twoDArrays.java

```java
/*
 * Lucas Carpenter
 * C201
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 * Genneral Description: This program uses a 2d array that the user must fill.
 *  Then the program will add together the rows individually,
 *  then the columns and display them accordingly.
 */
import java.util.*;

class twoDArrays {
    //DESCRIPTION: This class has 2 methods that manipulate the 2D Array and 1 main method

    //             The main method itterates through a 2D array and displays information and
    //               prompts to the user

    // TEMP VARIABLES FOR PRIVATE METHODS
    private static int Temp = 0;                    // temporary variable for
                                                    // sum of array method created

    private static int[] TempArray = new int[4];    // temporary array for column

    public static void main(String[] args) {
        int[][] Array = new int[4][3];              // MAIN 2D Array created
                                                    // Row(4) X Column(3)

        Scanner Read = new Scanner(System.in);      // Instance of Scanner class for
                                                    // Array population by user created

        // Itterate through Array while prompting user to fill each element of the 2d array

        for (int i = 0; i < 4; i++) {               //itterate through all 4 rows
            for (int j = 0; j < 3; j++) {           //itterate through each element

            System.out.print("Enter a value for row " + (1+i) + " column " + (j+1) + " ");
                                                    //Prompt user for input and specify
                                                    // the row and column

                Array[i][j] = Read.nextInt();       //Scan for input in terminal
            }

        }

        System.out.println();                       //Add empty line

        //PRINT 2D ARRAY (3x4)
        for (int[] row : Array) {
            for (int value : row) {
                System.out.printf("%4d", value);
                                                    //Print appropriate element to satisfy
                                                    // the 3x4 display of element
            }
            System.out.println();                   //Add empty line
```

```
54          }
55
56          //PRINT SUMMATION OF ROWS & COLUMNS
57          System.out.println("\nThe sum of Row 1 is: " +  twoDArrays.sumOfElements(Array[0]));
58          System.out.println("The sum of Row 2 is: " +    twoDArrays.sumOfElements(Array[1]));
59          System.out.println("The sum of Row 3 is: " +    twoDArrays.sumOfElements(Array[2]));
60          System.out.println("The sum of Row 4 is: " +    twoDArrays.sumOfElements(Array[3]));
61                                                          //From TwoDArray class -->
    SumOfElements()
62
63                                                          // for the respective print statements.
64                                                          // (sum of row 1, 2, 3, 4)
65
66      System.out.println("\nThe sum of elements in col 1 is: "
    +twoDArrays.sumOfElements(getColumnArray(Array, 1)) );
67      System.out.println("The sum of elements in col 2 is: "
    +twoDArrays.sumOfElements(getColumnArray(Array, 2)) );
68      System.out.println("The sum of elements in col 3 is: "
    +twoDArrays.sumOfElements(getColumnArray(Array, 3)) );
69                                                          //From TwoDArray class use -->
70                                                          //  GetColumArray to build a new 1D array
71                                                          //  to find the sum of elements
72                                                          //  (TwoDArray Private Method)
73                                                          //  for the respective columns.(1,2,3)
74      }
75
76      private static int sumOfElements(int[] Array) {
77          //DESCRIPTION: add up all elements from actual array parameter 'int[] Array' then
78                                                          // returns result.
79          Temp = 0;                                       //static variable is set to 0
80
81          for (int i = 0; i < Array.length; i++) {        //Parse through all elements of
82                                                          // 1D Array
83
84              Temp += Array[i];                           //Element in array is added to Result
85          }
86          return Temp;                                    //Result is Returned
87      }
88      private static int[] getColumnArray(int[][] Array, int ColumnRequested){
89          //DESCRIPTION: From 2D Array GET the Requested Column and return 1D Array of column
90          for (int i = 0; i < 4; i++) {
91              for (int j = 0; j < 3; j++) {
92                  if (j == ColumnRequested-1) {           //If the itterated column matches the
93                                                          // Actual parameter 'ColumnRequested'
94
95                      TempArray[i] = Array[i][j];         //  then Append 'TempArray' with the
96                                                          // Respective Element
97                                                          //      -from the Actual 2D int
98                                                          //          parameter'Array'.
99                  }
100             }
101         }
102         return TempArray;                               // Return New
103
104
105     }
106 }
```