Next Smallest Element

18 February 2025 15:55

Question :

```
Input 1:
    A = [4, 5, 2, 10, 8]
Output 1:
    G = [-1, 4, -1, 2, 2]
Explaination 1:
    index 1: No element less than 4 in left of 4, G[1] = -1
    index 2: A[1] is only element less than A[2], G[2] = A[1]
    index 3: No element less than 2 in left of 2, G[3] = -1
    index 4: A[3] is nearest element which is less than A[4], G[4] = A[3]
    index 4: A[3] is nearest element which is less than A[5], G[5] = A[3]

Input 2:
    A = [3, 2, 1]
Output 2:
    [-1, -1, -1]
```

Method - 1. — O(N²)

```
public class Solution {
    public int[] prevSmaller(int[] arr) {
        int[] ans =new int[arr.length];
        Arrays.fill(ans,-1);

        int n=arr.length;
        for(int i=0;i<n;i++){
            for(int j=i-1;j>=0;j--){
                if(arr[j]<arr[i]){
                    ans[i]=arr[j];
                    break;
                }
            }
        }

        return ans;
    }
}
```

```
public class Solution {
    public int[] prevSmaller(int[] arr) {
        int[] ans=new int[arr.length];
        Stack<Integer> stack =new Stack<>();
        int n=arr.length;

        for(int i=0;i<n;i++){

            while(!stack.isEmpty() && arr[i]<=stack.peek())
            stack.pop();

            ans[i]=(stack.isEmpty())?-1:stack.peek();
            stack.push(arr[i]);
        }

        return ans;
    }
}
```

TC O(2N)

Looking for rise order