

2026 Canadian Computing Olympiad  
Day 1, Problem 2  
**Melborp**

**Time Limit: 3 seconds**

**Memory Limit: 512 MB**

Seta is creating problems for the CCO! She came up with the following problem:

Given an array  $A[1, \dots, N]$  whose values are in the range  $[1, N]$ , define  $B[i]$  to be the number of pairs  $(\ell, r)$  such that  $\ell \leq i \leq r$  and

$$A[i] = \min(A[\ell], A[\ell + 1], \dots, A[r - 1], A[r]).$$

Print the array  $B[1, \dots, N]$ .

However, the day before the CCO, Seta's computer crashed, and she was only able to recover the output files. Given the output array  $B[1, \dots, N]$ , can you write a program to reconstruct the input array  $A[1, \dots, N]$ ?

Seta reminds you that the array  $A$  is not necessarily unique, and she will accept any valid array.

**Input Specification**

The first line of input will contain a single integer,  $N$ . The second line of input will contain  $N$  space-separated integers  $B[1], \dots, B[N]$  ( $1 \leq B[i] \leq N^2$ ).

The following table shows how the 25 available marks are distributed:

Marks Awarded	Bounds on $N$	Additional Constraints
2 marks	$1 \leq N \leq 8$	None.
3 marks	$1 \leq N \leq 5\,000$	The original array $A$ is a permutation.
5 marks	$1 \leq N \leq 3 \times 10^5$	The original array $A$ is a permutation.
5 marks		None.
5 marks	$1 \leq N \leq 5 \times 10^6$	The original array $A$ is a permutation.
5 marks		None.

**Output Specification**

Output  $N$  space-separated integers, the array  $A[1], \dots, A[N]$ , where  $1 \leq A[i] \leq N$ . It is guaranteed that there will always exist at least one valid array  $A$ .

If there is more than one valid array, you may output any valid array. In particular, even if the original array  $A$  is a permutation, your answer does not have to be a permutation.

**Sample Input 1**

3  
3 1 2

**Output for Sample Input 1**

1 3 2

**Explanation of Output for Sample Input 1**

- The subarrays  $[1, 3, 2]$ ,  $[1, 3]$ ,  $[1]$  have minimum 1. There are 3 such subarrays.
- The subarray  $[3]$  has minimum 3. There is 1 such subarray.
- The subarrays  $[3, 2]$  and  $[2]$  have minimum 2. There are 2 such subarrays.

**Sample Input 2**

2  
2 2

**Output for Sample Input 2**

1 1

**Sample Input 3**

3  
1 4 1

**Output for Sample Input 3**

2 1 3

**Explanation of Output for Sample Input 3**

Note that  $A = [2, 1, 2]$  would also be accepted by the judge.