LAB EXERCISE ON COLLECTIONS FRAMEWORK

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COURSE : JAVA PROGRAMMING LAB

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1) Write a Java Program to store the 5 words using ArrayList and display the words which are palindrome from the 5 words.

Code :

```
import java.util.*;


public class Palindrome


{


static boolean isPalindrome(String str)

{

int l=0;

int size=str.length() - 1;


while(size > l)

{

if(str.charAt(l++) != str.charAt(size--))


{


return false;
```

```
}

}

return true;

}

static ArrayList<String> PalindromeString(String []arr , int N)
{

ArrayList<String> s = new ArrayList<String>();

for(int i=0;i<N;i++)
{
if(isPalindrome(arr[i]))
s.add(arr[i]);
}

return s;
}



public static void main(String[] args)
{
String[] arr = new String[5];
Scanner sc = new Scanner(System.in);

for (int i=0;i<arr.length;i++)
{
```

```
arr[i] = sc.next();
}

ArrayList<String> s  = PalindromeString(arr,arr.length);
if(s.size() == 0)
System.out.println("-1");



System.out.println("The palindrome words are : ");
System.out.println(s + " " );
}
}
```

Output :

```
D:\SEM 4\CSE1007_LAB>javac Palindrome.java

D:\SEM 4\CSE1007_LAB>java Palindrome.java
racecar
rar
toy
pop
bat
The palindrome words are :
[racecar, rar, pop]
```

2) Develop a Java program to create an ArrayList of Floating point data type with 5 user input elements and find the mean, mode and standard deviation of all the elements from the ArrayList and store the mean, mode and standard deviation in 5th,6th, and 7th positions respectively.

Code:

```
import java.util.Scanner;
import java.util.ArrayList;
public class Calculate {

  public static void main(String[] args) {
     Scanner sc = new Scanner(System.in);
```

```
ArrayList<Double> li = new ArrayList<Double>();
for (int i=0;i<5;i++)
{
li.add(sc.nextDouble());
}
```

```
   double total = 0.0;
   double avg;
   for(int i = 0; i < li.size(); i++)

      total += li.get(i);
      avg = total /li.size();
      System.out.println("The Average is: " + avg);
```

```
   double max=0.0;
   int maxCount=0;
```

```
         for (int i = 0; i <li.size(); ++i) {

         int count = 0;

         for (int j = 0; j <li.size(); ++j) {

         if (li.get(i) == li.get(j)) ++count;
```

```
        }

        if (count > maxCount)

        {

        maxCount = count;

        max = li.get(i);

        }

        }

        System.out.println("Mode is : " + max);




double sum = 0.0, standardDeviation = 0.0;



   for(int i=0;i<li.size();i++) {
      standardDeviation += Math.pow((double)li.get(i) - avg, 2);
   }

double sd = Math.sqrt(standardDeviation/li.size());
   System.out.println("Standard Deviation : " + sd);
```

```
 li.add(5,avg);
 li.add(6,max);
 li.add(7,sd);
 System.out.println("The elements in the arraylist are as follows :");
 for (int i=0;i<li.size();i++)
 {
    System.out.println(li.get(i));

}
}
}
```

Output :

```
D:\SEM 4\CSE1007_LAB>javac Calculate.java

D:\SEM 4\CSE1007_LAB>java Calculate.java
3.56
6.93
2.56
8.34
3.56
The Average is: 4.99
Mode is : 3.56
Standard Deviation : 2.2352091624722727
The elements in the arraylist are as follows :
3.56
6.93
2.56
8.34
3.56
4.99
3.56
2.2352091624722727
```

3) Create a class bank with account number, name, bank_branch_name, and balance. Store the details of 10 customers either using parameterized constructor or through user input in a Java Collection LinkedList. Provide the facility to do the following (i) Display the details of the customers who have balance greater than 50000Rs (ii) Display the sum of all the account holders in a particular branch

Code:

```
import java.util.*;


class Bank{


private int accno;
private String name;
private String bank_branch;
private int balance;

Bank(int accno,String name, String bank_branch,int balance)
{
this.accno = accno;
this.name = name;
this.bank_branch=bank_branch;
this.balance=balance;
}


public static void main(String[] args)
{

Bank s1=new Bank(101,"Sonu","Dadar",79978);
Bank s2=new Bank(102,"Ravi","Thane", 2489);
Bank s3=new  Bank(103,"Hanumat","Vandalur",954533);
Bank s4=new Bank(104,"Kailash","Thane",494533);
Bank s5=new  Bank(105,"Hanumat","Sion",5533);
Bank s6=new  Bank(106,"Ramesh","Andheri",3523);
Bank s7=new  Bank(107,"Sanya","Chembur",1523);
Bank s8=new  Bank(108,"Tanya","Mulund",456533);
```

```
Bank s9=new  Bank(109,"Riya","Kalwa",935533);
Bank s10=new  Bank(110,"Pranay","Dadar",1925533);



//creating arraylist
LinkedList<Bank> al=new LinkedList<Bank>();
al.add(s1);//adding Student class object
al.add(s2);
al.add(s3);
al.add(s4);
al.add(s5);
al.add(s6);
al.add(s7);
al.add(s8);
al.add(s9);
al.add(s10);



Iterator itr=al.iterator();
//traversing elements of ArrayList object
int count1 =0,count2=0,count3=0,count4=0,count5=0,count6=0,count7=0,count8=0;
System.out.println("The details of the customers who have balance greater than 50000Rs are");
while(itr.hasNext()){
Bank st=(Bank)itr.next();
if(st.balance>50000)
System.out.println(st.accno+" "+st.name+" "+st.bank_branch+" "+st.balance);

}
System.out.println("Sum of all the account holders in a particular branch are ");
Iterator itr1=al.iterator();
```

```
while(itr1.hasNext()){
Bank st=(Bank)itr1.next();
if(st.bank_branch.equals("Thane"))
{
count1++;

System.out.println("The no. account holders in " +st.bank_branch + " is  "+ count1);
}

if(st.bank_branch.equals("Dadar"))
{
count2++;
System.out.println("The no. account holders in " +st.bank_branch + " is  "+ count2);
}

if(st.bank_branch.equals("Vandalur"))
{
count3++;
System.out.println("The no. account holders in " +st.bank_branch + " is  "+ count3);
}

if(st.bank_branch.equals("Sion"))
{
count4++;
System.out.println("The no. account holders in " +st.bank_branch + " is  "+ count4);
}
if(st.bank_branch.equals("Andheri"))
{
count5++;
System.out.println("The no. account holders in " +st.bank_branch + " is  "+ count5);
}
```

```
if(st.bank_branch.equals("Chembur"))
{
count6++;
System.out.println("The no. account holders in " +st.bank_branch + " is  "+ count6);
}
if(st.bank_branch.equals("Mulund"))
{
count7++;
System.out.println("The no. account holders in " +st.bank_branch + " is  "+ count7);
}
if(st.bank_branch.equals("Kalwa"))
{
count8++;
System.out.println("The no. account holders in " +st.bank_branch + " is  "+ count8);
}




}}
}
```

Output:

```
D:\SEM 4\CSE1007_LAB>javac Bank.java

D:\SEM 4\CSE1007_LAB>java Bank.java
The details of the customers who have balance greater than 50000Rs are
101 Sonu Dadar 79978
103 Hanumat Vandalur 954533
104 Kailash Thane 494533
108 Tanya Mulund 456533
109 Riya Kalwa 935533
110 Pranay Dadar 1925533
Sum of all the account holders in a particular branch are
The no. account holders in Dadar is  1
The no. account holders in Thane is  1
The no. account holders in Vandalur is  1
The no. account holders in Thane is  2
The no. account holders in Sion is  1
The no. account holders in Andheri is  1
The no. account holders in Chembur is  1
The no. account holders in Mulund is  1
The no. account holders in Kalwa is  1
The no. account holders in Dadar is  2
```

4) Write a method that takes a string and returns the number of unique characters in the string. It is expected that a string with the same character sequence may be passed several times to the method. Use collections and maps where appropriate. Include a main method to test harness the above method

Code :

```
import java.util.*;

public class P4

{

public static void main(String[] args)

{

String str = "abbffcehfjigglllgddd";

int count = 0;

      String [] arr = str.split("");

      Map<String, Integer> mapStr = new LinkedHashMap<>();


      for (int i=0 ; i < arr.length ; i++){

         if (!mapStr.containsKey(arr[i])){

            mapStr.put(arr[i],1);
```

```
        } else{
            mapStr.put(arr[i],mapStr.get(arr[i])+1);

        }
      }

      for (Map.Entry<String,Integer> map : mapStr.entrySet()) {
        if(map.getValue()==1) {
                                count ++;
            System.out.print(map.getKey());

        }
    }
System.out.println("\nThe count of unique characters is " + count);
 }



}
```

Output:

```
D:\SEM 4\CSE1007_LAB>javac P4.java

D:\SEM 4\CSE1007_LAB>java P4.java
acehji
The count of unique characters is 6
```