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

```
import java.util.Scanner;
 class CharacterCounter {

    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        int T = scanner.nextInt();
        scanner.nextLine();

        for (int i = 0; i < T; i++) {
            String passage = "";
            if (scanner.hasNextLine()) {
                passage = scanner.nextLine();
            }

            int exclamationCount = 0;
            int colonCount = 0;
            int semicolonCount = 0;

            for (char ch : passage.toCharArray()) {
                if (ch == '!') {
                    exclamationCount++;
                } else if (ch == ':') {
```

```
          colonCount++;
        } else if (ch == ';') {
          semicolonCount++;
        }
      }

      System.out.println(exclamationCount + " " + colonCount + " " +
semicolonCount);
    }
    scanner.close();
  }
}
```

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

```
import java.util.Scanner;
import java.util.HashSet;
import java.util.ArrayList;

class CharacterCounter {

    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        String sentence = "";
        if (scanner.hasNextLine()) {
            sentence = scanner.nextLine();
        }
        scanner.close();

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

        for (String word : words) {
            HashSet<Character> seenCharacters = new HashSet<>();
            boolean isRepetitive = false;
            for (char ch : word.toCharArray()) {
                if (!seenCharacters.add(ch)) {
                    isRepetitive = true;
                    break;
                }
            }
            if (isRepetitive) {
                repetitiveWords.add(word);
            }
        }

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

Status : Correct **_Marks : 10/10_**

3. 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

// You are using Java

```java
import java.util.Scanner;
import java.util.ArrayList;
class CharacterCounter {

  public static void main(String[] args) {
    Scanner scanner = new Scanner(System.in);
    String sentence = "";
    if (scanner.hasNextLine()) {
      sentence = scanner.nextLine();
    }
    scanner.close();

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

    for (String word : words) {
      int vowelCount = 0;
      for (char ch : word.toCharArray()) {
        if (vowels.indexOf(ch) != -1) {
          vowelCount++;
        }
      }
      if (vowelCount >= 2) {
        wordsWithTwoVowels.add(word);
      }
    }

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

Status : Correct ***Marks : 10/10***

4. 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 CharacterCounter {

   public static String validateUsername(String username) {
        if (username.length() < 5 || username.length() > 15) {
            return "NO";
        }

        if (!Character.isLetter(username.charAt(0))) {
            return "NO";
        }

        for (char ch : username.toCharArray()) {
            if (!Character.isLetterOrDigit(ch)) {
                return "NO";
            }
        }

        return "YES";
    }

    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        int T = scanner.nextInt();
        scanner.nextLine();

        for (int i = 0; i < T; i++) {
            String username = scanner.nextLine();
            System.out.println(validateUsername(username));
        }

        scanner.close();
    }
}
```

Status : Correct ***Marks : 10/10***