Rajalakshmi Engineering College

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2024_28_III_OOPS Using Java Lab

REC_2028_OOPS using Java_Week 4_MCQ

Attempt : 1
Total Mark : 15
Marks Obtained : 14

Section 1 : MCQ

1. What will be the output of the following program?

```java
class Main {
    public static void main(String args[]) {
        StringBuffer sb = new StringBuffer("Hello");
        System.out.println("buffer = " + sb);
        System.out.println("length = " + sb.length());
        System.out.println("capacity = " + sb.capacity());
    }
}
```

Answer

buffer = Hellolength = 5capacity = 21

Status : Correct   *Marks : 1/1*

2. What will be the output of the following code?

```java
class Main {
    public static void main(String args[])
    {
        StringBuffer sb = new StringBuffer("Hello");
        System.out.println("buffer before = " + sb);
        System.out.println("charAt(1) before = " + sb.charAt(1));
        sb.setCharAt(1, 'i');
        sb.setLength(2);
        System.out.println("buffer after = " + sb);
        System.out.println("charAt(1) after = " + sb.charAt(1));
    }
}
```

Answer

buffer before = HellocharAt(1) before = ebuffer after = HicharAt(1) after = i

Status : Correct   *Marks : 1/1*

3. What will be the output of the following code?

```java
class Main {
    public static void main(String args[]) {
        String s1 = "Hello i love java";
        String s2 = new String(s1);
        System.out.println((s1 == s2) + " " + s1.equals(s2));
    }
}
```

Answer

false true

Status : Correct   *Marks : 1/1*

4. What will be the output of the following program?

```java
class Main {
    public static void main(String[] args) {
```

```
String s1 = "EDUCATION";
String s2 = new String("EDUCATION");
String s3 = "EDUCATION";
if (s1 == s2) {
   System.out.println("s1 and s2 equal");
}
else {
   System.out.println("s1 and s2 not equal");
}
if (s1 == s3) {
   System.out.println("s1 and s3 equal");
}
else {
   System.out.println("s1 and s3 not equal");
}
}
}
```

Answer

s1 and s2 not equals1 and s3 equal

Status : Correct   *Marks : 1/1*

5. Predict the output for the following code:

```
public class Main {
   public static void main(String[] args) {
      float a = 10.0f;
      String temp = Float.toString(a);
      System.out.println(temp);
   }
}
```

Answer

10.0

Status : Correct   *Marks : 1/1*

6. What will be the output for the following code?

```
class Main {
  public static void main(String[] args) {
  String languages[] = { "C", "C++", "Java", "Python", "Ruby"};
    for (String sample: languages) {
      System.out.println(sample);
    }
  }
}
```

Answer

CC++JavaPythonRuby

Status : Correct   *Marks : 1/1*

7. What is the output of the following code?

```
class Main
{
   public static void main(String args[])
   {
      StringBuffer c = new StringBuffer("Hello");
      c.delete(0,2);
      System.out.println(c);
   }
}
```

Answer

llo

Status : Correct   *Marks : 1/1*

8. What will be the output of the following program?

```
class Main {
   public static void main(String[] args) {
      String s = new String("5");
      System.out.println(1 + 1111 + s + 1 + 1010);
   }
```

}

Answer

1112511010

Status : Correct   *Marks : 1/1*

9. What will be the output of the following program?

```
class Main {
  public static void main(String[] args) {
    String greet = "Welcome\n";
    System.out.print("String: " + greet);
    int length = greet.length();
    System.out.print("Length: " + length);
  }
}
```

Answer

String: WelcomeLength: 8

Status : Correct   *Marks : 1/1*

10. What will be the output of the following program?

```
class Main {
    public static void main(String args[])  {
        String name="Work Hard";
        name.concat("Success");
        System.out.println(name);
    }
}
```

Answer

Work Hard

Status : Correct   *Marks : 1/1*

11. Predict the output for the following code:

```
class Main {
    public static void main(String args[]) {
        StringBuffer sb = new StringBuffer("I Java!");
        sb.insert(5, "like ");
        System.out.println(sb);
    }
}
```

Answer

I Jav like a!

Status : Wrong   *Marks : 0/1*

12. What will be the output of the following code?

```
class Main {
    public static void main(String args[]) {
        char c[] = {'j', 'a', 'v', 'a'};
        String s1 = new String(c);
        String s2 = new String(s1);
        System.out.println(s1);
        System.out.println(s2);
    }
}
```

Answer

javajava

Status : Correct   *Marks : 1/1*

13. Predict the output for the following code.

```
class Main {
    public static void main(String[] fruits) {
        String fruit1 = new String("apple");
        String fruit2 = new String("orange");
        String fruit3 = new String("pear");
        fruit3 = fruit1;
```

```
      fruit2 = fruit3;
      fruit1 = fruit2;
      System.out.println(fruit1);
      System.out.println(fruit2);
      System.out.println(fruit3);
   }
}
```

Answer

appleappleapple

Status : Correct   *Marks : 1/1*

14. Predict the output for the following code.

```
public class Main {
   public static void main(String[] args) {
    String a = "java";
    char temp = a.charAt(1);
    System.out.println(temp);
  }
}
```

Answer

a

Status : Correct   *Marks : 1/1*

15. What will be the output of the following program?

```
public class Main {
   public static void main(String[] args) {
    String str = "1234.34";
    int a = Integer.parseInt(str);
    System.out.println(a);
   }
}
```

Answer

NumberFormatException

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Scan to verify results

2024_28_III_OOPS Using Java Lab

2028_REC_OOPS using Java_Week 4_Q1

Attempt : 1
Total Mark : 10
Marks Obtained : 10

Section 1 : Coding

1. Problem Statement

In a publishing company, editors often need to quickly analyze passages of text to check for punctuation usage. To assist them, you are asked to write a program that counts the number of specific punctuation marks in each passage.

The punctuation marks of interest are:

Commas (,)Periods (.)Question marks (?)

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 commas, periods, and question marks 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, world. How are you?

Output: 1 1 1

Answer

```java
import java.util.Scanner;
class PunctuationCounter{
    public static void main(String[] args){
        Scanner sc = new Scanner(System.in);
        int T = Integer.parseInt(sc.nextLine()); // number of test cases
        for (int i = 0; i < T; i++){
            String passage = sc.nextLine();
            int commas = 0, periods = 0, questions = 0;
            for (char ch : passage.toCharArray()){
                if (ch == ','){
                    commas++;
                } else if (ch == '.'){
                    periods++;
                } else if (ch == '?'){
                    questions++;
                }
            }
            System.out.println(commas + " " + periods + " " + questions);
        }
        sc.close();
    }
}
```

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Scan to verify results

2024_28_III_OOPS Using Java Lab

2028_REC_OOPS using Java_Week 4_Q2

Attempt : 1
Total Mark : 10
Marks Obtained : 10

Section 1 : Coding

1. Problem Statement

Anu is developing a tool for a conference registration system. Participants submit keywords related to their fields of interest. The organizer wants to sort these keywords alphabetically to generate tags for session grouping.

Write a program that accepts at least five keywords as input arguments and outputs them in sorted alphabetical order.

Input Format

The first line of input contains an integer n, representing the number of keywords.

The second line of input contains n space-separated keywords (string).

Output Format

The output prints n space separated strings representing the sorted keyword in alphabetical order.

Refer to the sample output for formatting specifications.

Sample Test Case

Input: 5
Blockchain Cloud AI Data Cybersecurity
Output: AI Blockchain Cloud Cybersecurity Data

Answer

```java
import java.util.*;
class KeywordSorter{
    public static void main(String[] args){
        Scanner sc = new Scanner(System.in);
        int n = sc.nextInt();
        sc.nextLine();
        String[] keywords = sc.nextLine().split(" ");
        Arrays.sort(keywords);
        for (int i = 0; i < n; i++){
            System.out.print(keywords[i]);
            if (i < n - 1){
                System.out.print(" ");
            }
        }
        System.out.println();
    }
}
```

Status : Correct   *Marks : 10/10*

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Scan to verify results

2024_28_III_OOPS Using Java Lab

2028_REC_OOPS using Java_Week 4_Q3

Attempt : 1
Total Mark : 10
Marks Obtained : 10

Section 1 : Coding

1. Problem Statement

Bechan Chacha is seeking help to filter out valid mobile numbers from a list provided by his crush. He can only pick his crush's number if the list contains valid mobile numbers.

A mobile number is considered valid if:

It has exactly 10 digits.It consists only of numeric values (0–9).It does not begin with zero.

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

Input Format

The first line contains an integer T, representing the number of mobile numbers

to check.

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

Output Format

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

Otherwise, print "NO".

Refer to the sample output for formatting specifications.

Sample Test Case

Input: 1
9876543210
Output: YES

Answer

```java
import java.util.*;
class MobileNumberValidator{
    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().trim();
            if (isValidMobile(s)){
                System.out.println("YES");
            } else {
                System.out.println("NO");
            }
        }
        sc.close();
    }
    private static boolean isValidMobile(String s){
        if (s.length() != 10) return false;
        if (s.charAt(0) == '0') return false;
        for (char c : s.toCharArray()){
            if (!Character.isDigit(c)){
                return false;
            }
```

```
        }
        return true;
    }
}
```

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

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2024_28_III_OOPS Using Java Lab

2028_REC_OOPS using Java_Week 4_Q4

Attempt : 1
Total Mark : 10
Marks Obtained : 10

Section 1 : Coding

1. Problem Statement

Arjun is learning how to filter words from a sentence based on grammar rules. He wants to identify the valid words in a sentence.

A word is considered valid if it satisfies all these conditions:

The word contains only alphabets (a–z, A–Z).The word length is at least 2 characters.The word should not contain digits or special characters.

Your task is to read a sentence and print all the valid words in it.

Input Format

The input contains a single line containing a sentence S.

Output Format

The output prints all the valid words separated by spaces.

If no valid word exists, print "No valid words."

Refer to the sample output for formatting specifications.

Sample Test Case

Input: Hello world1 123 ab" @#$ Hi
Output: Hello Hi

Answer

```java
import java.util.*;
class ValidWordsFilter{
    public static void main(String[] args){
        Scanner sc = new Scanner(System.in);
        String sentence = sc.nextLine();
        String[] words = sentence.split(" ");
        List<String> validWords = new ArrayList<>();
        for (String word : words){
            if (word.length() >= 2){
                boolean allLetters = true;
                for (char c : word.toCharArray()){
                    if (!Character.isLetter(c)){
                        allLetters = false;
                        break;
                    }
                }
                if (allLetters){
                    validWords.add(word);
                }
            }
        }
        if (validWords.isEmpty()){
            System.out.println("No valid words.");
        } else {
            System.out.println(String.join(" ", validWords));
        }
        sc.close();
    }
```

```
}
```

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2024_28_III_OOPS Using Java Lab

2028_REC_OOPS using Java_Week 4_Q5

Attempt : 1
Total Mark : 10
Marks Obtained : 10

Section 1 : Coding

1. Problem Statement

In a secure banking system, customers are required to create PIN codes for accessing their accounts. The bank wants to validate these PIN codes before accepting them.

A PIN code is considered valid if:

It consists of exactly 4 digits.All characters must be numeric (0–9).It cannot contain all identical digits (e.g., 1111 is invalid).

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

Input Format

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

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

Output Format

For each PIN code 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
1234
Output: YES

Answer

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

class PinCodeValidator {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        int T = scanner.nextInt(); // Read the number of PIN codes
        scanner.nextLine(); // Consume the newline character

        for (int i = 0; i < T; i++) {
            String pinCode = scanner.nextLine(); // Read each PIN code
            if (isValidPinCode(pinCode)) {
                System.out.println("YES"); // Print "YES" for valid PIN
            } else {
                System.out.println("NO"); // Print "NO" for invalid PIN
            }
        }

        scanner.close();
    }

    private static boolean isValidPinCode(String pinCode) {
        // Check if the length is exactly 4
```

```java
        if (pinCode.length() != 4) {
            return false;
        }

        // Check if all characters are digits
        for (char c : pinCode.toCharArray()) {
            if (!Character.isDigit(c)) {
                return false; // Contains a non-digit character
            }
        }

        // Check if all characters are identical
        char firstChar = pinCode.charAt(0);
        for (char c : pinCode.toCharArray()) {
            if (c != firstChar) {
                return true; // Not all characters are identical
            }
        }

        return false; // All characters are identical
    }
}
```

Status : Correct   *Marks : 10/10*

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2024_28_III_OOPS Using Java Lab

REC_2028_OOPS using Java_Week 4_PAH

Attempt : 1
Total Mark : 40
Marks Obtained : 40

Section 1 : Coding

1. Problem Statement

Riya is preparing a puzzle game for her friends. She wants to include a feature that highlights special words in a sentence — specifically, palindromic words (words that read the same forward and backward).

Your task is to help Riya by writing a program that extracts all palindrome words from the given sentence. If there are no palindromes, print "No palindromes found".

Input Format

The input contains a single string S representing a sentence.

Output Format

The output prints all palindromic words separated by a space.

If no palindrome exists, print "No palindromes found".

Refer to the sample output for formatting specifications.

Sample Test Case

Input: madam went to school

Output: madam

Answer

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

class PalindromeWordsFinder {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        String sentence = scanner.nextLine();
        String[] words = sentence.split(" ");
        StringBuilder palindromicWords = new StringBuilder();

        for (String word : words) {
            if (isPalindrome(word)) {
                palindromicWords.append(word).append(" ");
            }
        }

        if (palindromicWords.length() == 0) {
            System.out.println("No palindromes found");
        } else {
            System.out.println(palindromicWords.toString().trim());
        }

        scanner.close();
    }

    private static boolean isPalindrome(String word) {
        int left = 0;
        int right = word.length() - 1;
```

```
        while (left < right) {
            if (word.charAt(left) != word.charAt(right)) {
                return false;
            }
            left++;
            right--;
        }
        return true;
    }
}
```

Status : Correct   *Marks : 10/10*

2. Problem Statement

Sana is analyzing text for a secret code. She wants to find all words in a
sentence that start and end with the same letter. These words are
considered "special words" for her analysis.

Your task is to write a program that extracts and prints all words that start
and end with the same letter (case-insensitive).

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

Input Format

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

Output Format

The output prints all words that start and end with the same letter separated by a
space.

If no word satisfies the condition, print "No special words found".

Refer to the sample output for formatting specifications.

Sample Test Case

Input: Anna went to the civic center
Output: Anna civic

Answer

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

class SpecialWordsFinder {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        String sentence = scanner.nextLine();
        String[] words = sentence.split(" ");
        StringBuilder specialWords = new StringBuilder();

        for (String word : words) {
            if (isSpecialWord(word)) {
                specialWords.append(word).append(" ");
            }
        }

        if (specialWords.length() == 0) {
            System.out.println("No special words found");
        } else {
            System.out.println(specialWords.toString().trim());
        }

        scanner.close();
    }

    private static boolean isSpecialWord(String word) {
        if (word.length() == 0) return false;
        char firstChar = Character.toLowerCase(word.charAt(0));
        char lastChar = Character.toLowerCase(word.charAt(word.length() - 1));
        return firstChar == lastChar;
    }
}
```

Status : Correct   *Marks : 10/10*

3. Problem Statement

At a digital library, the system needs to analyze passages to identify the frequency of vowels, since they are key for linguistic research. You are asked to write a program that counts the number of vowels in each passage of text.

The vowels of interest are:

a, e, i, o, u (both uppercase and lowercase).

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 a single integer representing the total number of vowels 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 World
Output: 3

Answer

```java
// You are using Java
import java.util.Scanner;
class VowelFrequencyCounter {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        int T = scanner.nextInt(); // Read the number of test cases
        scanner.nextLine(); // Consume the newline character
```

```java
    for (int i = 0; i < T; i++) {
        String passage = scanner.nextLine(); // Read each passage
        int vowelCount = countVowels(passage); // Count vowels in the passage
        System.out.println(vowelCount); // Print the result
    }

    scanner.close();
}

private static int countVowels(String passage) {
    int count = 0;
    String vowels = "aeiouAEIOU"; // String containing all vowels

    for (char c : passage.toCharArray()) {
        if (vowels.indexOf(c) != -1) { // Check if the character is a vowel
            count++;
        }
    }
    return count; // Return the total count of vowels
    }
}
```

Status : Correct   *Marks : 10/10*

4. Problem Statement

Ravi is analyzing text messages for his research on typing patterns. He wants to count the number of uppercase letters, lowercase letters, and digits in a sentence to understand typing trends.

Your task is to help Ravi by writing a program that takes a sentence and prints the count of uppercase letters, lowercase letters, and digits.

Input Format

The input contains a single line containing a sentence (string).

Output Format

The output prints three integers separated by spaces:

- Number of uppercase letters
- Number of lowercase letters
- Number of digits

Refer to the sample output for formatting specifications.

Sample Test Case

Input: Hello World 123

Output: 2 8 3

Answer

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

class TypingPatternsAnalyzer {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        String sentence = scanner.nextLine(); // Read the input sentence

        int uppercaseCount = 0;
        int lowercaseCount = 0;
        int digitCount = 0;

        // Iterate through each character in the sentence
        for (char c : sentence.toCharArray()) {
            if (Character.isUpperCase(c)) {
                uppercaseCount++; // Count uppercase letters
            } else if (Character.isLowerCase(c)) {
                lowercaseCount++; // Count lowercase letters
            } else if (Character.isDigit(c)) {
                digitCount++; // Count digits
            }
        }

        // Print the counts separated by spaces
        System.out.println(uppercaseCount + " " + lowercaseCount + " " +
digitCount);

        scanner.close();
```

```
        }
    }
```

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

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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

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

class UppercaseWordsCounter {
    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 title = scanner.nextLine();
            String[] words = title.split(" ");
            int count = 0;
            for (String word : words) {
                if (!word.isEmpty() && Character.isUpperCase(word.charAt(0))) {
                    count++;
                }
            }
            System.out.println(count);
        }
        scanner.close();
    }
}
```

Status : Correct   *Marks : 10/10*

2. Problem Statement

Riya is preparing for a vocabulary test. Her teacher told her to focus on long words in her practice sentences, specifically words that have at least 5 letters.

Riya wants to write a program that will help her identify such words quickly.

Your task is to help Riya by printing all the words in a given sentence that have a length greater than or equal to 5.

If no such word exists, display "No long words found".

Input Format

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

Output Format

The output prints all words having length ≥ 5, separated by a space.

If no such word is found, print "No long words found".

Refer to the sample output for formatting specifications.

Sample Test Case

Input: The quick brown fox jumps over the lazy dog
Output: quick brown jumps

Answer

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

class LongWordsFinder {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        String sentence = scanner.nextLine();
        String[] words = sentence.split(" ");
        StringBuilder longWords = new StringBuilder();

        for (String word : words) {
```

```
        if (word.length() >= 5) {
            longWords.append(word).append(" ");
        }
    }

    if (longWords.length() == 0) {
        System.out.println("No long words found");
    } else {
        System.out.println(longWords.toString().trim());
    }

    scanner.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

```java
// You are using Java
import java.util.Scanner;
 class WordsWithDigitsFinder {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        String sentence = scanner.nextLine();
        String[] words = sentence.split(" ");
        StringBuilder wordsWithDigits = new StringBuilder();

        for (String word : words) {
            if (word.matches(".*\\d.*")) {
                wordsWithDigits.append(word).append(" ");
            }
        }

        if (wordsWithDigits.length() == 0) {
            System.out.println("No words with digits found");
        } else {
            System.out.println(wordsWithDigits.toString().trim());
        }

        scanner.close();
    }
}
```

Status : Correct   *Marks : 10/10*

4. 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

```java
// You are using Java
import java.util.HashSet;
import java.util.Scanner;
 class RepetitiveWordsFinder {
   public static void main(String[] args) {
     Scanner scanner = new Scanner(System.in);
     String sentence = scanner.nextLine();
     String[] words = sentence.split(" ");
     StringBuilder repetitiveWords = new StringBuilder();

     for (String word : words) {
       if (hasRepeatedCharacters(word)) {
         repetitiveWords.append(word).append(" ");
       }
     }

     if (repetitiveWords.length() == 0) {
       System.out.println("No repetitive words found");
     } else {
```

```java
        System.out.println(repetitiveWords.toString().trim());
    }

    scanner.close();
}

private static boolean hasRepeatedCharacters(String word) {
    HashSet<Character> charSet = new HashSet<>();
    for (char c : word.toCharArray()) {
        if (!charSet.add(c)) {
            return true;
        }
    }
    return false;
}
}
```

Status : Correct   *Marks : 10/10*