Minimum Permutation

Time limit: *1000 ms*
Memory limit: *256 MB*

You are given an array A of size N and a set S with M elements. Each number from 1 to $N + M$ occurs exactly once in either A or S.

You need to insert the elements from the set S into the array A in order to obtain the lexicographically smallest permutation.

Note: A Sequence $X_{1..n}$, of the same length as a sequence $Y_{1..n}$, is considered lexicographically smaller than $Y_{1..n}$ if, and only if, there exists an index j for which $X_i = Y_i$ for $1 \le i < j$, and $X_j < Y_j$.

Standard input

The first line contains the numbers N and M. The second line contains N integers corresponding to the elements of A. The third line contains M integers corresponding to the elements of S.

Standard output

The output should contain the elements of the lexicographically smallest permutation, separated by single spaces.

Constraints and notes

- $1 \le N \le 10^5$
- $1 \le M \le 10^5$
- $2 \le N + M \le 10^5$
- All the elements are unique and between 1 and $N + M$

Input	Output	Explanation
3 2 3 1 5 4 2	2 3 1 4 5	The array is $[3, 1, 5]$ and the set is $\{4, 2\}$. The first operation is to insert 2 at the beginning of the array, obtaining $[2, 3, 1, 5]$. The second operation is to insert 4 right after 1, obtaining $[2, 3, 1, 4, 5]$.