DSA LAB - Section A

2nd of June, 2022 **Total Marks : 10**

Problem 1 (3 Marks):

P0ggi is a creature residing in the digital world, after much contemplation he has decided to sort his life in ascending order. His life is stored in the database as a linked list with length N and value v_i of each of its node satisfying $v_i \in Z^+$.

If he succeeds at sorting the linked list which constitutes his life, he can finally sit back and mess with Elden Ring players online. Help P0ggi with this task.

Note: Only the submissions which use linked list data structure to complete P0ggi's task will be evaluated.

Input:

First Line of input will be an integer N

Second line has N space separated integers v_i

Output:

Print the sorted linked list.

Example:

1) **Input**

5
5 4 3 2 1

Output

1 2 3 4 5

Explanation

Sorting the input 5, 4, 3, 2, 1 in ascending order gives us 1,2,3,4,5.

2) **Input**

6
6 5 3 2 1 8

Output

1 2 3 5 6 8

3) **Input**

10

8 6 10 12 18 5 4 3 2 4

Output

2 3 4 4 5 6 8 10 12 18

4) **Input**

5

7 8 9 10 11 12

Output

7 8 9 10 11 12

Constraints:

$0 <= N <= 10^5$

$0 < v_i <= 10^5$

Problem 2 (3 Marks):

Create a linked list from scratch and take two sorted linked lists as input and Merge the two lists into one sorted list. Print the sorted list.

Input:

The first line contains two space-separated integers N and M which are the length of the two linked lists.
The second line contains N space-separated integers which are the values of each node of the first linked list.
The third line contains M space-separated integers which are the values of each node of the first linked list.

Output:

Print Merged linked list.

Note: Only the submissions which use the linked list data structure to complete tasks will be evaluated.

Example:

1) Input

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

Output

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

2) Input

```
5 4
6 8 9 10 12
3 5 7 9
```

Output

```
3 5 6 7 8 9 9 10 12
```

3) Input

```
5 5
1 2 3 4 5
6 7 8 9 10
```

Output

```
1 2 3 4 5 6 7 8 9 10
```

Constraints:

The number of nodes in both lists is in the range [0, 50].
-100 <= Node.val <= 100
Both list1 and list2 are sorted in non-decreasing order.

Problem 3 (4 Marks):

You are given a linked list of length n.
Your task is to reverse every k consecutive element of the linked list.
It is given that the length of the linked list is always divisible by k.

Input:

The first line contains two space-separated integers n and k.
The second line contains n space-separated integers which are the values of each node of the first linked list.

Output:

Print Reversed linked list.

Note: Only the submissions which use the linked list data structure to complete tasks will be evaluated.

Example:

1) Input
   4 2
   1 2 3 4
   Output
   2 1 4 3

2) Input
   6 3
   1 2 3 4 5 6
   Output
   3 2 1 6 5 4

3) Input
   8 2
   8 7 6 5 4 3 2 1
   Output
   7 8 5 6 3 4 1 2

4) Input
   6 6
   6 5 4 3 2 1
   Output
   1 2 3 4 5 6

4) Input

6 1

6 5 4 3 2 1

Output

6 5 4 3 2 1

Constraints:

The number of nodes in the list is n.

$1 <= k <= n <= 10^5$

0 <= Node.val <= 1000