

National Institute of Technology Calicut
Department of Computer Science and Engineering
Third Semester B. Tech.(CSE)
CS2092D Programming Laboratory
Assignment #2 Modification (14-08-2023)

Naming Conventions for Submission

- The source codes must be named as

ASSG<NUMBER>_<ROLLNO>_<FIRST-NAME>_MOD.c

(For example: *ASSG2.BxyyyyCS_LAXMAN_MOD.c*).

Standard of Conduct

- Violation of academic integrity will be severely penalized. Each student is expected to adhere to high standards of ethical conduct, especially those related to cheating and plagiarism. Any submitted work **MUST BE** an individual effort. Any academic dishonesty will result in zero marks in the corresponding exam or evaluation and will be reported to the department council for record keeping and for permission to assign F grade in the course. The department policy on academic integrity can be found at: http://cse.nitc.ac.in/sites/default/files/Academic-Integrity_new.pdf.

General Instructions

- Programs should be written in C language.
- Check your programs with sufficiently large values of inputs within the range as specified in the question.
- Global and/or static variables should not be used in your program.

QUESTION

1. Consider you have an array of 'n' distinct integers $\in [-10^3, 10^3]$, where $1 \leq n \leq 10^3$. You aim to find the '**special_min**' elements from this array. A 'special_min' element is one that is smaller than all of its neighboring elements within the array. Each element within the array has neighbors, which consist of the element to its immediate left and the one to its immediate right. Notably, the first and last elements have only one neighbor, while all others possess two neighbors. After locating the 'special_min' elements within the array, store them chronologically in another array called '**special**' and remove all 'special_min' elements from the original array. Repeat this process until the array is empty (Note:- if the array contains only 1 element, that element itself is the 'special_min' element). Design a program to display the elements in the 'special' array. For example: Given the array {4, 7, 8, 1, 5, 9}, the first set of 'special_min' elements consists of 4 and 1. After removing these elements, the array becomes {7, 8, 5, 9}. The next set of 'special_min' elements comprises 7 and 5. This leads to a remaining array of {8, 9}. The subsequent 'special_min' element is 8, reducing the array to {9}. Finally, the last 'special_min' element is 9, resulting in an empty array. As a result, the 'special' array contains the following elements in sequence: 4, 1, 7, 5, 8, 9.

Input Format:

- The first line is a positive integer $n \in [1, 10^3]$, which represents the total number of elements in an array.
- The second line contains 'n' space-separated integer numbers belonging to the range $[-10^3, 10^3]$, representing the array elements.

Output Format:

- A single line contains 'n' space-separated integer numbers belonging to the range $[-10^3, 10^3]$, representing the elements in the array 'special'.

Sample Input 1:

6

9 1 5 8 6 10

Sample Output 1:

1 6 5 8 9 10

Sample Input 2:

7

-10 -5 -1 0 1 5 10

Sample Output 2:

-10 -5 -1 0 1 5 10