

# Problem A - Ordenação Nada Intuitiva

Rita and Rúben are in the school library, leaning over their notebooks. Today, they learned the *selection sort* sorting algorithm and decided to practice it together, by sorting a sequence A of N distinct positive integers in ascending order.



The pseudo-code of the algorithm they used is as follows:

$\operatorname{sort}(A)$ :				
1:	for $i = 1 N$ :			
2:	$j = argmin(oldsymbol{A}[iN])$			
3:	$swap(\boldsymbol{A}[i], \boldsymbol{A}[j])$			

For each index i, the auxiliary function argmin returns the index j of the smallest element in the subsequence  $A[i], A[i+1], \ldots, A[N]$ , and the auxiliary function swap swaps the positions of the elements A[i] and A[j].

To make running the algorithm more fun, Rita and Rúben decided to work as a team: Rúben was the one who, for each index i, told Rita the index j that would be returned by  $\operatorname{argmin}(A[i..N])$ , and Rita was the one who then performed the swap of the elements A[i] and A[j].

In the end, they observed the results produced by the algorithm and noticed that the sequence wasn't properly sorted. Their initial suspicion was that the algorithm was incorrect, but it was then that Rúben realized that the mistake was actually his own: whenever the smallest element in the subsequence  $A[i], A[i+1], \ldots, A[N]$  was equal to the second smallest minus 1, he had mistakenly told Rita the index of the second smallest instead of the actual value of argmin(A[i..N]).

For example, for the sequence [2, 5, 4], Rúben would tell Rita the index 1 (whose element is 2), but for the sequence [2, 5, 3], Rúben would tell Rita the index 3 (whose element is 3), since 2 = 3 - 1.

Rita found the mistake amusing and, curious about the result, decided to repeat the algorithm with Rúben's error for other sequences of integers. Since Rúben has to leave now for a class, Rita would like your help to run the algorithm for the new sequences!

Given an integer N and a sequence A of N distinct positive integers, determine the result of applying the "wrong" algorithm to that sequence.

#### Example

If the sequence to be sorted is  $\mathbf{A} = [4, 1, 5, 6]$ , then the "wrong" algorithm produces the result [1, 5, 4, 6], because:

1. To determine the value of  $\operatorname{argmin}([4, 1, 5, 6])$ , Rúben would find 2 (which corresponds to the element 1). After Rita swaps positions 1 and 2, the sequence becomes [1, 4, 5, 6].

2. To determine the value of  $\operatorname{argmin}([-, 4, 5, 6])$ , Rúben would find 3 (which corresponds to the element 5). After Rita swaps positions 2 and 3, the sequence becomes [1, 5, 4, 6].

3. To determine the value of  $\operatorname{argmin}([-, -, 4, 6])$ , Rúben would find 3 (which corresponds to the element 4). After Rita swaps positions 3 and 3, the sequence remains [1, 5, 4, 6].

4. To determine the value of  $\operatorname{argmin}([-, -, -, 6])$ , Rúben would find 4 (which corresponds to the element 6). After Rita swaps positions 4 and 4, the sequence remains [1, 5, 4, 6].

#### Constraints

The following limits are guaranteed for all test cases that will be given to the program:

 $2 \le N \le 10^5$  Size of the sequence A $1 \le A[i] \le 10^9$  Elements of the sequence A

The test cases of this part of the problem are organized into three groups with different additional constraints:

$\mathbf{Subtask}$	Points	Additional Constraints
1	30	$N \le 1000$
2	30	All elements $\boldsymbol{A}[i]$ are even integers
3	40	No further restrictions

## **Input Format**

The first line contains an integer N, indicating the number of elements in the sequence.

This is followed by a line with N integers  $A[1], A[2], \ldots, A[N]$  separated by spaces, corresponding to the elements of the sequence.

## **Output Format**

The output should contain a line with N integers separated by single spaces, corresponding to the elements of the sequence produced by the "wrong" algorithm.

**Note:** There should be exactly one space between each integer, and there should be no space at the end of the line (i.e., after the last integer, there should only be a line break). If you do not follow this format, the result of a submission will be a **Presentation Error**.

## Example 1 Input

4 4 1 5 6

## Example 1 Output

1546

# Example 1 Description

This example corresponds to the example mentioned in the problem statement.

#### Example 2 Input

5 10 2 12 6 30

#### Example 2 Output

2 6 10 12 30



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