

# Rajalakshmi Engineering College

Name: SUBASH R

Email: 240701538@rajalakshmi.edu.in

Roll no: 240701538

Phone: 9150202710

Branch: REC

Department: CSE - Section 7

Batch: 2028

Degree: B.E - CSE

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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**

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**

```
import java.util.Scanner;
class RepetitiveWords {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        String sentence = sc.nextLine();
        String[] words = sentence.split(" ");
        String result = "";
        for (String word : words) {
            if (hasRepeatedChar(word)) {
                result += word + " ";
            }
        }
        if (result.equals("")) {
            System.out.println("No repetitive words found");
        } else {
            System.out.println(result.trim());
        }
    }
    private static boolean hasRepeatedChar(String word) {
        int[] freq = new int[256];
        for (int i = 0; i < word.length(); i++) {
            char c = word.charAt(i);
            freq[c]++;
            if (freq[c] > 1) return true;
        }
        return false;
    }
}
```

}

Status : Correct

Marks : 10/10

## 2. 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.Scanner;

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 s = sc.nextLine();
            if (s.matches("^[A-Za-z][A-Za-z0-9]{4,14}$")) {
                System.out.println("YES");
            } else {
                System.out.println("NO");
            }
        }
        sc.close();
    }
}
```

**Status :** Correct

**Marks :** 10/10

### 3. 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.Scanner;
```

```
class WordsWithDigits {  
    public static void main(String[] args) {  
        Scanner sc = new Scanner(System.in);  
        String sentence = sc.nextLine();  
        String[] words = sentence.split(" ");  
        String result = "";  
        for (String word : words) {  
            if (containsDigit(word)) {  
                result += word + " ";  
            }  
        }  
        if (result.equals("")) {  
            System.out.println("No words with digits found");  
        } else {  
            System.out.println(result.trim());  
        }  
    }  
  
    private static boolean containsDigit(String word) {  
        for (int i = 0; i < word.length(); i++) {  
            if (Character.isDigit(word.charAt(i))) return true;  
        }  
        return false;  
    }  
}
```

**Status :** Correct

**Marks :** 10/10

4. 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***

```
import java.util.Scanner;

class UppercaseWordsCount {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        int T = Integer.parseInt(sc.nextLine());
        for (int t = 0; t < T; t++) {
            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);
        }
    }
}
```

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

**Status :** Correct

**Marks :** 10/10