

PG-DAC CDAC MUMBAI
Assignment no-7
Programming Questions on Array

1. Write a program to print elements of Array ?

```
import java.util.Scanner;

public class Main {
    public static void main(String[] args) {
        //Create an array of 10 capacity
        int[] array = new int[10];

        //Input numbers from the user
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter 10 numbers :");
        for(int i = 0; i < array.length; i++){
            array[i] = sc.nextInt();
        }
        sc.close();

        //Print all the numbers from the array
        for(int i = 0; i < array.length; i++){
            System.out.print(array[i] + " ");
        }
    }
}
```

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

```
import java.util.Scanner;

public class Main {
    public static void main(String[] args) {
        //Create an arrays of 3 and 4 capacity
        int[] arrayOne = new int[3];
        int[] arrayTwo = new int[3];

        //Input numbers from the user in both arrays
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter 10 numbers :");
        for(int i = 0; i < arrayOne.length; i++){
            arrayOne[i] = sc.nextInt();
        }
        for(int i = 0; i < arrayTwo.length; i++){
            arrayTwo[i] = sc.nextInt();
        }
    }
}
```

```

        sc.close();

        //Check for the equality of arrays
        if(arrayOne.getClass().getSimpleName() ==
arrayTwo.getClass().getSimpleName()){
            if(arrayOne.length == arrayTwo.length){
                boolean flag = true;
                for(int i = 0; i < arrayOne.length; i++){
                    if(arrayOne[i] != arrayTwo[i]){
                        flag = false;
                        break;
                    }
                }
                if(flag){
                    System.out.println("Arrays are equal");
                }else
                    System.out.println("Arrays are not equal");
            }else
                System.out.println("Arrays are not equal");
        }else
            System.out.println("Arrays are not equal");
    }
}

```

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

```

import java.util.Scanner;

public class Main {
    public static void main(String[] args) {
        //Create an array of 5 capacity
        int[] array = new int[5];

        //Input values to assign in array
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter 5 numbers in an array:");
        for(int i = 0; i < array.length; i++){
            array[i] = sc.nextInt();
        }

        //Input target value to be compared to
        System.out.println("Enter the target value:");
        int target = sc.nextInt();

        sc.close();
    }
}

```

```

//To store pairs
int[][] pairs = new int[(array.length * array.length)][2];

//Check for the pairs
int row = 0;
boolean flag = false;
for(int fixedPointer = 0; fixedPointer < array.length - 1; fixedPointer++){
    for(int slidingPointer = fixedPointer + 1; slidingPointer <
array.length; slidingPointer++){
        if(array[fixedPointer] + array[slidingPointer] == target){
            pairs[row][0] = fixedPointer;
            pairs[row][1] = slidingPointer;
            row++;
            flag = true;
        }
    }
}

//print pairs
if(flag == true){
    System.out.println("The pairs are:");
    for(int i = 0; i < array.length; i++){
        if(pairs[i][0] == 0 && pairs[i][1] == 0){
            break;
        }
        System.out.println(pairs[i][0] + " " + pairs[i][1]);
    }
}else
    System.out.println("There are no pairs whose addition leads to the
target number");
}
}

```

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

```

import java.util.Scanner;

public class Main {
    public static void main(String[] args) {
        //Create an array of 5 capacity
        int[] array = new int[5];

        //Input values to assign in array
        Scanner sc = new Scanner(System.in);
    }
}

```

```

        System.out.println("Enter 5 numbers in an array:");
        for(int i = 0; i < array.length; i++){
            array[i] = sc.nextInt();
        }

        //Reverse an array
        for(int i = 0; i < array.length; i++){
            int j = array.length - i - 1;
            if(j < i){
                break;
            }
            int temp = array[i];
            array[i] = array[j];
            array[j] = temp;
        }

        //Print an array
        for(int i = 0; i < array.length; i++){
            System.out.println(array[i]);
        }
    }
}

```

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

```

import java.util.Scanner;

public class Main {
    public static void main(String[] args) {
        //Create an array of 5 capacity
        int[] array = new int[5];

        //Input values to assign in array
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter 5 numbers in an array:");
        for(int i = 0; i < array.length; i++){
            array[i] = sc.nextInt();
        }

        //Find smallest and largest number in an array
        int smallestNumber = array[0];
        int largestNumber = 0;

        for(int i = 0; i < array.length; i++){
            if(array[i] < smallestNumber){
                smallestNumber = array[i];
            }
        }
    }
}

```

```

        }

        if(array[i] > largestNumber){
            largestNumber = array[i];
        }
    }

    System.out.println("The smallest number is : " + smallestNumber);
    System.out.println("The largest number is : " + largestNumber);
}
}

```

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)

```

import java.util.Scanner;

public class Main {
    public static void main(String[] args) {
        //Create an array of 5 capacity
        int[] array = new int[5];

        //Input values to assign in array
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter 5 numbers in an array:");
        for(int i = 0; i < array.length; i++){
            array[i] = sc.nextInt();
        }

        //Find the third largest number
        int firstLargestNumber = 0;
        for(int i = 0; i < array.length; i++){
            if(array[i] > firstLargestNumber)
                firstLargestNumber = array[i];
        }

        //Find the second largest number
        int secondLargestNumber = 0;
        for(int i = 0; i < array.length; i++){
            if(array[i] > secondLargestNumber && array[i] < firstLargestNumber)
                secondLargestNumber = array[i];
        }

        //Find the third largest number
    }
}

```

```

        int thirdLargestNumber = 0;
        for(int i = 0; i < array.length; i++){
            if(array[i] > thirdLargestNumber && array[i] < secondLargestNumber)
                thirdLargestNumber = array[i];
        }

        System.out.println("The third largest number is : " + thirdLargestNumber);
    }
}

```

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]

```

import java.util.Scanner;

public class Main {
    public static void main(String[] args) {
        //Create an array of 5 capacity
        int[] array1 = {23, 60, 94, 3, 102};
        int[] array2 = {42, 16, 74};
        int[] targetArray = new int[array1.length + array2.length];

        //Input values to assign in array
        // Scanner sc = new Scanner(System.in);
        // System.out.println("Enter 5 numbers in an array:");
        // for(int i = 0; i < array.length; i++){
        //     array[i] = sc.nextInt();
        // }

        int array1Pointer = 0;
        int array2Pointer;
        int targetPointer = 0;
        for(array2Pointer = 0; array2Pointer < array2.length;){
            if(array2Pointer < array1Pointer){
                targetArray[targetPointer] = array2[array2Pointer];
                targetPointer++;
                array2Pointer++;
            }else{
                targetArray[targetPointer] = array1[array1Pointer];
                array1Pointer++;
                targetPointer++;
            }
        }
    }
}

```

```

    }

    for(; array1Pointer < array1.length; array1Pointer++){
        targetArray[targetPointer] = array1[array1Pointer];
        targetPointer++;
    }

    //Print target array
    for(int i = 0; i < targetArray.length; i++){
        System.out.print(targetArray[i] + " ");
    }

}
}

```

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: $18=(5+14+35)/3$, $46=(14+35+89)/3$, ...)

```

import java.util.Scanner;

public class Main {
    public static void main(String[] args) {
        //Create an array of 5 capacity
        int[] array = {5, 14, 35, 89, 140};
        int[] targetArray = new int[array.length - 2];

        //Calculate average
        int targetArrayPointer = 0;
        for(int i = 0; i < array.length - 2; i++){
            int average;
            int sum = 0;
            for(int j = i; j < (i+3); j++){
                sum = sum + array[j];
            }
            average = sum/3;
            targetArray[targetArrayPointer] = average;
            targetArrayPointer++;
        }
    }
}

```

```

        //Print average array
        for(int i = 0; i < targetArray.length; i++){
            System.out.print(targetArray[i] + " ");
        }
    }
}

```

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

```

import java.util.Scanner;

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

        for(int i = 1; i <= n; i++){
            if(i%2 == 0){
                System.out.print((i*i) + ", ");
            }else
                System.out.print((i*i*i) + ", ");
        }

    }
}

```

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

```

import java.util.Scanner;

public class Main {
    public static void main(String[] args) {
        int[] arr = {65,14,129,34,7};

        int i = 0;
        while(arr[i] == arr[i+1]){
            i++;
        }

        if(arr[i] > arr[i+1]){
            boolean flag = true;

```



```

        for(i = i + 1; i < arr.length - 1; i++){
            if(arr[i] > arr[i+1]){
                continue;
            }else{
                System.out.println("The array elements are in random order");
                flag = false;
                break;
            }
        }
        if(flag){
            System.out.println("The array elements are in descending order");
        }
    }else if(arr[i] < arr[i+1]){
        boolean flag = true;
        for(i = i + 1; i < arr.length - 1; i++){
            if(arr[i] < arr[i+1]){
                continue;
            }else {
                System.out.println("The array elements are in random order");
                flag = false;
                break;
            }
        }
        if(flag){
            System.out.println("The array element are in ascending order");
        }
    }
}
}
}
}
}

```