

# 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**

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 line = sc.nextLine();
            int exclam = 0, colon = 0, semicolon = 0;
            for (int j = 0; j < line.length(); j++) {
                char ch = line.charAt(j);
                if (ch == '!') exclam++;
                else if (ch == ':') colon++;
                else if (ch == ';') semicolon++;
            }
            System.out.println(exclam + " " + colon + " " + semicolon);
        }
    }
}
```

**Status : Correct**

**Marks : 10/10**

## 2. Problem Statement

Meera is practicing her English vocabulary. She wants to focus on words that have more vowels in them, as they help improve her pronunciation. She decides to extract only those words from a sentence that contain at least two vowels.

Your task is to help Meera by writing a program that finds such words from the given sentence.

### ***Input Format***

The input contains a string representing the sentence.

### ***Output Format***

The output prints all the words that contain at least two vowels, separated by a space.

If no such word exists, print "No words with two vowels".

Refer to the sample output for formatting specifications.

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

Input: This is an example sentence

Output: example sentence

### ***Answer***

```
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(" ");  
        List<String> result = new ArrayList<>();  
        for (String word : words) {  
            if (countVowels(word) >= 2) {  
                result.add(word);  
            }  
        }  
        System.out.println(result);  
    }  
    public static int countVowels(String word) {  
        int count = 0;  
        for (char c : word.toLowerCase().toCharArray()) {  
            if (c == 'a' || c == 'e' || c == 'i' || c == 'o' || c == 'u') {  
                count++;  
            }  
        }  
        return count;  
    }  
}
```

```

        }
    }
    if (result.isEmpty()) {
        System.out.print("No words with two vowels");
    } else {
        for (int i = 0; i < result.size(); i++) {
            System.out.print(result.get(i));
            if (i != result.size() - 1) System.out.print(" ");
        }
    }
}

static int countVowels(String word) {
    int count = 0;
    for (int i = 0; i < word.length(); i++) {
        char ch = Character.toLowerCase(word.charAt(i));
        if (ch == 'a' || ch == 'e' || ch == 'i' || ch == 'o' || ch == 'u') {
            count++;
        }
    }
    return count;
}
}

```

**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***

```
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");  
            }  
        }  
    }  
  
    static boolean isValid(String s) {  
        if (s.length() < 5 || s.length() > 15) return false;  
        if (s.isEmpty() || !Character.isLetter(s.charAt(0))) return false;
```

```
for (int i = 0; i < s.length(); i++) {  
    char ch = s.charAt(i);  
    if (!Character.isLetterOrDigit(ch)) return false;  
}  
return true;  
}  
}
```

**Status :** Correct

**Marks :** 10/10

#### 4. Problem Statement

Anjali is preparing a report on text complexity. She wants to identify all words in a sentence that contain at least one digit so she can analyze numeric mentions.

Your task is to write a program that extracts and prints all words containing at least one digit from a given sentence.

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

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

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

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

The output prints all words containing at least one digit separated by a space.

If no word contains a digit, print "No words with digits found".

Refer to the sample output for formatting specifications.

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

Input: The model X100 and Y200 are available

Output: X100 Y200

##### ***Answer***

```
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(" ");
        List<String> result = new ArrayList<>();

        for (String word : words) {
            if (containsDigit(word)) {
                result.add(word);
            }
        }

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

    static boolean containsDigit(String s) {
        for (int i = 0; i < s.length(); i++) {
            if (Character.isDigit(s.charAt(i))) {
                return true;
            }
        }
        return false;
    }
}
```

Status : Correct

Marks : 10/10