

Problems based on Stacks

Assignment Questions



Q1. You are given an array of n digits. Your task is to generate a k-digit number such that it is the maximum possible number that can be generated from the given digits. Make sure that the relative ordering of the digits is not changed.

Note the value of k can be large so the number should be formed in the form of a string.

Input

n=4

arr=[1, 2, 3, 4]

k=3

Output

234

Input

n=4

arr=[1, 2, 3, 4]

k=2

Output

34

Q2. You are given two non-empty linked lists representing two non-negative integers. The most significant digit comes first and each of their nodes contains a single digit. Add the two numbers and return the sum as a linked list.

You may assume the two numbers do not contain any leading zero, except the number 0 itself.

The first line of input contains n and m, the size of the 2 linked lists.

The second line of input contains n integers, the values stored in the first linked list.

The third line of input contains m integers, the values stored in the second linked list.

Input

3 4

1 2 3

1 2 3 4

Output

1357

Q3. Given a vector, print the index of the Next Smaller Element for every element.

The Next Smaller Element for an element x is the first smaller element on the right side of x in the vector.

Elements for which no smaller element exists, consider the next smaller element as -1.

The first line of input contains the size of the vector.

The second line of input contains the elements of the vector.

Input

4

3 2 4 1

Output

1 3 3 -1

Explanation

For 3, the next smaller element is 2(index = 1).

For 2, the next smaller element is 1(index = 3).

For 4, the next smaller element is 1(index = 3).

For 1, there is no value smaller than it on its right side

Q4. You are given an array of n integers representing the heights of the buildings in an area. Mario can jump from one building of height $\text{arr}[i]$ to another of height $\text{arr}[j]$, $i \leq j$, if the height of the second building is strictly greater than the height of the first building i.e. $\text{arr}[j] > \text{arr}[i]$. Each day mario makes a jump. Today he is a little busy so he wants to keep the length of jump ($j - i$) as small as possible. Help him find the location from where he must make his jump and to where.

Assume there always exists a valid answer. If there are multiple answers, print the answer with the minimum index (0-based indexing).

The first line of input contains the value of n .

The second line of input contains n integers, the heights of the buildings.

Input

5

1 10 3 2 4

Output

0 1

Explanation

There are 6 jumps possible for Mario to make.

1 \rightarrow 10, distance = $1 - 0 = 1$

1 \rightarrow 3, distance = $2 - 0 = 2$

1 \rightarrow 2, distance = $3 - 0 = 3$

1 \rightarrow 4, distance = $4 - 0 = 4$

3 \rightarrow 4, distance = $4 - 2 = 2$

2 \rightarrow 4, distance = $4 - 3 = 1$

Out of them 1 \rightarrow 10 and 2 \rightarrow 4 have the minimum distance.

Here 1 is located at index 0 and 2 is located at index 3. Since 1 has a lower index, we will print the indices of 1 and 10 i.e. 0 and 1.