

# Rajalakshmi Engineering College

Name: Samyuktha S  
Email: 240701701@rajalakshmi.edu.in  
Roll no: 240701701  
Phone: 6380226314  
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 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 analyzeMessage(String message) {
        for (char ch : message.toCharArray()) {
```

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

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

public class Main {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        int n = Integer.parseInt(sc.nextLine());
        MessageAnalyzer analyzer = new MessageAnalyzer();

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

        analyzer.printFrequencies();
    }
}
```

**Status :** Correct

**Marks :** 10/10