You are given a permutation $\{1,2,3,\ldots,n\}$. 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 $(1 \leq n \leq 200,000, 1 \leq m \leq 100,000)$. 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).

Output

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

Explanation: (1,5,3,4,2)->(1,3,4,2)->(3,4,2)->(3,2)->(3)

Sample Input

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

Sample Output

```
5
2
2
1
```