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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

```
import java.util.*;
public class Main{
    public static void main(String args[]){
        Scanner sc=new Scanner(System.in);
        int n=sc.nextInt();
        sc.nextLine();
        while(n-->0){
            int count=0;
            String sen=sc.nextLine();
            String[] s=sen.split(" ");
            for(String word:s){
                if(word.length()>0){
                char fc=word.charAt(0);
                if(Character.isUpperCase(fc)){
                    count++;
                }
            }
            }
            System.out.println(count);
        }
        sc.close();
    }
}
```

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

2. 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

```
import java.util.*;
public class Main{
   public static void main(String args[]){
      Scanner sc=new Scanner(System.in);
      String[] s=sc.nextLine().split(" ");
      StringBuilder r=new StringBuilder();
      String vowels="aeiouAEIOU";
      for(String ss:s){
         int count=0;
         for(char c:ss.toCharArray()){
            if(vowels.indexOf(c)!=-1){
               count++;
            }
```

```
            }
            if(count>=2){
                r.append(ss).append(" ");
            }
        }
        if(r.length()>0){
            System.out.println(r.toString().trim());
        }
        else{
            System.out.println("No words with two vowels");
        }
        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.*;
public class Main{
   public static void main(String args[]){
      Scanner sc=new Scanner(System.in);
      String s=sc.nextLine();
      String[] words=s.split(" ");
      boolean f=false;
      for(String word:words){
         if(hasRepetitive(word)){
            System.out.print(word+" ");
            f=true;
         }
      }
      if(!f){
         System.out.print("No repetitive words found");
      }
   }
   public static boolean hasRepetitive(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***

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.*;
public class Main{
   public static void main(String args[]){
      Scanner sc=new Scanner(System.in);
      int n=sc.nextInt();
      sc.nextLine();
```

```
        for(int i=0;i<n;i++){
            String s=sc.nextLine();
            if(isValid(s)){
                System.out.println("YES");
            }
            else{
                System.out.println("NO");
            }
        }
        sc.close();
    }
    public static boolean isValid(String word){
        if(word.length()<5 || word.length()>15){
            return false;
        }
        char first=word.charAt(0);
        if(!((first>='A' && first<='Z')|| (first>='a' && first<='z'))){
            return false;
        }
        for(int i=0;i<word.length();i++){
            char ch=word.charAt(i);
            boolean isletter=(ch>='A' && ch<='Z') || (ch>='a' && ch<='z');
            boolean isDigit=(ch>='0' &&ch<='9');
            if(!(isletter || isDigit)){
                return false;
            }
        }
        return true;
    }
}
```

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