COM194 HOMEWORKS – ARRAYS

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1. Write a Java program to sort a numeric array and a string array.

```
package LabProgramming;

import java.util.Arrays;
import java.util.Scanner;

public class Question1 {

	static Scanner scan = new Scanner(System.in);

	public static void main(String[] args) {
		System.out.println("Welcome to Java program to "
				+ "sort a numeric array and a string array");
		System.out.print("Please Enter Size of Numeric Array : ");
		int size = scan.nextInt();
		int[] arr1 = new int[size];

		numSorting(arr1, size);

		System.out.print("Please Enter Size of String Array : ");
		int size2 = scan.nextInt();
		String[] arr2 = new String[size2];

		characterSorting(arr2, size2);

		scan.close();
	}

	public static void characterSorting(String[] arr2, int size2) {
		int i = 0;
		while (i < size2) {
			System.out.printf("Please Enter %d . value of array : ", (i + 1));
			arr2[i] = scan.next();
			i++;
		}
		System.out.println("Form of array before the sort : " + Arrays.toString(arr2));
		Arrays.sort(arr2);
		System.out.println("Sorted form of string array : " + Arrays.toString(arr2));

	}

	public static void numSorting(int[] arr, int size) {
		int i = 0;
		while (i < size) {
			System.out.printf("Please Enter %d . value of array : ", (i + 1));
			arr[i] = scan.nextInt();
			i++;
		}
		System.out.println("Form of array before the sort : " + Arrays.toString(arr));
		Arrays.sort(arr);
		System.out.println("Sorted form of numeric array : " + Arrays.toString(arr));

	}
}
```

2. Write a Java program to test if an array contains a specific value.

```
 package LabProgramming;

import java.util.Scanner;

public class Question2 {

	static Scanner scan = new Scanner(System.in);

	public static void main(String[] args) {
		System.out.println("Welcome to Java program to test if an array contains a specific
value");
		System.out.print("Please Enter Size of Array : ");
		int size = scan.nextInt();
		String[] arr = new String[size];
		int i = 0;
		while (i < size) {
			System.out.printf("Please Enter %d . value of array : ", (i + 1));
			arr[i] = scan.next();
			i++;
		}
		checkSpecific(arr,size);
	}

	private static void checkSpecific(String[] arr, int size) {
		System.out.print("Please Enter value which do you want : ");
		String value = scan.next();

		int i = 0;
		while (i < size) {
			if(arr[i].equals(value)) {
				System.out.println("Array contains : " + value);
				break;
			}else {
				if(i==size-1)
					System.out.println("Array doesn't contain : " + value);
			}
			i++;
		}


	}

}
```

3. Write a Java program to find the index of an array element.

```java
package LabProgramming;

import java.util.Scanner;

public class Question3 {

	public static void main(String[] args) {
		Scanner scan = new Scanner(System.in);
		System.out.println("Welcome to Java program to find the index of an array element");
		System.out.print("Please Enter Size of Array : ");
		int size = scan.nextInt();
		int[] arr = new int[size];
		int i = 0;
		while (i < size) {
			System.out.printf("Please Enter %d . value of array : ", (i + 1));
			arr[i] = scan.nextInt();
			i++;
		}
		System.out.println("Please enter the value what you want to find : ");
		int find = scan.nextInt();
		System.out.println("Index position of 5 is:" + findIndex(arr, find));
		scan.close();
	}

	public static int findIndex(int arr[], int t) {

		if (arr == null) {
			return -1;
		}

		int len = arr.length;
		int i = 0;

		while (i < len) {

			if (arr[i] == t) {
				return i;
			} else {
				i = i + 1;
			}
		}
		return -1;
	}
}
```

4. Write a Java program to remove a specific element from an array.

```java
package LabProgramming;

import java.util.Arrays;
import java.util.Scanner;

public class Question4 {
	static Scanner scan = new Scanner(System.in);

	public static void main(String[] args) {
		System.out.println("Welcome to Java program to" + " remove a specific element from an
array");
		System.out.println("Please Enter size of array : ");
		int size = scan.nextInt();
		int[] arr = new int[size];
		for (int i = 0; i < arr.length; i++) {
			System.out.printf("Please Enter %d. Element of Array : ", (i + 1));
			arr[i] = scan.nextInt();
		}
		System.out.println("before removing the second element: " + Arrays.toString(arr));

		remove(arr);
		scan.close();

	}

	private static void remove(int[] arr) {
		System.out.println("Please Enter Specific Element For Remove : ");
		int element = scan.nextInt();
		int[] temp = new int[arr.length - 1];
		int count = 0;
		for (int el : arr) {
			if (el == element) {
				for (int i = count; i < arr.length - 1; i++) {
					arr[i] = arr[i + 1];
				}
			}
			count++;
		}
		System.arraycopy(arr, 0, temp, 0, arr.length - 1);
		System.out.println("After removing the specific element: " + Arrays.toString(temp));

	}

}
```

5. Write a Java program to insert an element (specific position) into an array.

```java
package LabProgramming;

import java.util.Arrays;
import java.util.Scanner;

public class Question5 {

	public static void main(String[] args) {
		Scanner scan = new Scanner(System.in);
		System.out.println("Welcome to Java program to insert "
				+ "an element (specific position) into an array.");
		System.out.println("Please Enter Size of Array : ");
		int size = scan.nextInt();
		int[] arr = new int[size];
		for (int i = 0; i < arr.length; i++) {
			System.out.printf("Please enter %d. element of array : ",i+1);
			arr[i]=scan.nextInt();

		}
		System.out.println("Please Enter Element which do you want to insert : ");
		int element = scan.nextInt();
		System.out.println("Please Enter position of the element : ");
		int position = scan.nextInt();
		scan.close();
		insert(element,position,arr,size+1);

	}

	private static void insert(int element, int position, int[] arr,int size) {
		int[] temp = new int[size];
		for (int i = 0; i < temp.length; i++) {
			if(i<position-1)
				temp[i] = arr[i];
			if(i==position-1)
				temp[i]=element;
			if(i>position-1)
				temp[i] = arr[i-1];
		}
		System.out.println("Last form of array : " + Arrays.toString(temp));
	}

}
```

6. Write a Java program to reverse an array of integer values.

```java
package LabProgramming;

import java.util.Arrays;
import java.util.Scanner;

public class Question6 {

	public static void main(String[] args) {
		Scanner scan = new Scanner(System.in);
		System.out.println("Welcome to Java program"
				+ " to reverse an array of integer values");
		System.out.print("Please Enter Size of Array : ");
		int size = scan.nextInt();
		int[] arr = new int[size];
		for (int i = 0; i < arr.length; i++) {
			System.out.printf("Please enter %d. element of array : ", i + 1);
			arr[i] = scan.nextInt();

		}
		scan.close();
		System.out.println("Your Array : " + Arrays.toString(arr));
		reverse(arr,size);

	}

	private static void reverse(int[] arr,int size) {
		int[] temp = new int[size];
		int j = 0 ;
		for (int i = size-1; i > -1; i--) {
				temp[i]=arr[j++];

		}
		System.out.println("Reverse of array : " + Arrays.toString(temp));
	}

}
```

7. Write a Java program to find the common elements between two arrays of integers.

```java
package LabProgramming;

import java.util.ArrayList;
import java.util.Arrays;
import java.util.Scanner;


public class Question7 {
	static Scanner scan = new Scanner(System.in);

	public static void main(String[] args) {
		System.out.println(
				"Welcome to Java program to " + "find the common elements" + " between
two arrays of integers");
		System.out.print("Please Enter Size of Arrays :");
		int size = scan.nextInt();
		int[] arr1 = new int[size];
		int[] arr2 = new int[size];
		getArr(1, arr1, size);
		getArr(2, arr2, size);
		System.out.printf("Your %d. array  : ", 1);
		System.out.println(Arrays.toString(arr1));
		System.out.printf("Your %d. array  : ", 2);
		System.out.println(Arrays.toString(arr2));
		findCommon(arr1,arr2);
	}

	private static void findCommon(int[] arr1, int[] arr2) {
		ArrayList<Integer> temp = new ArrayList<Integer>();
		for (int i = 0; i < arr2.length; i++) {
			for (int j = 0; j < arr2.length; j++) {
				if (arr1[i]==arr2[j]) {
					temp.add(arr1[i]);
				}
			}
		}
		System.out.println("Common Elements : " + temp.toString());
	}

	private static void getArr(int arrNum, int[] arr, int size) {

		for (int i = 0; i < arr.length; i++) {
			System.out.printf("Please enter %d. element of array : ", i + 1);
			arr[i] = scan.nextInt();
		}


	}

}
```

8. Write a Java program to remove duplicate elements from an array.

```java
package LabProgramming;

import java.util.Arrays;
import java.util.Scanner;

public class Question8 {

	public static void main(String[] args) {
		Scanner scan = new Scanner(System.in);
		System.out.println(
				"Welcome to Java program to remove duplicate"
				+ " elements from an array.");
		System.out.print("Please Enter Size of Arrays :");
		int size = scan.nextInt();
		int[] arr = new int[size];
		for (int i = 0; i < arr.length; i++) {
			System.out.printf("Please enter %d. element of array : ", i + 1);
			arr[i] = scan.nextInt();

		}
		scan.close();
		System.out.println("Your Array : " + Arrays.toString(arr));
		int length = removeDuplicate(arr);
		System.out.print("Your new array : [");
		for (int i = 0; i < length; i++) {
		   System.out.print(arr[i]+" ");
		}
		System.out.print("]");
	}

	private static int removeDuplicate(int[] arr) {
		 int[] temp = new int[arr.length];
		int j = 0;
		for (int i=0; i<arr.length-1; i++){
		    if (arr[i] != arr[i+1]){
		        temp[j++] = arr[i];
		    }
		 }
		temp[j++] = arr[arr.length-1];
		for (int i=0; i<j; i++){
		    arr[i] = temp[i];
		}
		return j;
	    }
	}
```

9. Write a Java program to test the equality of two arrays.

```java
package LabProgramming;

import java.util.Arrays;
import java.util.Scanner;

public class Question9 {

	public static void main(String[] args) {
		Scanner scan = new Scanner(System.in);
		System.out.println("Welcome to Java program to test" + " the equality of two arrays.");
		System.out.print("Please Enter Size of First Array :");
		int size1 = scan.nextInt();

		int[] arr1 = new int[size1];

		for (int i = 0; i < arr1.length; i++) {
			System.out.printf("Please enter %d. element of array : ", i + 1);
			arr1[i] = scan.nextInt();

		}

		System.out.println("========================");

		System.out.print("Please Enter Size of Second Array :");
		int size2 = scan.nextInt();

		int[] arr2 = new int[size2];

		for (int i = 0; i < arr2.length; i++) {
			System.out.printf("Please enter %d. element of array : ", i + 1);
			arr2[i] = scan.nextInt();

		}
		System.out.println("========================");

		System.out.println("Your First Array : " + Arrays.toString(arr1));
		System.out.println("Your Second Array : " + Arrays.toString(arr2));
		scan.close();
		System.out.println("========================");

		test(arr1, arr2);

	}

	private static void test(int[] arr1, int[] arr2) {
		int count = 0;
		if (arr1.length == arr2.length) {
			for (int i = 0; i < arr2.length; i++) {
				if (arr1[i] == arr2[i]) {
					count++;
				}
			}
			if (count == arr1.length)
				System.out.println("These are equal");
			else
				System.out.println("These are not equal");

		} else {
			System.out.println("Lengths are not equal");
		}

	}

}
```

10. Write a Java program to separate even and odd numbers of an given array of integers. Put all even numbers first, and then odd numbers.

```
package LabProgramming;

import java.util.Arrays;
import java.util.Scanner;

public class Question10 {

	public static void main(String[] args) {
		Scanner scan = new Scanner(System.in);
		System.out
				.println("Welcome to Java program to separate even " + "and odd
numbers of an given array of integers");
		System.out.print("Please Enter Size of Array :");
		int size = scan.nextInt();

		int[] arr = new int[size];
		System.out.println("========================");

		for (int i = 0; i < arr.length; i++) {
			System.out.printf("Please enter %d. element of array : ", i + 1);
			arr[i] = scan.nextInt();
		}
		scan.close();
		System.out.println("========================");
		System.out.println(Arrays.toString(seperater(arr)));

	}

	private static int[] seperater( int[] arr) {
		int[] temp = new int[arr.length ];
		int j = 0;
		for (int i = 0; i < temp.length; i++) {
			if (arr[i] % 2 == 0)
				temp[j++] = arr[i];
		}

		for (int i = 0; i < temp.length; i++) {
			if (arr[i] % 2 == 1)
				temp[j++] = arr[i];
		}


		return temp;
	}

}
```

COM128 JAVA HOMEWORKS

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COMPUTER ENGINEERING

1.Write a Java program that keeps a number from the user and generates an integer between 1 and 7 and displays the name of the weekday.

```
package ComputerProgramming;

import java.util.Scanner;

public class Question1 {

	public static void main(String[] args) {
		Scanner scan = new Scanner(System.in);
		int day ;

		System.out.println("This Program Generate Days Of Week");
		System.out.println("----------------------------------");

		System.out.print("Please Enter Day Of The Week As A Number : ");
		day = scan.nextInt();

		System.out.format("%d. day of the week : ",day);

		switch (day) {
		case 1:
			System.out.println("Monday");
			break;
		case 2:
			System.out.println("Tuesday");
			break;
		case 3:
			System.out.println("Wednesday");
			break;
		case 4:
			System.out.println("Thursday");
			break;
		case 5:
			System.out.println("Friday");
			break;
		case 6:
			System.out.println("Saturday");
			break;
		case 7:
			System.out.println("Sunday");
			break;
		default:
			System.out.println("Error - Please Enter from 1 up to 7 !");
			break;
		}

		scan.close();
	}

}
```

2. Write a Java program that reads in two floating-point numbers and tests whether they are the same up to three decimal places.

```
package ComputerProgramming;

import java.util.Scanner;

public class Question2 {

        public static void main(String[] args) {
            Scanner scan = new Scanner(System.in);
            double num1,num2;
            System.out.println("Java program that reads in two floating-point numbers "
                        + "and tests whether they are the same up to three decimal places");

            System.out.println("Please Enter First Floating Point Number : ");
            num1=scan.nextDouble();

            System.out.println("Please Enter First Floating Point Number : ");
            num2=scan.nextDouble();


            num1=(num1*1000)/1000;
            num2=(num2*1000)/1000;


            if(num1==num2)
                System.out.println("These are same up to three decimal places.");
            else
                System.out.println("These are not same up to three decimal places.");

            scan.close();
        }

}
```

3. Write a Java program to find the number of days in a month.

```
package ComputerProgramming;

import java.util.Scanner;

public class Question3 {

	public static void main(String[] args) {
		Scanner scan = new Scanner(System.in);
		int month;

		System.out.println("Java program to find the number of days in a month");

		System.out.print("Please Enter Number of Month : ");
		month = scan.nextInt();

		if(month<1 || month>12)
			System.out.println("Error!");
		else if(month==1 || month==3 || month==5 || month==7 || month==8 || month==10 ||
month==12)
			System.out.println("This month contains 31 days.");
		else if(month==2)
			System.out.println("This month contains 28 days.");
		else
			System.out.println("This month contains 30 days.");

		scan.close();
	}

}
```

4. Write a Java program that takes a year from user and print whether that year is a leap year or not.

```
package ComputerProgramming;

import java.util.Scanner;

public class Question4 {

	public static void main(String[] args) {
		Scanner scan = new Scanner(System.in);
		int year;

		System.out.println("Java program that takes a year from user "
				+ "and print whether that year is a leap year or not");

		System.out.println("Please Enter A Year : ");
		year = scan.nextInt();
		if (year % 4 == 0)
		{
		     if (year % 100 == 0)
		     {
		       if (year % 400 == 0)
		           System.out.println(year + " is a leap year.");
		       else
		        System.out.println(year + " is not a leap year.");
		     }
		     else
		        System.out.println(year + " is a leap year.");
		}
		else
		   System.out.println(year + " is not a leap year.");

		 scan.close();

		}
	}
```

5. Write a Java program that reads an positive integer and count the number of digits the number has.

```
package ComputerProgramming;

import java.util.Scanner;

public class Question5 {

	public static void main(String[] args) {
		Scanner scan = new Scanner(System.in);
		int num;
		int digit=0;
		boolean check = true;
		System.out.println("a Java program that reads an positive "
				+ "integer and count the number of digits the number has");
		System.out.print("Please Enter A Positive Number : ");
		num = scan.nextInt();
		if(num<=0)
		{
			System.out.println("Error.Please Enter Positive Value !!!");
			check=false;
		}
		else
		{
			while (num>0)
			{
				num = num / 10 ;
				digit++;
			}
		}
		if(check) {
			System.out.println("Digits of this number : " + digit);
		}

		scan.close();

	}

}
```

6. Write a Java program that accepts three numbers and prints "All numbers are equal" if all three numbers are equal, "All numbers are different" if all three numbers are different and "Neither all are equal or different" otherwise.

```
package ComputerProgramming;

import java.util.Scanner;

public class Question6 {

	public static void main(String[] args) {
		Scanner scan = new Scanner(System.in);
		System.out.println("This program compare the values");

		System.out.print("Please Enter First Value : ");
		int n1 = scan.nextInt();
		System.out.print("Please Enter First Value : ");
		int n2 = scan.nextInt();
		System.out.print("Please Enter First Value : ");
		int n3 = scan.nextInt();

		System.out.println("ANSWER");
		System.out.println("------");
		if(n1==n2 && n1==n3)
			System.out.println("All numbers are equal");
		else if((n1==n2 && n1!=n3) || (n2==n1 && n2!=n3))
			System.out.println("Neither all are equal or different");
		else if((n1!=n2 && n1==n3) || (n2!=n1 && n2==n3))
			System.out.println("Neither all are equal or different");
		else {
			System.out.println("All numbers are different");
		}
		scan.close();

	}

}
```

7. Write a program that accepts three numbers from the user and prints "increasing" if the numbers are in increasing order, "decreasing" if the numbers are in decreasing order, and "Neither increasing or decreasing order" otherwise.

```
package ComputerProgramming;

import java.util.Scanner;

public class Question7 {

	public static void main(String[] args) {
		Scanner scan = new Scanner(System.in);
		System.out.println("This program says sorting the values");

		System.out.print("Please Enter First Value : ");
		int n1 = scan.nextInt();
		System.out.print("Please Enter First Value : ");
		int n2 = scan.nextInt();
		System.out.print("Please Enter First Value : ");
		int n3 = scan.nextInt();
		System.out.println("------");
		System.out.println("ANSWER");
		if(n3>n2 && n2>n1)
			System.out.println("Increasing");
		else if(n1>n2 && n2>n3)
			System.out.println("Decreasing");
		else
			System.out.println("Neither increasing or decreasing order");
		scan.close();
	}

}
```

8. Write a Java program that accepts two real numbers and checks whether they are the same up to two decimal places.

```
package ComputerProgramming;

import java.util.Scanner;

public class Question8 {

	public static void main(String[] args) {
		float r1,r2;
		Scanner scan = new Scanner(System.in);
		System.out.println("Java program that accepts two real numbers "
				+ "and checks whether they are the same up to two decimal places");

		System.out.print("Please Enter First Real Number : ");
		r1=scan.nextFloat();
		System.out.print("Please Enter First Real Number : ");
		r2=scan.nextFloat();

		r1=(int)(r1*100)/1000;
		r2=(int)(r2*100)/1000;

		if(r1==r2)
			System.out.println("These are same up to two decimal place.");
		else
			System.out.println("These are not same up to two decimal place.");

		scan.close();
	}

}
```

9. Write a Java program to convert minutes into a number of years and days.

```java
package ComputerProgramming;

import java.util.Scanner;

public class Question9 {

	public static void main(String[] args) {
		int min;
		int days,years;

		Scanner scan = new Scanner(System.in);
		System.out.println("Java program to convert minutes into a number of years and days");

		System.out.print("Please Enter Minute : ");
		min = scan.nextInt();
		scan.close();

		years = min/(60*24*365);
		days = (min/60/24) % 365;

		System.out.print(min+" minutes" + " = " + years + " years and " + days + " days");

	}

}
```

10. Write a Java program to takes the user for a distance (in meters) and the time was taken (as three numbers: hours, minutes, seconds), and display the speed, in meters per second, kilometers per hour.

```
package ComputerProgramming;

import java.util.Scanner;

public class Question10 {

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

		int distanceMeter ;
		int timeSeconds;
		int hours , minutes , seconds ;
		double meterPerSecond , kilometerPerHour;

		System.out.print("Please Enter Distance As a Meter : ");
		distanceMeter=scan.nextInt();

		System.out.println("Please Enter Time");
		System.out.print("Hours   :");
		hours = scan.nextInt();
		System.out.print("Minutes :");
		minutes = scan.nextInt();
		System.out.print("Seconds :");
		seconds = scan.nextInt();

		scan.close();
		timeSeconds=(hours*3600+(minutes*60)+seconds);
		meterPerSecond = distanceMeter / timeSeconds;
		kilometerPerHour = (distanceMeter/1000) / (timeSeconds/3600);
		System.out.println("Speed = " + meterPerSecond + " m/s");
		System.out.println("Speed = " + kilometerPerHour + " km/h");



	}

}
```

11. Write a Java program to prove that Euclid's algorithm computes the greatest common divisor of two positive given integers.

```
package ComputerProgramming;
import java.util.Scanner;

public class Question11 {

	public static void main(String[] args) {
		int n1,n2,temp,euchlid;
		Scanner scan = new Scanner(System.in);
		System.out.println("Euchlid Algorithm");
		System.out.print("Please Enter First Value : ");
		n1=scan.nextInt();
		System.out.print("Please Enter Second Value : ");
		n2=scan.nextInt();
		if(n1<n2) {
			temp=n1;
			n1=n2;
			n2=temp;
		}

		if(n1%n2==0) {
			System.out.println("GCD : " + n2);
		} else {
			euchlid = n2%(n1%n2);
			if(euchlid==0)
				System.out.println("GCD : "+n1%n2);
			else
				System.out.println("GCD : 1");
		}
		scan.close();
	}

}
```

12. Write a Java program that will accept an integer and convert it into a binary representation.

```
package ComputerProgramming;

import java.util.Scanner;

public class Question12 {

    public static void main(String[] args) {
       Scanner scan = new Scanner(System.in);
       int num;
       System.out.print("Please Enter A Number : ");
       num = scan.nextInt();
       scan.close();
        decimalToBinary(num);
    }

    public static void decimalToBinary(int num) {
        int[] binary = new int[50];
        int id = 0;

        while (num > 0) {
            binary[id++] = num % 2;
            num = num / 2;
        }

        printBinary(binary, id);
    }

        static void printBinary(int[] binary, int id) {
                System.out.print("Binary : ");
        for (int i = id - 1; i >= 0; i--) {

        System.out.print(binary[i] + "");
        }

    }

}
```

13. Write a Java program to divide the two given integers using subtraction operator.

```
package ComputerProgramming;
import java.util.Scanner;

public class Question13 {

	public static void main(String[] args) {
		int num1,num2,total=0;
		Scanner scan = new Scanner(System.in);
		System.out.println("Diving With Substraction Operator");
		System.out.println("Please Enter Dividend Value : ");
		num1=scan.nextInt();
		System.out.println("Please Enter Divider Value : ");
		num2=scan.nextInt();
		scan.close();
		if(num1==0)
			System.out.println("Answer : 0");
		else {
			while(num1>num2) {
				num1=num1-num2;
				total++;
				System.out.println(num1);
			}
			System.out.println("Answer : " + total);
		}
		scan.close();

	}

}
```

14. Write a Java program to multiply two given integers without using the multiply operator(*).

```
package ComputerProgramming;
import java.util.Scanner;

public class Question14 {

	public static void main(String[] args) {
		int num1,num2,total=0,i=0;
		Scanner scan = new Scanner(System.in);
		System.out.println("Multiplying With Summing Operator");
		System.out.println("Please Enter First Value : ");
		num1=scan.nextInt();
		System.out.println("Please Enter Second Value : ");
		num2=scan.nextInt();

		while(i<num2) {
			total=total+num1;
			i++;

		}
		System.out.println("Answer : "+total);
		scan.close();
	}

}
```

15. Write a Java program to accept a positive number and repeatedly add all its digits until the result has only one digit.

```
package ComputerProgramming;

import java.util.Scanner;

public class Question15 {

	public static void main(String[] args) {
		Scanner scan = new Scanner(System.in);
		int num;
		int total;
		System.out.print("Please enter a number : ");
		num = scan.nextInt();
		scan.close();
		total=addDigit(num);
		if(total>9) {
			total = addDigit(total);
			System.out.println("Total as a one digit : " + total);
		}else {
			System.out.println("Total as a one digit : " + total);
		}

	}

	public static int addDigit(int num) {
		int digitTotal=0;
		while(num>0) {
			digitTotal = digitTotal + num%10;
			num = num/10;
		}
		return digitTotal;
	}

}
```

16. Write a Java program to add two binary numbers.

```java
package ComputerProgramming;

import java.util.Scanner;

public class Question16 {

	public static void main(String[] args) {
		Scanner scan = new Scanner(System.in);
		int binary1;
		int binary2;
		int total;
		System.out.println("Java program to add two binary numbers");
		System.out.print("Please Enter First Binary Number : ");
		binary1 = scan.nextInt();
		System.out.print("Please Enter First Binary Number : ");
		binary2 = scan.nextInt();
		total = binaryAdd(binary1,binary2);
		System.out.println("This is sum of two binary num : " + total);
		scan.close();


	}

	private static int binaryAdd(int binary1,int binary2) {

		StringBuilder output = new StringBuilder();
		int carry=0;
		int temp;
		while(binary1 != 0 || binary2 != 0) {
			temp = (binary1 % 10  + binary2 % 10 + carry) % 2 ;
			output.append(temp);

			carry = (binary1 % 10 + binary2 % 10 + carry) / 2;
			binary1 = binary1 / 10;
			binary2 = binary2 / 10;

		}
		if (carry != 0) {
		output.append(carry);
	    }

		return Integer.valueOf(output.reverse().toString());
	}

}
```

17. Write a Java program to convert a binary number to decimal number.

```java
package ComputerProgramming;

import java.util.Scanner;

public class Question17 {

	public static void main(String[] args) {
		Scanner scan = new Scanner(System.in);
		int binary1;
		System.out.println("Java program to convert a binary number to decimal number");
		System.out.print("Please Enter Binary Number : ");
		binary1 = scan.nextInt();
		System.out.println("Decimal : " + toDecimal(binary1));
		scan.close();

	}

	private static int toDecimal(int binary) {
		int decimalNumber = 0;
	    int base = 1;

	    while (binary > 0) {
	        int lastDigit = binary % 10;
	        binary = binary / 10;
	        decimalNumber += lastDigit * base;
	        base = base * 2;
	    }
	        return decimalNumber;
	}


}
```

18. Write a Java program to create and display unique three-digit number using 1, 2, 3, 4. Also count how many three-digit numbers are there.

```
package ComputerProgramming;

public class Question18 {

	public static void main(String[] args) {
		System.out.println("Java program to create and display"
				+ " unique three-digit number using 1, 2, 3, 4");
		digit();

	}

	private static void digit() {
		int amount = 0;
		for(int i = 1; i <= 4; i++){
			for(int j = 1; j <= 4; j++){
				for(int k = 1; k <= 4; k++){
					if(k != i && k != j && i != j){
						amount++;
						System.out.print(i + "" + j + "" + k);
						System.out.print("||");
					}
				}
			}
			System.out.println();
		}
		System.out.println("Total number of the three-digit-number is " + amount);
	}

}
```

19. Write a Java program that accepts an integer (n) and computes the value of n+nn+nnn

```
package ComputerProgramming;

import java.util.Scanner;

public class Question19 {

	public static void main(String[] args) {
		Scanner scan = new Scanner(System.in);
		System.out.println("Java program that accepts an integer (n) "
                                                    + "and computes the value of n+nn+nnn");
		System.out.print("Please Enter An Integer : ");
		int n = scan.nextInt();
		sum(n);
		scan.close();

	}

	public static void sum(int num ){
		int total=0,multiplier=1;
		int num1,num2;
		if(10>num && num>=0){
			System.out.printf("\nSum of this number (n+nn+nnn) :
%d\n",(num+(num*11)+(num*111)));
		}
		else if (num>0) {
			while(multiplier<=num) {
				multiplier=multiplier*10;
			}
			num1=(num*multiplier)+num;
			num2=(num1*multiplier)+num;
			total=num+num1+num2;
			System.out.printf("\nSum of this number (n+nn+nnn) : %d\n",total);
		} else {
			multiplier=-1;
			while(multiplier>=num) {
				multiplier=multiplier*10;
			}
			multiplier=multiplier*(-1);
			num1=(num*multiplier)+num;
			num2=(num1*multiplier)+num;
			total=num+num1+num2;
		System.out.printf("\nSum of this number (n+nn+nnn) : %d\n",total);
		}

	}
}
```

20. Write a Java program to print numbers between 1 to 100 which are divisible by 3, 5 and by both.

```
package ComputerProgramming;

public class Question20 {

	public static void main(String[] args) {
		System.out.printf("--- Finding Divisible Numbers ---\n\n");
		System.out.printf("Numbers that are divisible by 3 and 5 : \n");
		d15();
		System.out.printf("\nNumbers that are divisible by 5 : \n");
		d();
		System.out.printf("\nNumbers that are divisible by 3 : \n");
		d();
	}
	public static void d15(){
		int i ;
		for(i=1 ;i<=100;i++)
		if(i%3==0 && i%5==0 && i%15==0){
			System.out.printf("%d ",i);
		} else {
			continue;
		}
	}
	public static void d(){
		int i ;
		for(i=1 ;i<=100;i++) {
			if(i%5==0){
				System.out.printf("%d ",i);
			}else{
				continue;
			}
		}
	}

}
```

21. Write a Java program to compute the sum of the first 100 prime numbers.

```
package ComputerProgramming;

public class Question21 {

	public static void main(String[] args) {
		System.out.println("--- Sum of First 100 Prime Numbers ---");
		System.out.printf("Sum is equal to %d ", prime());
		}
	public static int prime(){
		int i, n,croll,sum=0;
		for(n = 1; n <= 541; n++) {
			croll = 0;
		for (i = 2; i <= n/2; i++) {
			if(n%i == 0){
				croll++;
			}
		}
		if(croll == 0 && n != 1 ){
			sum=sum+n;
		}
	}
		return sum;
	}
}
```

22. Write a Java program to reverse an integer number.

```java
package ComputerProgramming;

import java.util.Scanner;

public class Question22 {

	public static void main(String[] args) {
		Scanner scanner = new Scanner(System.in);
		int num, reverseNum;
		System.out.println("Welcome to Java program to reverse an integer number");
		System.out.print("Please Enter An Integer Number : ");
		num = scanner.nextInt();
		reverseNum = reverse(num);
		System.out.println("Reverse of number entered : " + reverseNum);
		scanner.close();
	}

	public static int reverse(int num) {
		int digit;
		int reverseNum = 0;
		while (num != 0) {
			digit = num % 10;
			reverseNum = reverseNum * 10 + digit;
			num = num / 10;
		}

		return reverseNum;
	}

}
```

23. Write a Java program to count the number of prime numbers less than a given positive number.

```java
package ComputerProgramming;

import java.util.Scanner;

public class Question23 {

	public static void main(String[] args) {
		Scanner scan = new Scanner(System.in);
		int num, count = 0;
		System.out.println(
				"Welcome to Java program to count the number "
		+ "of prime numbers less than a given positive number.");
		System.out.print("Please Enter An Integer Number : ");
		num = scan.nextInt();
		scan.close();
		for (int i = 3; i < num; i++) {
			if (count(i) == 1) {
				count++;
			}
		}

		System.out.println("Count of primes : " + count);
	}

	public static int count(int n) {
		for (int i = 2; i < n / 2; i++) {
			if (n % i == 0) {
				return 0;
			}
		}
		return 1;

	}
}
```

24. Write a Java program to count the number of days from the beginning of a year when a data is given fort he same year.

```
package ComputerProgramming;

import java.util.Scanner;

public class Question24 {

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

		int num1, num2, num3;
		System.out.println("Welcome to Java program to count the number of days from"
				+ " the beginning of a year when a data is given fort he same year.");
		System.out.print("Please Enter A Date As a DD MM YYYY : ");
		num1 = scan.nextInt();
		num2 = scan.nextInt();
		num3 = scan.nextInt();
		scan.close();
		Date date = new Date(num1, num2, num3);
		System.out.println("Total day of until now : " + date.dayCalculator());
	}

}

class Date {
	int day, month, year;

	public Date(int d, int m, int y) {
		this.day = d;
		this.month = m;
		this.year = y;
	}

	public int dayCalculator() {
		int monthDays[] = { 31, 28, 31, 30, 31, 30, 31, 31, 30, 31, 30, 31 };
		for (int i = 0; i < this.month-1; i++) {
			if (yearIsLeap()) {
				monthDays[1] = 29;
			}
			day = day + monthDays[i];
		}
		return day;
	}

	public boolean yearIsLeap() {
		boolean leap = false;

		if (year % 4 == 0) {

			if (year % 100 == 0) {

				if (year % 400 == 0)
					leap = true;
				else
					leap = false;
			}

			else
				leap = true;
		}

		else
			leap = false;

		return leap;
	}

}
```

25. Write a Java program top print the average of prime numbers between given two integers.

```
package ComputerProgramming;

import java.util.Scanner;

public class Question25 {

	public static void main(String[] args) {
		System.out.println(
				"Welcome to Java program top print the "
		+ "average of prime numbers between given two integers");
		Scanner scan = new Scanner(System.in);
		System.out.println("Please Enter First Number : ");
		int number1 = scan.nextInt();
		System.out.println("Please Enter Second Number : ");
		int number2 = scan.nextInt();
		scan.close();

		System.out.println("\nAvarage of prime numbers : " + avgPrime(number1, number2));

	}

	public static double avgPrime(int low, int high) {
		int total = 0, counter = 0;
		while (low < high) {
			boolean flag = false;

			for (int i = 2; i <= low / 2; ++i) {
				if (low % i == 0) {
					flag = true;
					break;
				}
			}

			if (!flag && low != 0 && low != 1) {
				System.out.print(low + " ");
				total = low + total;
				counter++;
			}
			++low;
		}
		return total / counter;
	}
}
```

26. Write a Java program to find the k largest elements in a given array. Elements in the array can be in any order.

```
package ComputerProgramming;

import java.util.Arrays;
import java.util.Scanner;

public class Question26 {

	public static void main(String[] args) {
		int[] arr = new int[] {15,20,45,12,46,20};
		int[] arr1 = new int[100];
		Scanner scan = new Scanner(System.in);
		System.out.println("Welcome to Java program to find the k largest elements "
				+ "in a given array. Elements in the array can be in any order.");
		Arrays.sort(arr);
		int j = arr.length-1;
		for(int i = 0 ; i < arr.length ; i ++) {
			arr1[j--]=arr[i];
		}
		System.out.print("Please Enter Value of K : ");
		int k=scan.nextInt();
		for (int i = 0; i < k; i++) {
			System.out.printf("%d. Largest Value : %d\n",(i+1),arr1[i]);

		}
		scan.close();

	}

}
```

27. Write a Java program to find the numbers greater than the average of the numbers of a given array.

```
package ComputerProgramming;

public class Question27 {

	public static void main(String[] args) {
		System.out.println("Welcome to Java program to find the "
				+ "numbers greater than the average of the numbers of a given array");
		int arr[] = { 20,35,21,87,12,34 };
	int length = arr.length;
	greaterThanAvarage(arr, length);

	}

	public static void greaterThanAvarage(int[] arr, int length) {

		double avg = 0;
		for(int i = 0; i < length; i++)
	    avg = avg + arr[i];
	avg = avg / length;
	System.out.println("Avg : " + avg);
	System.out.print("Numbers are : ");
	for (int i = 0; i < length; i++)
	    if (arr[i] > avg)
		System.out.print(arr[i] + " ");
	}
}
```

28. Write a Java program to find the length of the longest consecutive sequence of a given array of integers.

```
package ComputerProgramming;

import java.util.Arrays;

public class Question28 {

	public static void main(String[] args) {
		int arr[] = {1, 9, 3, 10, 4, 20, 2};
		int n = arr.length;

		System.out.println("Length of the Longest "
		+ "contiguous subsequence is " + longest(arr, n));
	}

	static int	longest(int arr[], int n) {

		Arrays.sort(arr);
		int ans = 0, count = 0;
		int[] arr2 = new int[n];

		for (int i = 1; i < n; i++) {
			if (arr[i] != arr[i - 1])
				arr2[i]=arr[i];
		}

		for (int i = 0; i < arr2.length; i++) {

			if (i > 0 && arr2[i] == arr2[i-1] + 1)
				count++;
			else
				count = 1;

			ans = Math.max(ans, count);
		}
		return ans;
	}
	}
```

29. Write a Java program to divide a given array of integers into given k non-empty subsets whose sums are all equal. Return true if all sums are equal otherwise return false.

```
package ComputerProgramming;

import java.util.Arrays;
import java.util.Scanner;

public class Question29 {

	public static void main(String[] args) {
		System.out.println("Welcome to Java program to divide a given"
				+ " array of integers into given k non-empty "
				+ "subsets whose sums are all equal");
		Scanner scan = new Scanner(System.in);
		int[] nums = { 4, 3, 2, 3, 5, 2, 1};
		System.out.print("Please Enter a K value : ");
		int k = scan.nextInt();
		System.out.println("Result is : "+canPartitionKSubsets(nums, k));
		scan.close();
	}

	public static boolean canPartitionKSubsets(int[] nums, int k) {
		int sum = 0;
		for (int num : nums) {
			sum += num;
		}
		if (sum % k != 0) {
			return false;
		}

		int target = sum / k;

		Arrays.sort(nums);

		int elements = nums.length - 1;
		if (nums[elements] > target) {
			return false;
		}
		while (elements >= 0 && nums[elements] == target) {
			elements--;
			k--;
		}

		int[] subSets = new int[k];
		return helper(elements, nums, target, subSets);
	}

	public static boolean helper(int elements, int[] nums, int target, int[] subSets) {
		if (elements < 0) {
			return true;
		}

		for (int i = 0; i < subSets.length; i++) {
			if (subSets[i] + nums[elements] <= target) {
				subSets[i] += nums[elements];
				if (helper(elements - 1, nums, target, subSets)) {
					return true;
				}
				subSets[i] -= nums[elements];
			}

			if (subSets[i] == 0)
				break;
		}

		return false;
	}

}
```

30. Write a Java program to multiply corresponding elements of two arrays of integers.

```
package ComputerProgramming;

import java.util.Arrays;
import java.util.Scanner;

public class Question30 {

	public static void main(String[] args) {
		int[] arr1 = new int[100];
		int[] arr2 = new int[100];
		int i = 0;
		Scanner scan = new Scanner(System.in);
		System.out.println("**Java program to multiply corresponding "
				+ "elements of two arrays of integers**");

		System.out.print("Please Enter Size Of Arrays : ");
		int size = scan.nextInt();

		System.out.println("Please Enter Element Of First Array ");
		while(i<size) {
			System.out.printf("%d. Element of First Array : ",i+1);
			arr1[i]=scan.nextInt();
			i++;
		}

		System.out.println("Please Enter Element Of Second Array ");
		i=0;
		while(i<size) {
			System.out.printf("%d. Element of Second Array : ",i+1);
			arr2[i]=scan.nextInt();
			i++;

		}
		scan.close();

		System.out.println("Answer : " + mult(arr1,arr2,size));

	}
	public static String mult(int[] arr1 , int[] arr2,int size) {
		int[] arr3 = new int[size];
		int i = 0;
		while(i<size) {
			arr3[i]=arr1[i]*arr2[i];
			i++;
		}

		return Arrays.toString(arr3);
	}

}
```

31. Write a Java program to merge two given sorted array of integers and create a new sorted array.

```
package ComputerProgramming;

import java.util.Arrays;
import java.util.Scanner;

public class Question31 {

	public static void main(String[] args) {

		int[] arr1 = new int[100];
		int[] arr2 = new int[100];
		int[] temp = new int[200];

		int size1;
		int size2;
		int totalSize;
		int tempSize=0;

		Scanner scan = new Scanner(System.in);

		System.out.print("Please Enter Size Of First Array : ");
		size1 = scan.nextInt();

		System.out.println("--------------------------------");

		for(int i = 0 ; i < size1 ; i++) {
			System.out.printf("Please Enter %d. element of First Array : ",i+1);
			arr1[i]=scan.nextInt();
			temp[tempSize++]=arr1[i];
		}

		System.out.println("================================");

		System.out.print("Please Enter Size Of Second Array : ");
		size2 = scan.nextInt();

		System.out.println("--------------------------------");

		for(int i = 0 ; i < size2 ; i++) {
			System.out.printf("Please Enter %d. element of Second Array : ",i+1);
			arr2[i]=scan.nextInt();
			temp[tempSize++]=arr2[i];
		}

		scan.close();

		totalSize = size1+size2;

		Arrays.sort(temp,0,totalSize);

		System.out.println("================================");

		System.out.print("New Sorted Array : [ ");
		for(int i = 0 ; i<totalSize;i++) {
			System.out.print(temp[i]+" ");
		}
		System.out.println("]");

	}

}
```

32. Write a Java program to calculate the median of an given unsorted array of integers.

```java
package ComputerProgramming;

import java.util.Arrays;
import java.util.Scanner;


public class Question32 {

	public static void main(String[] args) {
		int[] arr = new int[100];
		double median1,median2;
	    double size;
		Scanner scan = new Scanner(System.in);
		System.out.println("**Java program to calculate the median "
                                        + "of an given unsorted array of integers**");
		System.out.print("Please Enter Size of Array : ");
		size = scan.nextInt();
		for (int i = 0; i < size; i++) {
			System.out.format("Enter %d element of array : ", i+1);
			arr[i]=scan.nextInt();
		}
		scan.close();
		Arrays.sort(arr,0,(int)size);
		if(size%2==1) {
			median1 = (size+1) / 2;
			System.out.println("This is odd array so median : " + arr[(int)median1-1]);
		}else {
			median1 = size/2;
			median2 = (size / 2 )+ 1;
			System.out.println("This is even array so");
			System.out.println("First median : " + arr[(int)median1-1]);
			System.out.println("Second median: " + arr[(int)median2-1]);
		}


	}

}
```

33. Write a Java program to find a number that appears only once in a given array of integers, all numbers occur twice.

```
package ComputerProgramming;

import java.util.Scanner;

public class Question33 {

	public static void main(String[] args) {
		Scanner scan = new Scanner(System.in);
		int[] arr = new int[100];
		int size;
		System.out.print("Please Enter Size of Array : ");
		size = scan.nextInt();
		for (int i = 0; i < size; i++) {
			System.out.format("Enter %d element of array : ", i+1);
			arr[i]=scan.nextInt();
		}
		scan.close();
		System.out.print("Answer : ");
		if (arr[0] != arr[1])
		System.out.println(arr[0] + " ");

	    for (int i = 1; i < size - 1; i++)
	        if (arr[i] != arr[i + 1] && arr[i] != arr[i - 1])
	            System.out.print(arr[i] + " ");

	    if (arr[size - 2] != arr[size - 1]) {
			System.out.print(arr[size - 1] + " ");
	    }

	}

}
```

34. Write a Java program to remove all occurrences of a specified value in a given array of integers and return the new length of the array.

```
package ComputerProgramming;

import java.util.Scanner;

public class Question34 {

	public static void main(String[] args) {
		int delete,size,temp=0,count=0;
		int num[] = new int[100];
		Scanner scan = new Scanner(System.in);
		System.out.print("**Java program to find the number of elements");
		System.out.println(" that is higher than the average of given array of integers**");
		System.out.print("Please Enter Size of Array : ");
		size = scan.nextInt();
		for (int i = 0; i < size; i++) {
			System.out.format("Enter %d element of array : ", i+1);
			num[i]=scan.nextInt();
		}
		System.out.print("Which element will delete from array : ");
		delete = scan.nextInt();
		for (int i = 0 ; i < size ; i++) {
			if(num[i]!=delete) {
				num[temp++]=num[i];
				count++;
			}
		}
		scan.close();
		System.out.print("[ ");
		for (int i = 0 ; i < temp ; i++) {
			System.out.print(num[i]+" ");
		}
		System.out.println("]");
		System.out.println("New size of array : " + count);

	}

}
```

35. Write a Java program to find the number of elements that is higher than the average of given array of integers.

```
package ComputerProgramming;

import java.util.Scanner;

public class Question35 {

	public static void main(String[] args) {
		int size,i,count=0;
		int[] arr = new int[100];
		double avg=0;
		Scanner scan = new Scanner(System.in);

		System.out.print("**Java program to find the number of elements that is higher than");
		System.out.println(" the average of given array of integers**");
		System.out.println("Please Enter An Array As A Integer");
		System.out.print("Please Enter Size Of Array : ");
		size = scan.nextInt();
		scan.close();
		for( i = 0 ; i<size ; i++) {
			System.out.print("Please Enter A Element : ");
			arr[i]=scan.nextInt();
			avg = avg + arr[i];
		}


		avg = avg/i;
		for(int element : arr) {
			if(element>avg) {
				count++;
			}
		}
		System.out.println("The number of elements that is higher than the average : " + count);

	}

}
```