairs (i,j) such that i < j and A[i] > A[j].

Input

The input contains several test cases. The first line of each case contains two integers n and m (1<=n<=200,000, 1<=m<=100,000). After that, n lines follow, representing the initial permutation. Then m lines follow, representing the removed integers, in the order of the removals. No integer will be removed twice. The input is terminated by end-of-file (EOF). The size of input file does not exceed 5MB.

Output

For each removal, output the number of inversion pairs before it.

Examples

Sample Input 1

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

Sample Output 1

```
5
2
2
1
```

Notes

(1,5,3,4,2) → (1,3,4,2) → (3,4,2) → (3,2) → (3)