CS69011: Computing Lab-1
Test-1
August 02, 2023

========== Instructions ==========

1. All Questions carry equal marks.
2. In case of user-input assume only valid values will be passed as input.
3. **Regarding Submission:** For each question create a separate C file. Create a zip file of all these C files in the name <RollNo>_T1.zip and submit it to moodle.

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Q. In a doubly-linked list, we define an element as a local minima if it is minimum to all its N left and N right neighbors (if available). Given a sequence of numbers as user input, enter the numbers in a doubly-linked list. Find all such minima from the list and put them in an array. Subsequently output the largest minima. N is a user given input to the program.

If you face difficulty in implementing a doubly-link list, try implementing the same using an array (will fetch only 50% marks).

[Test Case]

Enter the number [Enter -1 to stop]: 10
Enter the number [Enter -1 to stop]: 2
Enter the number [Enter -1 to stop]: 4
Enter the number [Enter -1 to stop]: 7
Enter the number [Enter -1 to stop]: 6
Enter the number [Enter -1 to stop]: 3
Enter the number [Enter -1 to stop]: 11
Enter the number [Enter -1 to stop]: -1

The entered linked list is: 10->2->4->7->6->3->11->NULL
Enter the value of N (size of neighborhood) : 2

The minimas stored in the arrays are: 2, 3
The maximum of these minimas are: 3

Explanation:
For every element in linked list we have to check its two left and two right neighbors [since N=2]

For 10: The two right neighbors are 2,4 and no left neighbors: It is not a local minima
For 2:The two right neighbors are 4,7 and 10 as the only left neighbor: It is a local minima —store it in array
For 4: The two right neighbors are 7,6 and two left neighbors are 10,2: It is not a local minima.
For 7: The two right neighbors are 6,3 and two left neighbors are 2,4: It is not a local minima.
For 6: Its two right neighbors are 3,11 and two left neighbors are 7,4: It is not a local minima.
For 3: The only right neighbor is 11 and two left neighbors are 6,7: It is a local minima —store it in array
For 11: There is no right neighbor, its two left neighbors are 6,3: It is not a local minima.

So we have two local minima: 2,3 and the maximum is 3.

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