# SHL Automata-Pro Practice Problems

## Problem 1: Partial Sorting

You are given a list of integers of size N. Write an algorithm to sort the first K elements in ascending order and the remaining (N-K) elements in descending order.  
  
Input:  
The first line of the input consists of an integer n, representing the number of elements.  
The second line consists of n space-separated integers representing the elements of the list.  
The last line consists of an integer k, representing the number of elements to be sorted in ascending order.  
  
Output:  
Print n space-separated integers representing the sorted list.  
  
Example:  
Input:  
8  
11 7 5 10 46 23 16 8  
3  
  
Output:  
5 7 11 46 23 16 10 8  
  
Explanation:  
The first three elements are arranged in increasing order and the remaining elements in decreasing order.

## Problem 2: Alumni Dinner Arrangement

A university has invited its alumni for a dinner. The alumni register on the university website and also identify one alumnus that they like from among the registered alumni. A round table is arranged for the dinner. The university wants to seat the alumni in such a way that each alumnus sits next to the alumnus they like. Write an algorithm to identify the alumni who will attend the dinner in the possible seating arrangement.  
  
If there is more than one possible seating arrangement, then output the one that is smallest.  
  
Input:  
The first line of the input consists of an integer n, representing the number of alumni.  
The second line consists of n space-separated integers alumni[0], alumni[1], ..., alumni[n-1] representing the ID of the person whom the ith alumnus likes.  
  
Output:  
Print space-separated integers representing the IDs of the alumni who will attend the dinner.  
  
Note:  
One alumnus can be liked by multiple alumni.  
  
Constraints:  
1 ≤ n ≤ 10^5  
  
Example:  
Input:  
4  
2 3 4 1  
  
Output:  
1 2 3 4  
  
Explanation:  
The first alumnus likes the person whose ID is 2.  
The second alumnus likes the person whose ID is 3.  
The third alumnus likes the person whose ID is 4.  
The fourth alumnus likes the person whose ID is 1.  
Hence, all 4 alumni can be seated around the table in the order 1 2 3 4.