# Rajalakshmi Engineering College

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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*

```java
// You are using Java
import java.util.*;

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

        // Read the number of elements
        int N = sc.nextInt();

        ArrayList<Integer> increasingList = new ArrayList<>();

        // Process each element
        for (int i = 0; i < N; i++) {
            int num = sc.nextInt();

            // Add the first number directly
            if (increasingList.isEmpty()) {
                increasingList.add(num);
            }
            // Add number only if it is greater than the last number in the list
            else if (num > increasingList.get(increasingList.size() - 1)) {
                increasingList.add(num);
            }
```

```
        }

        // Print the resulting increasing subsequence
        System.out.println(increasingList);

        sc.close();
    }
}
```

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