

# 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

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**

```
// You are using Java
import java.util.*;
public class Main{
    public static void main(String[] args){
        Scanner s = new Scanner(System.in);
        String sc = s.nextLine();
        String[] a = sc.split(" ");
        ArrayList<String>result=new ArrayList<>();
        for(String b:a){
            if(containsDigit(b)){
                result.add(b);
            }
        }
        if(result.isEmpty()){
            System.out.println("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(" ");
            }
        }
    }
    public static boolean containsDigit(String s){
        for(char c : s.toCharArray()){
            if(Character.isDigit(c)){
                return true;
            }
        }
    }
}
```

```
        return false;
    }
}
```

**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.*;
public class Main{
    public static void main(String[] args){
```

```

Scanner s = new Scanner(System.in);
String sc = s.nextLine();
String[] a = sc.split(" ");
ArrayList<String>result=new ArrayList<>();
for(String b : a){
    if (hasRepetition(b)){
        result.add(b);
    }
}
if(result.isEmpty()){
    System.out.println("No repetitive words found");
}else{
    for(int i=0;i<result.size();i++){
        System.out.print(result.get(i));
        if(i<result.size()-1)System.out.print(" ");
    }
}
}

public static boolean hasRepetition(String word){
    HashSet<Character>seen = new HashSet<>();
    for(char c : word.toCharArray()){
        if(seen.contains(c)){
            return true;
        }
        seen.add(c);
    }
    return false;
}
}

```

**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***

```
// You are using Java
import java.util.*;
public class Main{
    public static void main(String[] args){
        Scanner s = new Scanner(System.in);
        int T = s.nextInt();
        s.nextLine();
        for(int i=0;i<T;i++){
            String username = s.nextLine();
            if(isValid(username)){
                System.out.println("YES");
            }else{
                System.out.println("NO");
            }
        }
    }
}
```

```

    }
}
public static boolean isValid(String s){
    if(s.length()<5||s.length()>15){
        return false;
    }
    if(!Character.isLetter(s.charAt(0))){
        return false;
    }
    for(char c:s.toCharArray()){
        if(!Character.isLetterOrDigit(c)){
            return false;
        }
    }
    return true;
}
}

```

**Status :** Correct

**Marks :** 10/10

#### 4. 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
import java.util.*;
public class Main{
    public static void main(String[] args){
        Scanner s = new Scanner(System.in);
        String sc = s.nextLine();
        String[] a = sc.split(" ");
        List<String>result=new ArrayList<>();
        for(String b:a){
            if(countVowels(b)>=2){
                result.add(b);
            }
        }
        if(result.isEmpty()){
            System.out.println("No words with two vowels");
        }else{
            System.out.println(String.join(" ",result));
        }
    }
    public static int countVowels(String b){
        int count = 0;
        for(char c:b.toLowerCase().toCharArray()){
            if("aeiou".indexOf(c)!=-1){
                count++;
            }
        }
        return count;
    }
}
```

**Status :** Correct

**Marks :** 10/10