

# Rajalakshmi Engineering College

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## 2024\_28\_III\_OOPS Using Java Lab

### 2028\_REC\_OOPS using Java\_Week 10\_Q3

Attempt : 1  
Total Mark : 10  
Marks Obtained : 10

#### Section 1 : COD

##### 1. Problem Statement

Priya is analyzing encrypted messages in a research project. She wants to analyze the frequency of each character in a given paragraph. The characters should be stored in a TreeMap so that the output is sorted in ascending order of characters automatically.

You are required to build a Java program that:

Uses a `TreeMap<Character, Integer>` to count how many times each character appears in the message. Ignores spaces and considers only alphabets (case-sensitive). Outputs the frequencies of characters in sorted order.

You must use a TreeMap in the class named MessageAnalyzer.

**Input Format**

The first line of input contains an integer n, the number of lines in the message.

The next n lines each contain a string (the encrypted message line).

### **Output Format**

The first line of output prints: "Character Frequency:"

Then print each character and its frequency in the format: "<character>: <count>"

Refer to the sample output for formatting specifications.

### **Sample Test Case**

Input: 2  
Hello World  
Java

Output: Character Frequency:

H: 1

J: 1

W: 1

a: 2

d: 1

e: 1

l: 3

o: 2

r: 1

v: 1

### **Answer**

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

```
class MessageAnalyzer {  
    private TreeMap<Character, Integer> charFrequency;
```

```
    public MessageAnalyzer() {  
        charFrequency = new TreeMap<>();  
    }
```

```
    public void analyze(String message) {  
        for (char c : message.toCharArray()) {
```

```

        if (Character.isLetter(c)) {
            charFrequency.put(c, charFrequency.getOrDefault(c, 0) + 1);
        }
    }
}

public void displayFrequency() {
    System.out.println("Character Frequency:");
    for (Map.Entry<Character, Integer> entry : charFrequency.entrySet()) {
        System.out.println(entry.getKey() + ": " + entry.getValue());
    }
}
}

public class Main {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        int n = sc.nextInt();
        sc.nextLine();
        MessageAnalyzer analyzer = new MessageAnalyzer();
        for (int i = 0; i < n; i++) {
            String line = sc.nextLine();
            analyzer.analyze(line);
        }
        analyzer.displayFrequency();
        sc.close();
    }
}

```

**Status :** Correct

**Marks :** 10/10