Rajalakshmi Engineering College

Name: PRAGADEESH S
Email: 240701388@rajalakshmi.edu.in
Roll no: 2116240701388
Phone: 709464835
Branch: REC
Department: CSE - Section 9
Batch: 2028
Degree: B.E - CSE

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2024_28_III_OOPS Using Java Lab

2028_REC_OOPS using Java_Week 9_Q1

Attempt : 1
Total Mark : 10
Marks Obtained : 10

Section 1 : Coding

1. Problem Statement

Bobby is tasked with processing a sequence of numbers from a monitoring system. He needs to extract a strictly increasing subsequence using an ArrayList. The program should dynamically add numbers to the ArrayList only if they are greater than the last number currently stored in the list. Bobby aims to efficiently utilize the dynamic resizing and indexing features of the ArrayList to solve this problem.

Help Bobby implement this solution.

Input Format

The first line of input consists of an integer N, representing the number of elements.

The second line consists of N space-separated integers, representing the elements.

Output Format

The output prints the list of integers in increasing sequence, ignoring out-of-order elements.

Refer to the sample output for the formatting specifications.

Sample Test Case

Input: 7
3 5 9 1 11 7 13
Output: [3, 5, 9, 11, 13]

Answer

```
import java.util.*;

interface Sequence {
   void add(int num);
   ArrayList<Integer> getList();
}

class IncreasingSubsequence implements Sequence {
   private ArrayList<Integer> list = new ArrayList<>();

   public void add(int num) {
      if (list.isEmpty() || num > list.get(list.size() - 1)) {
         list.add(num);
      }
   }

   public ArrayList<Integer> getList() {
      return list;
   }
}

public class Main {
   public static void main(String[] args) {
      Scanner sc = new Scanner(System.in);
```

```
        int n = sc.nextInt();

        IncreasingSubsequence seq = new IncreasingSubsequence();

        for (int i = 0; i < n; i++) {
            int num = sc.nextInt();
            seq.add(num);
        }

        System.out.println(seq.getList());
        sc.close();
    }
}
```

Status : Correct ***Marks : 10/10***