Assignment No: 01

Code:

```java
import java.util.Random;
public class threeDarray {
    public static void main(String[] args) {
        int[][][] array = new int[3][3][3];
        Random rand = new Random();

        int sum = 0;
        int totalElements = 0;
        int max = Integer.MIN_VALUE;

        System.out.println("3D Array Elements:");
        for (int i = 0; i < array.length; i++) {
            System.out.println("Layer " + (i + 1) + ":");
            for (int j = 0; j < array[i].length; j++) {
                for (int k = 0; k < array[i][j].length; k++) {
                    array[i][j][k] = rand.nextInt(100);
                    System.out.print(array[i][j][k] + "\t");

                    sum += array[i][j][k];
                    if (array[i][j][k] > max) {
                        max = array[i][j][k];
                    }
                    totalElements++;
                }
                System.out.println();
            }
            System.out.println();
        }
        double average = (double) sum / totalElements;

        System.out.println("Maximum value in the array: " + max);
        System.out.printf("Average of all elements: %.2f\n  ", average);
    }
}
```

Output:

```
W:\Tranning\lab codes>java threeDarray
3D Array Elements:
Layer 1:
44      96      17
15      57      79
17      98      54

Layer 2:
32      98      20
75      89      0
35      67      41

Layer 3:
91      74      11
55      62      82
53      54      13

Maximum value in the array: 98
Average of all elements: 52.93
```

Assignment No: 02

Code:

```java
import java.util.Scanner;
public class matrixadd {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);

        System.out.print("Enter number of rows: ");
        int rows = scanner.nextInt();

        System.out.print("Enter number of columns: ");
        int cols = scanner.nextInt();

        Integer[][] matrix1 = new Integer[rows][cols];
        Integer[][] matrix2 = new Integer[rows][cols];
        Integer[][] sumMatrix = new Integer[rows][cols];

        System.out.println("\nEnter elements for Matrix 1:");
        for (int i = 0; i < rows; i++) {
            for (int j = 0; j < cols; j++) {
                System.out.print("Matrix1[" + i + "][" + j + "]: ");
                matrix1[i][j] = scanner.nextInt();
            }
        }
        System.out.println("\nEnter elements for Matrix 2:");
        for (int i = 0; i < rows; i++) {
            for (int j = 0; j < cols; j++) {
                System.out.print("Matrix2[" + i + "][" + j + "]: ");
                matrix2[i][j] = scanner.nextInt();
            }
        }
        for (int i = 0; i < rows; i++) {
            for (int j = 0; j < cols; j++) {
                sumMatrix[i][j] = matrix1[i][j] + matrix2[i][j];
            }
        }
        System.out.println("\nSum of Matrix 1 and Matrix 2:");
        for (int i = 0; i < rows; i++) {
            for (int j = 0; j < cols; j++) {
                System.out.print(sumMatrix[i][j] + "\t");
            }
            System.out.println();
        }
        scanner.close();
    }
}
```

Output :

```
W:\Tranning\lab codes>java matrixadd
Enter number of rows: 3
Enter number of columns: 3

Enter elements for Matrix 1:
Matrix1[0][0]: 1
Matrix1[0][1]: 22
Matrix1[0][2]: 55
Matrix1[1][0]: 6
Matrix1[1][1]: 1
Matrix1[1][2]: 7
Matrix1[2][0]: 8
Matrix1[2][1]: 6
Matrix1[2][2]: 2

Enter elements for Matrix 2:
Matrix2[0][0]: 7
Matrix2[0][1]: 8
Matrix2[0][2]: 4
Matrix2[1][0]: 1
Matrix2[1][1]: 2
Matrix2[1][2]: 3
Matrix2[2][0]: 5
Matrix2[2][1]: 8
Matrix2[2][2]: 7

Sum of Matrix 1 and Matrix 2:
8       30      59
7       3       10
13      14      9
```