

# Rajalakshmi Engineering College

Name: Ramya J.T  
Email: 241801223@rajalakshmi.edu.in  
Roll no: 241801223  
Phone: 8946015292  
Branch: REC  
Department: AI & DS - Section 5  
Batch: 2028  
Degree: B.E - AI & DS

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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**

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

```
class MessageAnalyzer {
    TreeMap<Character, Integer> charFrequency = new TreeMap<>();

    public void addMessage(String message) {
        for (char c : message.toCharArray()) {
            if (Character.isLetter(c)) { // consider only alphabets
                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.print(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(); // consume newline

        MessageAnalyzer analyzer = new MessageAnalyzer();

        for (int i = 0; i < n; i++) {
            String line = sc.nextLine();
            analyzer.addMessage(line);
        }

        analyzer.displayFrequency();
    }
}
```

**Status :** Correct

**Marks : 10/10**