PG-DAC CDAC MUMBAI
Assignment no-7

1. Write a program to print elements of Array ?

```
package com.exm1;

public class Arr1 {
    public static void main(String[] args) {

        int [] arr = new int [] {1, 2, 3, 4, 5};
        System.out.println("Elements of given array: ");

        for (int i = 0; i < arr.length; i++) {
            System.out.print(arr[i] + " ");
        }
    }
}
```

Output:

```
Elements of given array:
1 2 3 4 5
```

2) Write a Java program to check the equality of two arrays?

```
package com.exm2;

public class Arr2 {
    public static void main(String[] args)
    {

        int a[] = { 10, 30, 12 };

        int b[] = { 10, 30, 12 };

        boolean result = true;


        if (a.length == b.length) {


            for (int i = 0; i < a.length; i = i + 1) {


                if (a[i] != b[i]) {


                    result = false;
```

```
                }
            }
        }
        else {

            result = false;
        }


        if (result == true) {

            System.out.println("Arrays are equal");
        }
        else {

            System.out.println("Arrays are not equal");
        }
    }
}
```

Output:

```
        Arrays are equal
```

3) Write a Java program to find all pairs of elements in an integer array whose sum is equal to a given number?

```
package com.exm3;

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

public class Arr3{
   public static void main(String args[]){

      Scanner sc = new Scanner(System.in);
      System.out.println("Enter the size of the array that is to be
created: ");
      int size = sc.nextInt();
      int[] myArray = new int[size];
      System.out.println("Enter the elements of the array: ");
      for(int i=0; i<size; i++){
         myArray[i] = sc.nextInt();
      }

      System.out.println("Enter the number: ");
      int num = sc.nextInt();
      System.out.println("The array created is:
"+Arrays.toString(myArray));
      System.out.println("indices of the elements whose sum is: "+num);
      for(int i=0; i<myArray.length; i++){
         for (int j=i; j<myArray.length; j++){
            if((myArray[i]+myArray[j])== num && i!=j){
               System.out.println(i+", "+j);
```

```
            }
        }
    }
}
```

```
Output:
      Enter the size of the array that is to be created:
4
Enter the elements of the array:
2
3
1
4
Enter the number:
2
The array created is: [2, 3, 1, 4]
indices of the elements whose sum is: 2
```

4) Write a program to reverse an Array in java .

```
package com.exm4;

public class Arr4 {
    public static void main(String[] args) {

        int [] arr = new int [] {1, 2, 3, 4, 5};
        System.out.println("Original array: ");
        for (int i = 0; i < arr.length; i++) {
            System.out.print(arr[i] + " ");
        }
        System.out.println();
        System.out.println("Array in reverse order: ");

        for (int i = arr.length-1; i >= 0; i--) {
            System.out.print(arr[i] + " ");
        }
    }
}
```

```
Output:
      Original array:
1 2 3 4 5
Array in reverse order:
5 4 3 2 1
```

5) Find out smallest and largest number in a given Array?

```
package com.exm5;

public class Arr5 {

       public static void main(String[] args) {

        int numbers[] = new int[]{55,32,45,98,82,11,9,39,50};

        int smallest = numbers[0];
        int largetst = numbers[0];

        for (int i = 1; i < numbers.length; i++) {
         if (numbers[i] > largetst)
          largetst = numbers[i];
         else if (numbers[i] < smallest)
          smallest = numbers[i];
        }

        System.out.println("Largest Number is : " + largetst);
        System.out.println("Smallest Number is : " + smallest);
       }
        }
```

Output:

```
   Largest Number is : 98
Smallest Number is : 9
```

6) .Print the third-largest number in an array without sorting it
Input: [24,54,31,16,82,45,67]
Output: 54 (82 and 67 are the largest and second-largest)

```
package com.exm6;


public class Arr6 {
    public static void main(String[] args) {
        int[] numbers = {24,54,31,16,82,45,67};
        int thirdLargest = findThirdLargest(numbers);
        System.out.println("THIRDLARGEST IS = " +thirdLargest );
    }

    public static int findThirdLargest(int[] arr) {
        int firstLargest = Integer.MIN_VALUE;
        int secondLargest = Integer.MIN_VALUE;
        int thirdLargest = Integer.MIN_VALUE;

        for (int num : arr) {
```

```
            if (num > firstLargest) {
                thirdLargest = secondLargest;
                secondLargest = firstLargest;
                firstLargest = num;
            } else if (num > secondLargest && num != firstLargest) {
                thirdLargest = secondLargest;
                secondLargest = num;
            } else if (num > thirdLargest && num != firstLargest && num !=
secondLargest) {
                thirdLargest = num;
            }
        }

        return thirdLargest;
    }
}
```

OUTPUT:

```
   THIRDLARGEST IS = 54
```

7)Write a program to merge two arrays of integers by reading one number at a time from each array until one of the array is exhausted, and then concatenating the remaining numbers.
Input: [23,60,94,3,102] and [42,16,74]
Output: [23,42,60,16,94,74,3,102]

```
package com.exm7;


import java.util.Arrays;

public class Arr7{
    public static void main(String[] args) {
        int[] array1 = {1, 3, 5, 7, 9};
        int[] array2 = {2, 4, 6, 8, 10, 12};

        int[] mergedArray = mergeArrays(array1, array2);

        System.out.println("Merged Array: " +
Arrays.toString(mergedArray));
    }

    public static int[] mergeArrays(int[] array1, int[] array2) {
        int[] mergedArray = new int[array1.length + array2.length];
        int i = 0, j = 0, k = 0;


        while (i < array1.length && j < array2.length) {
            if (array1[i] < array2[j]) {
                mergedArray[k++] = array1[i++];
            } else {
                mergedArray[k++] = array2[j++];
            }
        }


        while (i < array1.length) {
```

```
            mergedArray[k++] = array1[i++];
        }


        while (j < array2.length) {
            mergedArray[k++] = array2[j++];
        }

        return mergedArray;
    }
}
```

OUTPUT:

```
   Merged Array: [1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 12]
```

8).Write a program which takes an array of integers and prints the running average of 3 consecutive integers.
In case the array has fewer than 3 integers, there should be no output.
Input: [5,14,35,89,140]
Output: [18, 46, 88]
(Explanation: 18=(5+14+35/3, 46=(14+35+89)/3, ...)

```
package com.exm8;

public class Arr8 {
    public static void main(String[] args) {
        int[] numbers = {1, 2, 3, 4, 5, 6, 7, 8, 9, 10};


        printRunningAverages(numbers);
    }

    public static void printRunningAverages(int[] nums) {
        if (nums.length < 3) {
            System.out.println("Array is too small to calculate running
averages.");
            return;
        }

        System.out.println("Running averages of 3 consecutive integers:");

        for (int i = 0; i <= nums.length - 3; i++) {
            int sum = nums[i] + nums[i + 1] + nums[i + 2];
            double average = (double) sum / 3;
            System.out.println("Average of " + nums[i] + ", " + nums[i + 1]
+ ", " + nums[i + 2] + " = " + average);
        }
    }
}
```

OUTPUT:

```
   Running averages of 3 consecutive integers:
Average of 1, 2, 3 = 2.0
```

```
Average of 2, 3, 4 = 3.0
Average of 3, 4, 5 = 4.0
Average of 4, 5, 6 = 5.0
Average of 5, 6, 7 = 6.0
Average of 6, 7, 8 = 7.0
Average of 7, 8, 9 = 8.0
Average of 8, 9, 10 = 9.0
```

9) Write a program which generates the series 1,4,27,16,125,36

```
package com.exm9;

public class Arr9 {
    public static void main(String[] args) {
        int n = 6;
        generateSeries(n);
    }

    public static void generateSeries(int n) {
        for (int i = 1; i <= n; i++) {
            if (i % 2 == 0) {
                int square = i * i;
                System.out.print(square + ", ");
            } else {
                int cube = i * i * i;
                System.out.print(cube + ", ");
            }
        }
    }
}
```

```
OUTPUT:
       1, 4, 27, 16, 125, 36,
```

10) Given an array of integers, print whether the numbers are in ascending order or in descending order or in random order without sorting

```
 Input: [5,14,35,90,139] Output: Ascending
 Input: [88,67,35,14,-12] Output: Descending
Input: [65,14,129,34,7] Output: Random
```

```
package com.exm10;


import java.util.Scanner;

public class Arr10{
```

```
    public static void main(String args[])
    {
        Scanner scan = new Scanner(System.in);
        int tenNums[]=new int[10], orderedNums[]=new int[10];
        int greater;
        String choice;


        System.out.println("Enter 10 integers : ");
        for (int i=0;i<tenNums.length;i++)
        {
            System.out.print(i+1+"=> ");
            tenNums[i] = scan.nextInt();
        }
        System.out.println();


        for(int indexL=0;indexL<tenNums.length;indexL++)
        {
            greater=0;
            for(int indexR=0;indexR<tenNums.length;indexR++)
            {
                if(tenNums[indexL]>tenNums[indexR])
                {
                    greater++;
                }
            }
            while (orderedNums[greater] == tenNums[indexL]) {
                greater++;
           }
           orderedNums[greater] = tenNums[indexL];

        }


        System.out.print("Display order :\nA - Ascending\nD -
Descending\nEnter your choice : ");
        choice = scan.next();


        if(choice.equalsIgnoreCase("a"))
        {
            for(greater=0;greater<orderedNums.length;greater++)
            {
                System.out.print(orderedNums[greater]+" ");
            }
        }
        else if(choice.equalsIgnoreCase("d"))
        {
            for(greater=9;greater>-1;greater--)
            {
                System.out.print(orderedNums[greater]+" ");
            }
        }
    }
}
OUTPUT:

   Enter 10 integers :
1=> 1
2=> 2
```

```
3=> 3
4=> 4
5=> 5
6=> 6
7=> 7
8=> 8
9=> 9
10=> 54

Display order :
A - Ascending
D - Descending
Enter your choice :
```