1. Create arrayList, add the integer elements in arrayList using asList().Remove the duplicate values and return a arrayList containing unique values. Implement the logic inside removeDuplicates() method. Test the functionalities using the main () method of the Tester class.

**Sample Input and Output**---------10, 20, 10, 15,40,15,40 --- 10,20,15,40

|  |  |
| --- | --- |
| **import** java.util.\*;    **public** **class** GFG {        // Function to remove duplicates from an ArrayList  **public** **static** <T> ArrayList<T> removeDuplicates(ArrayList<T> list)      {            // Create a new ArrayList          ArrayList<T> newList = **new** ArrayList<T>();            // Traverse through the first list  **for** (T element : list) {                // If this element is not present in newList              // then add it  **if** (!newList.contains(element)) {                    newList.add(element);              }          }            // return the new list  **return** newList;      }        // Driver code  **public** **static** **void** main(String args[])      {            // Get the ArrayList with duplicate values          ArrayList<Integer>              list = **new** ArrayList<>(                  Arrays                      .asList(1, 10, 1, 2, 2, 3, 3, 10, 3, 4, 5, 5));            // Print the Arraylist          System.out.println("ArrayList with duplicates: "                             + list);            // Remove duplicates          ArrayList<Integer>              newList = removeDuplicates(list);            // Print the ArrayList with duplicates removed          System.out.println("ArrayList with duplicates removed: "                             + newList);      }  }  Or  import java.util.ArrayList;  import java.util.Arrays;  import java.util.LinkedHashSet;  import java.util.Set;  class Main {  public static void main(String[] args) {  // create an arraylist from the array  // using asList() method of the Arrays class  ArrayList<Integer> numbers = new ArrayList<>(Arrays.asList(1, 2, 3, 4, 1, 3));  System.out.println("ArrayList with duplicate elements: " + numbers);  // convert the arraylist into a set  Set<Integer> set = new LinkedHashSet<>();  set.addAll(numbers);  // delete al elements of arraylist  numbers.clear();  // add element from set to arraylist  numbers.addAll(set);  System.out.println("ArrayList without duplicate elements: " + numbers);  }  }  4. Write a Java Program to-   * 1. Check that given number is Armstrong or not   import java.util.Scanner; class Lab4a {  public static void main(String[] args) {  int originalNum, digit, cubeSum = 0,num;   System.*out*.println("Enter the number:");  Scanner sc = new Scanner(System. *in* );  num = sc.nextInt();  originalNum = num;  while (num!= 0)  {  digit = num % 10;  cubeSum += Math.*pow*(digit, 3);  num /= 10;  }  if(cubeSum == originalNum)  System.*out*.println(originalNum+ " is an Armstrong number");  else  System.*out*.println(originalNum+ " is not an Armstrong number");  } }     * 1. Check that given number is palindrome or not   class Lab4b{  public static void main(String args[]){  int r,sum=0,temp;  int n=454;//It is the number variable to be checked for palindrome   temp=n;  while(n>0){  r=n%10; //getting remainder  sum=(sum\*10)+r;  n=n/10;  }  if(temp==sum)  System.*out*.println("palindrome number ");  else  System.*out*.println("not palindrome");  } }     * 1. Check that given number is odd or even   class Lab4b{  public static void main(String args[]){  int r,sum=0,temp;  int n=454;//It is the number variable to be checked for palindrome   temp=n;  while(n>0){  r=n%10; //getting remainder  sum=(sum\*10)+r;  n=n/10;  }  if(temp==sum)  System.*out*.println("palindrome number ");  else  System.*out*.println("not palindrome");  } }   * 1. Print reverse of a number   import java.util.Scanner;  public class Lab4d {  public static void main(String[] args) {  System.*out*.println("enter the no ");  Scanner sc = new Scanner(System.*in*);  int number = sc.nextInt();   int reverse = 0;  while (number != 0) {  int remainder = number % 10;  reverse = reverse \* 10 + remainder;  number = number / 10;  }  System.*out*.println("The reverse of the given number is: " + reverse);  } }  5. An educational institution provides stipends for post-graduate students every year. For calculating the stipend, the institution has fixed a base amount of $100 which is provided to all the students. The students who perform exceptionally well during the academics get an extra amount based on their performance. You need to help the institution in developing an application for calculating the stipend by implementing the class using info given below. **Note:** STIPEND is a final variable.  **calculateTotalStipend():-**Calculate and return the total stipend amount based on the aggregate marks of the student using the below table. Implement the getter and setter methods appropriately.  i) Aggregate marks>=85 and <90 then bonus stipend amt is $10  ii) Aggregate marks>=90 and <95 then bonus stipend amt is $15  iii) Aggregate marks>=95 and <100 then bonus stipend amt is $20  package demo;  public class FinalStudent {  int STIPEND; int studentId; int aggregateMarks; double calculateTotalStipend; private static int bonusStipend1 = 10; private static int bonusStipend2 = 15; private static int bonusStipend3 = 20;  this.STIPEND = STIPEND; this.studentId = studentId; this.aggregateMarks = aggregateMarks;  public getSTIPEND = int STIPEND(){ return STIPEND;  } public void setSTIPEND(int STIPEND) { this.STIPEND; } public getStudentId = int studentId() { return studentId; } public void setStudentId(int studentID) { this.studentId; } public getAggregateMarks = int aggregateMarks() { return aggregateMarks;  }  public void setAggregateMarks = (int aggregateMarks){ this.aggregateMasks; } if(aggregateMarks >= 85 && aggregateMarks < 90) { return bonusStipend1; } else if(aggregateMarkss >= 90 && aggregateMarks < 95) { return bonusStipend2; } else if(aggregateMarks >= 95 && aggregateMarks < 100) { return bonusStipend3; }  class Tester {  public static void main(String[] args) { Student student1 = new Student(); student1.setStudentId(1212); student1.setAggregateMarks(93);  double totalStipend = student1.calculateTotalStipend(); System.out.println("The final stipend of " + student1.getStudentId()+" is $" + totalStipend);  Student student2 = new Student(); student2.setStudentId(1222); student2.setAggregateMarks(84);  totalStipend = student2.calculateTotalStipend(); System.out.println("The final stipend of " + student2.getStudentId()+" is $" + totalStipend); } } }  6.  import javax.swing.\*; import java.awt.\*; import java.awt.event.\*;   class Myframe extends JFrame implements ActionListener{   Container c;  JLabel label1 , label2 , label3;  JTextField user;  JPasswordField pass;  JButton btn;  Myframe(){  setTitle("PasswordField Example");   setSize(400,300);  setLocation(100,100);  setDefaultCloseOperation(*EXIT\_ON\_CLOSE*);   c = getContentPane();  c.setLayout(null);   label1 = new JLabel("Username");  label2 = new JLabel("Password");  label3 = new JLabel("");   label1.setBounds(10,50,100,20);  label2.setBounds(10,100,100,20);  label3.setBounds(10,180,300,20);   c.add(label1);  c.add(label2);  c.add(label3);    user = new JTextField();  user.setBounds(120,50,120,20);  c.add(user);   pass = new JPasswordField();  pass.setBounds(120,100,120,20);  c.add(pass);   btn = new JButton("Login");  btn.setBounds(120,150,70,20);  c.add(btn);  btn.addActionListener(this);  setVisible(true);  }   @Override  public void actionPerformed(ActionEvent e) {  System.*out*.println("Username " + user.getText());  System.*out*.println("Password " + pass.getText());   label3.setText("Username " + user.getText() + " ,Password: " + pass.getText() );  } } public class Lab6 {  public static void main(String[] args) {  Myframe frame = new Myframe();  }  8. Write a Java Program to count the number of words in a string using HashMap     |  | | --- | | // Java Program to find the occurrence  // of words in a String using HashMap.  **import** java.io.\*;  **import** java.util.HashMap;  **import** java.util.Map;    **class** GFG {  **public** **static** **void** main(String[] args)      {            // Declaring the String          String str = "Alice is girl and Bob is boy";          // Declaring a HashMap of <String, Integer>          Map<String, Integer> hashMap = **new** HashMap<>();            // Splitting the words of string          // and storing them in the array.          String[] words = str.split(" ");    **for** (String word : words) {                // Asking whether the HashMap contains the              // key or not. Will return null if not.              Integer integer = hashMap.get(word);    **if** (integer == **null**)                  // Storing the word as key and its                  // occurrence as value in the HashMap.                  hashMap.put(word, 1);    **else** {                  // Incrementing the value if the word                  // is already present in the HashMap.                  hashMap.put(word, integer + 1);              }          }          System.out.println(hashMap);      }  }  9. b) Write a java program that takes two positive integers as command-line arguments and prints true if either evenly divides the other.  public class q1  {  public static void main(String[] args)  {  int a = Integer.parseInt(args[0]);  int b = Integer.parseInt(args[1]);  boolean res = (a%b==0 || b%a==0);  System.out.println("result=" + res);  }  } |   10. a  import java.util.\*;  // Main class class Lab10a{   // Main driver method  public static void main(String[] args)  {  // Creating and initializing the ArrayList  // Declaring object of integer type  List<Integer> numbers = Arrays.*asList*(1, 2, 3,  4, 5, 6, 7, 8);   // Iterating using for loop  for (int i = 0; i < numbers.size(); i++)   // Printing and display the elements in ArrayList  System.*out*.print(numbers.get(i) + " ");  } }  10.b. import java.util.\*;  // Main class class Lab10b {   // Main driver method  public static void main(String[] args)  {  // Declaring and initializing ArrayList  List<Integer> numbers  = Arrays.*asList*(1, 2, 3, 4, 5, 6, 7, 8);   // Iterating ArrayList using Iterator  Iterator it = numbers.iterator();   // Holds true till there is single element  // remaining in the list  while (it.hasNext())   // Print the elements of ArrayList  System.*out*.print(it.next() + " ");  } }  11. a. Write a program that takes three double values X0, V0, and t from the user and prints the valuehttp://thetechpoint.in/img/question/assignment26.PNG, where g is the constant 9.78033. This value is the displacement in meters after t seconds when an object is thrown straight up from initial position x0 at velocity v0 meters per second. |

public class q6

{

public static void main(String[] args)

{

double x0 = Double.parseDouble(args[0]);

double v0 = Double.parseDouble(args[1]);

double t = Double.parseDouble(args[2]);

double g = 9.78033;

double res = x0 + v0\*t + ((g\*t\*t)/2);

System.out.println("Result=" + res);

}

}

b. Write a program that takes two int values m and d from the command line and prints true if day d of month m is between 3/20 and 6/20, false otherwise.

public class q7

{

public static void main(String[] args)

{

int m = Integer.parseInt(args[0]);

int d = Integer.parseInt(args[1]);

boolean res = (((m==3)&&(d>20&&d<=31))||((m==4)&&(d>=1&&d<=30))||((m==5)&&(d>=1&&d<=31))||((m==6)&&(d>=1&&d<20)));

System.out.println("Result=" + res);

}

}

1. A. Write a program to check if the two strings entered by user are anagrams or not. Two words are said to be anagrams if the letters of one word can be rearranged to form the other word. For example, jaxa and ajax are anagrams of each other.

import java.util.Arrays;

import java.util.Scanner;

class Main {

public static void main(String[] args) {

// create an object of Scanner class

Scanner input = new Scanner(System.in);

// take input from users

System.out.print("Enter first String: ");

String str1 = input.nextLine();

System.out.print("Enter second String: ");

String str2 = input.nextLine();

// check if length is same

if(str1.length() == str2.length()) {

// convert strings to char array

char[] charArray1 = str1.toCharArray();

char[] charArray2 = str2.toCharArray();

// sort the char array

Arrays.sort(charArray1);

Arrays.sort(charArray2);

// if sorted char arrays are same

// then the string is anagram

boolean result = Arrays.equals(charArray1, charArray2);

if(result) {

System.out.println(str1 + " and " + str2 + " are anagram.");

}

else {

System.out.println(str1 + " and " + str2 + " are not anagram.");

}

}

else {

System.out.println(str1 + " and " + str2 + " are not anagram.");

}

input.close();

}

}

b. Check whether the string is palindrome without using string methods.

public class Palindrom

{

private static Scanner in;

public static void main(String[] args)

{

String s,str1,str2;

Scanner scan =new Scanner (System.in);

System.out.println("Enter the string");

String s = in.nextLine();

StringBuffer str1 = new StringBuffer();

StringBuffer str2 = new StringBuffer();

str1.reverse();

System.out.println("orignal string="+str2);

System.out.println("reveser string="+str1);

if(String.valueOf(str1).compareTo(String.valueOf(str2))==0)

System.out.println("palindrom");

else

System.out.println("not palindrom");

}

}

13.a.

public class Lab13a  
{  
 public static void main(String args[])  
 {  
 System.*out*.println("3 factorial: " + *fact*(3));  
 System.*out*.println("4 factorial: " + *fact*(4));  
 System.*out*.println("5 factorial: " + *fact*(5));  
 }  
  
 public static int fact(int number)  
 {  
 int result = 1;  
  
 while(number != 0)  
 {  
 result = result \* number;  
 number--;  
 }  
 return result;  
 }  
}

13.b.

class Lab13b{  
 public static void main(String args[]){  
 int i,fact=1;  
 int number=5;//It is the number to calculate factorial  
 for(i=1;i<=number;i++){  
 fact=fact\*i;  
 }  
 System.*out*.println("Factorial of "+number+" is: "+fact);  
 }  
}

16.

public class Lab16 {  
 public static void main(String[] args) {  
 int x;  
 int y;  
 String name;  
 Scanner sc = new Scanner(System.*in*);  
 Customer c = new Customer();  
 System.*out*.println("enter name");  
 name = sc.nextLine();  
 System.*out*.println("enter balance");  
 x = sc.nextInt();  
 System.*out*.println("enter account number");  
 y = sc.nextInt();  
  
 c.set(x);  
 System.*out*.println("your balance is : " + c.display());  
  
 c.store(y);  
 System.*out*.println("your account no is : " + c.disp());  
 c.interest();  
 }  
}

20.

import java.util.Scanner;  
  
class Orders {  
 static String *status*;  
 double totalPrice;  
 int price;  
  
 public Orders(int x) {  
 price = x;  
  
 }  
  
 public double calculateTotalPrice() {  
 totalPrice = 0.05 \* price + price;  
 return totalPrice;  
 }  
  
 static {  
 *status* = "ordered";  
  
 }  
  
}  
  
  
public class Lab20{  
 public static void main(String[] args) {  
 Scanner sc = new Scanner(System.*in*);  
 int unitPrice = 30;  
 int orderid;  
 String orderedFoods;  
 Orders o = new Orders(unitPrice);  
  
 System.*out*.println("enter food id");  
 orderid = sc.nextInt();  
  
 System.*out*.println("enter food ");  
 orderedFoods = sc.next();  
  
 System.*out*.println("Order Id: " + orderid);  
 System.*out*.println("Ordered Food : " + orderedFoods);  
  
 System.*out*.println("Order status: " + Orders.*status*);  
 System.*out*.println("Total Price: " + o.calculateTotalPrice());  
  
 }  
}

1. 23. Calculate and return the sum of all the even numbers present in the numbers array passed to the method calculateSumOfEvenNumbers. Implement the logic inside calculateSumOfEvenNumbers() method. Test the functionalities using the main() method of the Tester class.

public class SumOfEvens1 {

private static Scanner sc;

public static void main(String[] args)

{

int Size, i, EvenSum = 0;

sc = new Scanner(System.in);

System.out.print(" Please Enter Number of elements in an array : ");

Size = sc.nextInt();

int [] a = new int[Size];

System.out.print(" Please Enter " + Size + " elements of an Array : ");

for (i = 0; i < Size; i++)

{

a[i] = sc.nextInt();

}

for(i = 0; i < Size; i++)

{

if(a[i] % 2 == 0)

{

EvenSum = EvenSum + a[i];

}

}

System.out.println("\n The Sum of Even Numbers in this Array = " + EvenSum);

}

}

24.

class Camera {  
 private String brand;  
 private double cost;  
  
 public Camera(String b, double c) {  
 this.brand = b;  
 this.cost = c;  
 System.*out*.println(this.brand);  
 System.*out*.println(this.cost + "$");  
 }  
  
}  
  
class DigitalCamera extends Camera {  
 private int memory;  
  
 DigitalCamera(String b, double c) {  
 super(b, c);  
 }  
  
 public int getMemory() {  
 return this.memory;  
 }  
  
 public void setMemory(int memory) {  
 this.memory = memory;  
 }  
}  
  
public class Lab24 {  
 public static void main(String[] args) {  
 DigitalCamera dc = new DigitalCamera("Nikon", 100);  
  
 dc.setMemory(16);  
 System.*out*.println(dc.getMemory() + "GB");  
 }  
}

26. 1. Write a Java program to find the maximum and minimum value of an array

**import** *java.util.*\*;

**public** **class** test

**{**

**public** **static** **void** main**(String[]** args**)**

**{**

Scanner sc=new Scanner**(**System.in**)**;

**int** arr**[]**=new **int[**10**]**;

System.out.println**(**"Enter elements in array"**)**;

**int** min=**Integer**.MAX\_VALUE;

**int** max=**Integer**.MIN\_VALUE;

**for(int** i=0;i**<**=9;i++**)**

**{**

arr**[**i**]**=sc.nextInt**()**;

**if(**arr**[**i**]<**min**)**

**{**

min=arr**[**i**]**;

**}**

**if(**arr**[**i**]>**max**)**

**{**

max=arr**[**i**]**;

**}**

**}**

System.out.println**(**"Maximum element is "+max**)**;

System.out.println**(**"Minimum element is "+min**)**;

**}**

**}**

2.Write a Java program to find the second largest element in an array.

1. public class ThirdLargestNumberInAnArray {
2. public static void main(String args[]){
3. int temp, size;
4. int array[] = {10, 20, 25, 63, 96, 57};
5. size = array.length;
6. for(int i = 0; i<size; i++ ){
7. for(int j = i+1; j<size; j++){
8. if(array[i]>array[j]){
9. temp = array[i];
10. array[i] = array[j];
11. array[j] = temp;
12. }
13. }
14. }
15. System.*out*.println("Third second largest number is:: "+array[size-2]);
16. }
17. }

3. Take 10 integer inputs from user and store them in an array. Now, copy all the elements in another array but in reverse order.

3. **import** java.util.\*;

**class** Ans{

**public** **static** **void** main(String[] args){

Scanner s = **new** Scanner(System.in);

**int**[] z = **new** **int**[10];

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

System.out.println("Print the value of z["+i+"]");

z[i] = s.nextInt();

}

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

System.out.println("The value of z["+i+"] is "+z[i]);

}

}

27. 2. Count number of occurrences (or frequency) in a sorted array

**class** Main

{

    // Returns number of times x occurs in arr[0..n-1]

**static** **int** countOccurrences(**int** arr[], **int** n, **int** x)

    {

**int** res = 0;

**for** (**int** i=0; i<n; i++)

**if** (x == arr[i])

              res++;

**return** res;

    }

**public** **static** **void** main(String args[])

    {

**int** arr[] = {1, 2, 2, 2, 2, 3, 4, 7 ,8 ,8 };

**int** n = arr.length;

**int** x = 2;

        System.out.println(countOccurrences(arr, n, x));

    }

}

29. Create an abstract class 'Bank' with an abstract method 'getBalance'. $100, $150 and $200 are deposited in banks A, B and C respectively. 'BankA', 'BankB' and 'BankC' are subclasses of class 'Bank', each having a method named 'getBalance'. Call this method by creating an object of each of the three classes.

package class2;

**//@author Java\_Programs**

public class Class2 {

    public static void main(String[] args) {

                BankA bA = new BankA();

bA.getBalance();

      BankB bB = new BankB();

        bB.getBalance();

         BankC bC = new BankC();

        bC.getBalance();

}

   }

abstract class Bank{

   public abstract void getBalance();

}

class BankA extends Bank{

@Override

    public void getBalance(){

        System.out.println("Deposited: $100 ");

    }

}

class BankB extends Bank{

    @Override

    public void getBalance(){

        System.out.println("Deposited: $150 ");

    }

}

class BankC extends Bank{

    @Override

    public void getBalance(){

        System.out.println("Deposited: $200 ");

    }

}