

Multidimensional Array

Assinment-1

```
package Arrays;

import java.util.Random;

public class ThreeDArrayOperation {

    public static void main(String[] args) {

        // Initialize a 3D array with random values
        int[][][] array = new int[2][3][5];
        Random random = new Random();
        for (int i = 0; i < array.length; i++)
        {
            for (int j = 0; j < array[i].length; j++)
            {
                for (int k = 0; k < array[i][j].length; k++)
                {
                    array[i][j][k] = random.nextInt(100);

                }
            }
        }

        // Find the maximum value in the array
        int max = array[0][0][0];
        for (int i = 0; i < array.length; i++)
        {
            for (int j = 0; j < array[i].length; j++)
            {
                for (int k = 0; k < array[i][j].length; k++)
                {
                    if (array[i][j][k] > max) {
                        max = array[i][j][k];
                    }
                }
            }
        }
    }
}
```

```

    }

    // Calculate the average of all elements
    int sum = 0, count = 0;
    for (int i = 0; i < array.length; i++)
    {
        for (int j = 0; j < array[i].length; j++)
        {
            for (int k = 0; k < array[i][j].length; k++)
            {
                sum += array[i][j][k];
                count++;
            }
        }
    }

    double average = (double) sum / count;

    // Display the array
    for (int i = 0; i < array.length; i++)
    {
        for (int j = 0; j < array[i].length; j++)
        {
            for (int k = 0; k < array[i][j].length; k++)
            {
                System.out.print(array[i][j][k] + " ");
            }
            System.out.println();
        }
        System.out.println();
    }

    System.out.println("Maximum value: " + max);
    System.out.println("Average value: " + average);

}

}

```

Output

67 64 54 7 9

```
53 57 66 36 49
82 72 19 56 11
```

```
35 66 34 16 77
95 12 38 60 98
83 95 99 80 42
```

```
Maximum value: 99
Average value: 54.4
```

Assignment-2

```
package Arrays;

import java.util.Scanner;

public class MatrixAddition {

    public static void main(String[] args) {

        Scanner sc = new Scanner(System.in);

        // input the dimension of the matrices

        System.out.println("Enter the number of rows and columns of the matrices: ");

        int rows = sc.nextInt();
        int cols = sc.nextInt();

        // Create two 2D arrays (matrices) and one to store the result
        Integer[][] matrix1 = new Integer[rows][cols];
        Integer[][] matrix2 = new Integer[rows][cols];
        Integer[][] resultMatrix = new Integer[rows][cols];

        // Input elements for the first matrix
        System.out.println("Enter the elements of the first matrix:");
        for (int i = 0; i < rows; i++)
        {
            for (int j = 0; j < cols; j++)
            {
                matrix1[i][j] = sc.nextInt();
            }
        }
    }
}
```

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        // Input elements for the second matrix
System.out.println("Enter the elements of the second matrix:");
        for (int i = 0; i < rows; i++)
        {
            for (int j = 0; j < cols; j++)
            {
                matrix2[i][j] = sc.nextInt();
            }
        }

        // Perform matrix addition
        for (int i = 0; i < rows; i++)
        {
            for (int j = 0; j < cols; j++)
            {
                resultMatrix[i][j] = matrix1[i][j] + matrix2[i][j];
            }
        }

        // Display the resulting matrix
System.out.println("Resulting Matrix after addition:");
        displayMatrix(resultMatrix);
    }

    // Method to display the matrix
    public static void displayMatrix(Integer[][] matrix)
    {
        for (int i = 0; i < matrix.length; i++)
        {
            for (int j = 0; j < matrix[i].length; j++)
            {
                System.out.print(matrix[i][j] + "\t");
            }
            System.out.println();
        }
    }
}

```

Output

Enter the number of rows and columns of the matrices:

3 3

Enter the elements of the first matrix:

1 4 6

4 3 8

3 6 8

Enter the elements of the second matrix:

9 4 6

2 8 9

2 7 9

Resulting Matrix after addition:

10 8 12

6 11 17

5 13 17