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\* General 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.

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import java.util.\*;

class twoDArrays {

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

//The main method iterates 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

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

for (int i = 0; i < 4; i++) {

//iterate through all 4 rows

for (int j = 0; j < 3; j++) {

//iterate through each element

System.out.print("Enter a value for row " + (1+i) + " column " + (j+1) + " ");

//Prompt user for input and specify

// input prompt for 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

}

//PRINT SUMMATION OF ROWS & COLUMNS

System.out.println("\nThe sum of Row 1 is: " + twoDArrays.sumOfElements(Array[0]));

System.out.println("The sum of Row 2 is: " + twoDArrays.sumOfElements(Array[1]));

System.out.println("The sum of Row 3 is: " + twoDArrays.sumOfElements(Array[2]));

System.out.println("The sum of Row 4 is: " + twoDArrays.sumOfElements(Array[3]));

//From TwoDArray class --> SumOfElements()

// for the respective print statements.

// (sum of row 1, 2, 3, 4)

System.out.println("\nThe sum of elements in col 1 is: "+twoDArrays.sumOfElements(getColumnArray(Array, 1)) );

System.out.println("The sum of elements in col 2 is: "+twoDArrays.sumOfElements(getColumnArray(Array, 2)) );

System.out.println("The sum of elements in col 3 is: "+twoDArrays.sumOfElements(getColumnArray(Array, 3)) );

// From TwoDArray class use -->

// GetColumArray to build a new 1D array to find the sum of elements (TwoDArray Private Method) for the respective columns.(1,2,3)

}

private static int sumOfElements(int[] Array) {

//DESCRIPTION: add up all elements from actual array parameter 'int[] Array' then

// returns result.

Temp = 0;

//static variable is set to 0

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

//Parse through all elements of

// 1D Array

Temp += Array[i];

//Element in array is added to Result

}

return Temp;

//Result is Returned

}

private static int[] getColumnArray(int[][] Array, int ColumnRequested){

//DESCRIPTION: From 2D Array GET the Requested Column and return 1D Array of column

for (int i = 0; i < 4; i++) {

for (int j = 0; j < 3; j++) {

if (j == ColumnRequested-1) {

//If the iterated column matches the

// Actual parameter 'ColumnRequested'

TempArray[i] = Array[i][j];

// then Append 'TempArray' with the

// Respective Element -from the Actual 2D int parameter 'Array'.

}

}

}

return TempArray;

// Return New

}

}



