

Next Greater Element

Given an array **arr[]** of size **N** having distinct elements, the task is to find the next greater element for each element of the array in order of their appearance in the array.

Next greater element of an element in the array is the nearest element on the right which is greater than the current element.

If there does not exist next greater of current element, then next greater element for current element is -1. For example, next greater of the last element is always -1.

Example 1:

Input:

N = 4, arr[] = [1 3 2 4]

Output:

3 4 4 -1

Explanation:

In the array, the next larger element to 1 is 3, 3 is 4, 2 is 4 and for 4 ? since it doesn't exist, it is -1.

Example 2:

Input:

N = 5, arr[] [6 8 0 1 3]

Output:

8 -1 1 3 -1

Explanation:

In the array, the next larger element to 6 is 8, for 8 there is no larger elements hence it is -1, for 0 it is 1, for 1 it is 3 and then for 3 there is no larger element on right and hence -1.

Your Task:

This is a **function** problem. You only need to complete the function **nextLargerElement()** that takes **list of integers arr[]** and **N** as input parameters and returns list of integers of length N denoting the next greater elements for all the corresponding elements in the input array.

Expected Time Complexity : O(N)

Expected Auxilliary Space : O(N)

Constraints:

$$1 \leq N \leq 10^6$$

$$1 \leq A_i \leq 10^8$$

```
def nextLargerElement(self, arr, n):  
    #code here  
    stack = []  
    ans = []  
    for i in range(n-1, -1, -1):  
        if len(stack)==0:  
            ans.append(-1)  
        elif len(stack)!=0 and stack[-1]>arr[i]:  
            ans.append(stack[-1])  
        elif len(stack)!=0 and stack[-1]<=arr[i]:  
            while len(stack)>0 and stack[-1]<=arr[i]:  
                stack.pop()  
            if len(stack)==0:  
                ans.append(-1)  
            else:  
                ans.append(stack[-1])  
        stack.append(arr[i])  
  
    return ans[::-1]
```