Lab 9 - 2D Arrays

1) Navigate to the **Labs** package in IntelliJ and create a package named **Lab9**

2) Drag the **Lab9** file provided into **Lab9** package**.** In this file you will see two methods that are blank. The first method is **addTo10** (below).

```
public static void addTo10(int[][] array){
          //Your code here
}
```

This method accepts a 2-dimensional array of integers. The array that is passed in can be any size. However, each row within the 2-dimensional array will have exactly one element with a value of 0. For each row, you will modify each 0 element so that the sum of all numbers in each row is 10. No other elements should be modified. A 2D array for testing the addTo10 method is provided in the main method. The 2D array is named addTo10Input. Here is an example:

3	5	-8	19	0	17

turns into

3	5	-8	19	-26	17

since 3 + 5 – 8 + 19 – 26 + 17 = 10

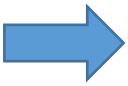
3) You will see another method in **Lab9** called **findAverage** (below).

```
public static void findAverage(double[][] array){
     //Your code here
}
```

This method accepts a 2-dimensional array of doubles. The array that is passed in can be any size. For each value of 0 found, you will modify this value to be the larger of the row average or column average at this point in the matrix. Two 2D arrays for testing the findAverage method are provided in the main method, named findAvgInput and findAvgInputLarge.

The figure below illustrates the state of an array at the beginning of the method (left) and at the end of the method (right) after the 0 has been replaced by the largest average, the column average of ((4.5 + 0 + 8.4)/3 = 4.3 verses (6 + 0 + 3.4)/3 = 3.133).

5	4.5	6.8
6	0	3.4
7	8.4	2.3



5	4.5	6.8
6	4.3	3.4
7	8.4	2.3

4) You can run your methods by running your main method that will run these methods with the arrays provided in main. You can add output lines to output the results.

5) Fully test your methods by running `Lab9Test.java`. Correct your `Lab9.java` file so that each test runs successfully.
6)
7) Submit your `Lab9.java` file to Gradescope and ensure that all tests pass.

8) Take a screenshot of the file `Lab9Test.java` and upload the screenshot along with the `Lab9.java` file to the submission area in Canvas.