

# Rajalakshmi Engineering College

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

### REC\_2028\_OOPS using Java\_Week 4\_CY

Attempt : 1  
Total Mark : 40  
Marks Obtained : 40

#### Section 1 : Coding

##### 1. Problem Statement

A library wants to analyze book titles to count the number of words that start with an uppercase letter. This helps the library track proper nouns and important words in titles.

Your task is to write a program that, for each given title, counts and prints the number of words that start with an uppercase letter.

##### ***Input Format***

The first line contains an integer T, representing the number of book titles.

Each of the next T lines contains a single title (string).

##### ***Output Format***

For each title, the output print a single integer representing the number of words starting with an uppercase letter.

Refer to the sample output for formatting specifications.

### **Sample Test Case**

Input: 1

The Chronicles of Narnia

Output: 3

### **Answer**

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

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

        for (int i = 0; i < T; i++) {
            String title = sc.nextLine();
            String[] words = title.split(" ");
            int count = 0;

            for (String word : words) {
                if (word.length() > 0 && Character.isUpperCase(word.charAt(0))) {
                    count++;
                }
            }

            System.out.println(count);
        }
    }
}
```

**Status :** Correct

**Marks :** 10/10

## 2. Problem Statement

Neha is analyzing text messages to identify words that have repeated characters. A word is considered "repetitive" if any character appears more than once in that word.

Your task is to write a program that extracts all words that contain repeated characters from a given sentence.

If no such word exists, print "No repetitive words found".

### ***Input Format***

The input contains a single line containing a sentence with multiple words.

### ***Output Format***

The output prints all words that contain repeated characters separated by a space.

If no word contains repeated characters, print "No repetitive words found".

Refer to the sample output for formatting specifications.

### ***Sample Test Case***

Input: letter balloon apple tree

Output: letter balloon apple tree

### ***Answer***

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

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

        String[] words = sentence.split(" ");
        ArrayList<String> result = new ArrayList<>();

        for (String word : words) {
```

```

        if (hasRepeatedChar(word)) {
            result.add(word);
        }
    }

    if (result.isEmpty()) {
        System.out.println("No repetitive words found");
    } else {
        for (int i = 0; i < result.size(); i++) {
            System.out.print(result.get(i));
            if (i < result.size() - 1) {
                System.out.print(" ");
            }
        }
    }
}

private static boolean hasRepeatedChar(String word) {
    Set<Character> seen = new HashSet<>();
    for (char c : word.toCharArray()) {
        if (seen.contains(c)) {
            return true;
        }
        seen.add(c);
    }
    return false;
}
}

```

**Status :** Correct

**Marks :** 10/10

### 3. Problem Statement

In a college, students are required to create unique usernames for accessing the digital library.

The librarian needs your help to verify whether the usernames entered by students are valid.

A username is considered valid if:

It contains only letters (a–z, A–Z) and digits (0–9). Its length is between 5 and 15 characters (inclusive). It must start with a letter (not a digit).

Your task is to determine whether each username in the list is valid or not.

### ***Input Format***

The first line of input contains an integer T, representing the number of usernames to check.

The next T lines each contain a string S, representing a username.

### ***Output Format***

For each username S, the output print "YES" if it is valid.

Otherwise, the output print "NO".

Refer to the sample output for formatting specifications.

### ***Sample Test Case***

Input: 1

Alice123

Output: YES

### ***Answer***

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

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

        for (int i = 0; i < T; i++) {
            String username = sc.nextLine();

            if (isValid(username)) {
                System.out.println("YES");
            } else {
```

```

        System.out.println("NO");
    }
}

private static boolean isValid(String s) {
    if (s.length() < 5 || s.length() > 15) {
        return false;
    }

    if (!Character.isLetter(s.charAt(0))) {
        return false;
    }

    for (char c : s.toCharArray()) {
        if (!Character.isLetterOrDigit(c)) {
            return false;
        }
    }

    return true;
}
}

```

**Status :** Correct

**Marks :** 10/10

#### 4. Problem Statement

In a university library, librarians need to track the usage of special characters in students' notes.

To help them, you are asked to write a program that counts the number of specific symbols in each passage of text.

The symbols of interest are:

Exclamation marks (!)Colons (: )Semicolons (;)

#### **Input Format**

The first line of input contains an integer T, representing the number of test cases (passages).

Each of the next T lines contains a single passage of text.

### **Output Format**

For each test case, print three integers separated by spaces, representing the number of exclamation marks, colons, and semicolons in the passage.

The first line of output corresponds to the first passage, the second line to the second passage, and so on.

Refer to the sample output for formatting specifications.

### **Sample Test Case**

Input: 1  
Hello! How are you  
Output: 1 0 0

### **Answer**

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

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

        for (int i = 0; i < T; i++) {
            String passage = sc.nextLine();

            int exclamations = 0;
            int colons = 0;
            int semicolons = 0;

            for (char c : passage.toCharArray()) {
                if (c == '!') {
                    exclamations++;
                } else if (c == ':') {
                    colons++;
                } else if (c == ';') {
                    semicolons++;
                }
            }

            System.out.println(exclamations + " " + colons + " " + semicolons);
        }
    }
}
```

```
        semicolons++;  
    }  
}  
  
System.out.println(exclamations + " " + colons + " " + semicolons);  
}  
}
```

**Status :** Correct

**Marks :** 10/10