

# Rajalakshmi Engineering College

Name: Reshma AL  
Email: 241901089@rajalakshmi.edu.in  
Roll no: 241901089  
Phone: 9884453399  
Branch: REC  
Department: CSE (CS) - Section 1  
Batch: 2028  
Degree: B.E - CSE (CS)

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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 : 11

#### **Section 1 : MCQ**

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

```
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**

2. 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**

3. 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 Javlike a!

**Status : Correct**

**Marks : 1/1**

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

```
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**

true true 

**Status : Wrong**

**Marks : 0/1**

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

```
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 equals1 and s3 equal

**Status : Wrong**

**Marks : 0/1**

6. 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

**Status : Correct**

**Marks : 1/1**

7. 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: 7

**Status : Wrong**

**Marks : 0/1**

8. 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**

9. 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**

j a v a j a v a

**Status : Wrong**

**Marks : 0/1**

10. 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**

11. 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**

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

```
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 = Hello length = 5 capacity = 21

**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?

```
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**

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## 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***

```
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;++){
            String line=sc.nextLine();
            int commas=0;
            int periods=0;
            int q=0;
            for(char c:line.toCharArray()){
                if(c==','){
                    commas++;
                }else if(c=='.'){
                    periods++;
                }else if(c=='?'){
                    q++;
                }
            }
            System.out.println(commas + " " +periods + " " +q);
        }
        sc.close();
    }
}
```

}

**Status : Correct**

**Marks : 10/10**

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## 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**

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

**Status : Correct**

**Marks : 10/10**

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## 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**

```
import java.util.*;
public class Main{
    public static void main(String[] args){
        Scanner sc=new Scanner(System.in);
        int a=sc.nextInt();
        while( a-- > 0){
            String num = sc.next();
            if(num.matches("[1-9][0-9]{9}")){
                System.out.println("YES");
            }else{
                System.out.println("NO");
            }
        }
    }
}
```

**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**

```
import java.util.*;
public class Main{
    public static void main(String[] args){
        Scanner sc = new Scanner(System.in);
        String line = sc.nextLine();
        String[] words=line.split(" ");
        List<String> validWords= new ArrayList<>();
        for(String w : words){
            if(w.matches("[a-zA-Z]{2,}")){
                validWords.add(w);
            }
        }
        if(validWords.isEmpty()){
            System.out.println("No valid words.");
        }else{
            System.out.println(String.join(" ", validWords));
        }
    }
}
```

**Status :** Correct

**Marks :** 10/10

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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**

```
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.length()==4 && s.matches("\\d{4}")&& !allSame(s)){
                System.out.println("YES");
            }else{
                System.out.println("NO");
            }
        }
    }
    static boolean allSame(String s){
        for(int i=1;i<s.length();i++){
            if(s.charAt(i)!=s.charAt(0)) return false;
        }
        return true;
    }
}
```

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**

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**

```
import java.util.*;
class main{
    public static void main(String[] args){
        Scanner sc=new Scanner(System.in);
        String s=sc.nextLine();
        int upper =0, lower =0, digits =0;
        for(char c:s.toCharArray()){
            if(Character.isUpperCase(c)) upper++;
            else if(Character.isLowerCase(c)) lower++;
            else if(Character.isDigit(c)) digits++;
        }
        System.out.println(upper + " " + lower + " " + digits);
    }
}
```

**Status : Correct**

**Marks : 10/10**

**2. 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***

```
import java.util.*;
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();
            int count =0;
            for(char c : s.toCharArray()){
                if("aeiouAEIOU".indexOf(c)!=-1) count++;
            }
            System.out.println(count);
        }
    }
}
```

Status : Correct

Marks : 10/10

### 3. 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***

```
import java.util.Scanner;

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

        String[] words = sentence.split(" ");
        StringBuilder palindromes = new StringBuilder();

        for (String word : words) {
```

```
        if (isPalindrome(word)) {
            palindromes.append(word).append(" ");
        }
    }

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

private static boolean isPalindrome(String word) {
    int i = 0, j = word.length() - 1;
    while (i < j) {
        if (word.charAt(i) != word.charAt(j)) {
            return false;
        }
        i++;
        j--;
    }
    return true;
}
```

**Status :** Correct

**Marks :** 10/10

#### 4. 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**

```
import java.util.*;
class main{
    public static void main(String[] args){
        Scanner sc=new Scanner(System.in);
        String sen=sc.nextLine();
        String[] words=sen.split(" ");
        ArrayList<String>specialWords=new ArrayList<>();
        for(String word: words){
            if(!word.isEmpty()){
                char first=Character.toLowerCase(word.charAt(0));
                char last=Character.toLowerCase(word.charAt(word.length()-1));
                if(first == last){
                    specialWords.add(word);
                }
            }
        }
        if(specialWords.isEmpty()){
            System.out.println("No special words found");
        }else{
            System.out.println(String.join(" ",specialWords));
        }
    }
}
```

**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**

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();
        sc.close();

        String[] words = sentence.split(" ");
        StringBuilder result = new StringBuilder();

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

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

    private static boolean containsDigit(String word) {
        for (char ch : word.toCharArray()) {
            if (Character.isDigit(ch)) {
                return true;
            }
        }
    }
}
```

```
        }  
    }  
    return false;  
}  
}
```

**Status :** Correct

**Marks :** 10/10

## 2. 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 CountUppercaseWords {  
    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);  
        }  
        sc.close();  
    }  
}
```

Status : Correct

Marks : 10/10

### 3. 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;

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

        String[] words = sentence.split(" ");
        StringBuilder result = new StringBuilder();

        for (String word : words) {
            if (hasRepeatedCharacter(word)) {
                result.append(word).append(" ");
            }
        }

        if (result.length() > 0) {
            System.out.println(result.toString().trim());
        } else {
            System.out.println("No repetitive words found");
        }
    }
}
```

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

Status : Correct

Marks : 10/10

#### 4. 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  $\geq 5$ , 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**

```
import java.util.Scanner;
```

```
class LongWords {  
    public static void main(String[] args) {  
        Scanner sc = new Scanner(System.in);  
        String sentence = sc.nextLine();  
        sc.close();  
  
        String[] words = sentence.split(" ");  
        StringBuilder result = new StringBuilder();  
  
        for (String word : words) {  
            if (word.length() >= 5) {  
                result.append(word).append(" ");  
            }  
        }  
  
        if (result.length() > 0) {  
            System.out.println(result.toString().trim());  
        } else {  
            System.out.println("No long words found");  
        }  
    }  
}
```

**Status : Correct**

**Marks : 10/10**