

Rajalakshmi Engineering College

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2024_28_III_OOPS Using Java Lab

REC_2028_OOPS using Java_Week 9_PAH

Attempt : 1
Total Mark : 30
Marks Obtained : 30

Section 1 : Coding

1. Problem Statement

Aditi is analyzing stock market trends and wants to find the Next Greater Element (NGE) for each stock price in a list. The Next Greater Element for an element x in an array is the first element to the right that is greater than x . If no greater element exists, return -1 for that position.

Your task is to help Aditi by efficiently computing the Next Greater Element for each element in the given array using a Stack.

Example:

Input:

6

4 5 2 10 8 6

Output:

5 10 10 -1 -1 -1

Explanation:

For each element:

4 5 (next greater element)5 102 1010 -1 (No greater element)8 -16 -1

Input Format

The first line contains an integer n, representing the number of elements.

The second line contains n space-separated integers arr[i], where arr[i] is the stock price on the i-th day.

Output Format

The output prints n space-separated integers representing the Next Greater Element for each element in the array.

Refer to the sample output for formatting specifications.

Sample Test Case

Input: 6

4 5 2 10 8 6

Output: 5 10 10 -1 -1 -1

Answer

```
import java.util.*;
```

```
public class Main {  
    public static void main(String[] args) {  
        Scanner sc = new Scanner(System.in);  
        int n = sc.nextInt();  
        int arr[] = new int[n];  
        for (int i = 0; i < n; i++) {  
            arr[i] = sc.nextInt();  
        }  
  
        int result[] = new int[n];
```

```

Stack<Integer> stack = new Stack<>();

for (int i = n - 1; i >= 0; i--) {
    while (!stack.isEmpty() && stack.peek() <= arr[i]) {
        stack.pop();
    }

    if (stack.isEmpty()) {
        result[i] = -1;
    } else {
        result[i] = stack.peek();
    }

    stack.push(arr[i]);
}

for (int i = 0; i < n; i++) {
    System.out.print(result[i] + " ");
}
}
}

```

Status : Correct

Marks : 10/10

2. Problem Statement

Arun is building a task manager to keep track of tasks using a LinkedList. The task manager supports the following operations:

"ADD <task>" Adds the given task to the end of the list. "REMOVE" Removes the first task from the list. "SHOW" Displays all tasks in the list in order. If the list is empty, print "EMPTY".

Help Arun implement this functionality using a LinkedList.

Input Format

The first line of the input consists of an integer n , the number of operations.

The next n lines, each containing a command:

- "ADD <task>"
- "REMOVE"
- "SHOW"

Output Format

For each "SHOW" command, the output prints the tasks in order, separated by spaces.

If no tasks exist, print "EMPTY".

Refer to the sample output for formatting specifications.

Sample Test Case

Input: 5

ADD homework

ADD project

SHOW

REMOVE

SHOW

Output: homework project
project

Answer

```
import java.util.*;
```

```
public class Main {  
    public static void main(String[] args) {  
        Scanner sc = new Scanner(System.in);  
        int n = sc.nextInt();  
        LinkedList<String> list = new LinkedList<>();  
  
        for (int i = 0; i < n; i++) {  
            String command = sc.next();  
  
            if (command.equals("ADD")) {  
                String task = sc.next();  
                list.add(task);  
            }  
        }  
    }  
}
```

```
else if (command.equals("REMOVE")) {  
    if (!list.isEmpty()) {  
        list.removeFirst();  
    }  
}  
  
else if (command.equals("SHOW")) {  
    if (list.isEmpty()) {  
        System.out.print("EMPTY ");  
    } else {  
        for (String t : list) {  
            System.out.print(t + " ");  
        }  
    }  
}  
}  
}
```

Marks : 10/10

Refer to the sample output for the formatting specifications.

Sample Test Case

Input: 5

1.0 2.0 3.0 4.0 5.0

Output: Average of the list: 3.00

Answer

```
import java.util.*;

public class Main {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        int n = sc.nextInt();
        ArrayList<Double> marks = new ArrayList<>();

        for (int i = 0; i < n; i++) {
            marks.add(sc.nextDouble());
        }

        double sum = 0;
        for (double m : marks) {
            sum += m;
        }

        double avg = sum / n;
        System.out.printf("Average of the list: %.2f ", avg);
    }
}
```

Status : Correct

Marks : 10/10