**Montgomery College**

**CMSC 203**

**Assignment 5 Implementation**

1. Turn in a UML diagram for TwoDimRaggedArrayUtility and HolidayBonus classes.

**Diagram

Description automatically generated**

1. Write the pseudo code for the methods of *TwoDimRaggedArrayUtility* and *HolidayBonus* class based on the Assignment 5 Description given to you.

Your pseudo-code should be part-way between English and java. There is no need to spell out all the details of variable declaration, etc., but by the same token, the pseudo-code needs to have enough detail that a competent Java programmer could implement it.

1. Inside TwoDimRaggedArrayUtility class:
2. Methods:
3. getAverage(double[][] data), static method that returns a double. Returns the average of the elements in the two-dimensional array.
4. getColumnTotal(double[][] data, int col ), static method that returns a double. Returns the total of the selected column in the two-dimensional array index 0 refers to the first column.
5. getHighestInArray(double[][] data ), static method that returns a double. Returns the largest element in the two dimensional array.
6. getHighestInColumn(double[][] data, int col)), static method that returns a double. Returns the largest element of the selected column in the two dimensional array index 0 refers to the first column.
7. getHighestInColumnIndex(double[][] data, int col), static method that returns a int. Returns index of the largest element of the selected column in the two dimensional array index 0 refers to the first column.
8. getHighestInRow(double[][] data, int row), static method that returns a double. Returns the largest element of the selected row in the two-dimensional array index 0 refers to the first row.
9. getHighestInRowIndex(double[][] data, int row), static method that returns a int. Returns the largest element of the selected row in the two dimensional array index 0 refers to the first row.
10. getLowestInArray(double[][] data)), static method that returns a double. Returns the smallest element in the two dimensional array.
11. getLowestInColumn(double[][] data, int col) , static method that returns a double. Returns the smallest element of the selected column in the two-dimensional array index 0 refers to the first column.
12. getLowestInColumnIndex(double[][] data, int col), static method that returns a int. Returns the index of the smallest element of the selected column in the two dimensional array index 0 refers to the first column.
13. getLowestInRow(double[][] data, int row), static method that returns a double. Returns the smallest element of the selected row in the two dimensional array index 0 refers to the first row.
14. getLowestInRowIndex(double[][] data, int row), static method that returns a int. Returns the index of the smallest element of the selected row in the two dimensional array index 0 refers to the first row.
15. getRowTotal(double[][] data, int row ), static method that returns a double. Returns the total of the selected row in the two dimensional array index 0 refers to the first row.
16. getTotal(double[][] data) , static method that returns a double. Returns the total of all the elements of the two dimensional array
17. readFile(java.io.File file), static method that returns a double 2-dimential array. Reads from a file and returns a ragged array of doubles The maximum rows are 10 and the maximum columns for each row is 10. Each row in the file is separated by a new line Each element in the row is separated by a space.
18. writeToFile(double[][] data, java.io.File outputFile), static void method. Writes the ragged array of doubles into the file.
19. End of methods and end of TwoDimRaggedArrayUtility class.
20. Inside HolidayBonus class:
21. Methods:
22. [calculateHolidayBonus](file:///C:\Users\Miles\AppData\Local\Temp\Temp1_Assignment5%20To%20Studentsupd040722.zip\Assignment5%20To%20Students\HolidayBonus.html#calculateHolidayBonus(double[][], double, double, double))(double[][] data, double high, double low, double other), static method that returns a double array. Calculates the holiday bonus for each store
23. [calculateTotalHolidayBonus](file:///C:\Users\Miles\AppData\Local\Temp\Temp1_Assignment5%20To%20Studentsupd040722.zip\Assignment5%20To%20Students\HolidayBonus.html#calculateTotalHolidayBonus(double[][], double, double, double))(double[][] data, double high, double low, double other), static method that returns a double. Calculates the total holiday bonuses

Screen shots of the GUI:

A picture containing table

Description automatically generated

Screen shot of GUI with district 5 data:

Text, letter

Description automatically generated

A picture containing graphical user interface

Description automatically generated

Screen shot of GUI with district 4 data:

Text

Description automatically generatedA screenshot of a computer

Description automatically generated

Screen shot of GUI with district 3 data:

Text

Description automatically generated

A screenshot of a computer

Description automatically generated

Screen shots for each JUnit:

HolidayBonus\_GFA\_Test:Graphical user interface, text, application

Description automatically generated

HolidayBonusTest:Graphical user interface, application

Description automatically generated

HolidayBonusTestSTUDENT: Text

Description automatically generated

TwoDimRaggedArrayUtility\_GFA\_Test: Graphical user interface, application

Description automatically generated

TwoDimRaggedArrayUtilityTest: Graphical user interface, text, application

Description automatically generated

TwoDimRaggedArrayUtilitySTUDENT\_Test: Text

Description automatically generated

Screen shot of GitHub submission:

A screenshot of a computer

Description automatically generated

Test Case for HolidayBonus

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | values | testCalculateHolidayBonusA  Expected | testCalculateHolidayBonusA  Actual | testCalculateHolidayBonusB  Expected | testCalculateHolidayBonusB  Actual | testCalculateTotalHolidayBonusA  Expected | testCalculateTotalHolidayBonusA  Actual | testCalculateTotalHolidayBonusB  Expected | testCalculateTotalHolidayBonusB  Actual |
| dataSetSTUDENT | {{3,4,9},{2,3},{4,6,1}} | (9000.0,result[0],.001)  (2000.0,result[1],.001  (11000.0,result[2],.001) | (9000.0,result[0],.001)  (2000.0,result[1],.001  (11000.0,result[2],.001) | (2650.0,result[0],.001)  (200.0,result[1],.001)  (2600.0,result[2],.001) | (2650.0,result[0],.001)  (200.0,result[1],.001)  (2600.0,result[2],.001) | 31712.0 | 31712.0 | 26087.0 | 26087.0 |
| dataSetSTUDENT2 | {{3,6,1,2},{3},{7,3,0},{15,2,3,8}} | (9000.0,result[0],.001)  (1000.0,result[1],.001)  (4000.0,result[2],.001)  assertEquals(16000.0,result[3],.001) | (9000.0,result[0],.001)  (1000.0,result[1],.001)  (4000.0,result[2],.001)  assertEquals(16000.0,result[3],.001) | (2150.0,result[0],.001)  (100.0,result[1],.001)  (1400.0,result[2],.001)  (3850.0,result[3],.001) | (2150.0,result[0],.001)  (100.0,result[1],.001)  (1400.0,result[2],.001)  (3850.0,result[3],.001) | 43229.0 | 43229.0 | 34885.0 | 34885.0 |

Test Case for TwoDimRaggedArrayUtility

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | values | testGetTotal Expected | testGetTotal Actual | testGetAverage Expected | testGetAverage Actual | testGetRowTotal  Expected | testGetRowTotal  Actual | testGetColumnTotal  Expected | testGetColumnTotal  Actual | testGetHighestInArray  Expected | testGetHighestInArray  Actual |
| dataSetSTUDENT | {{3,6,7,2},{4,9},{2,9,3,2}} | 47.0 | 47.0 | 4.7 | 4.7 | 13.0 | 13.0 | 9.0 | 9.0 | 7.0 | 7.0 |
| dataSetSTUDENT2 | {{5,8,2,4},{2,1,7},{9,7,4,3},{6,3,7,9,8}} | 85.0 | 85.0 | 5.3125 | 5.3125 | 10.0 | 10.0 | 20.0 | 20.0 | 7.0 | 7.0 |

Lessons Learned

Write about your Learning Experience, highlighting your lessons learned and learning experience from working on this project.

What have you learned?

In this assignment, I learned many things. One thing that I learned the most was being able to read files and write to files. I learned how to search 2-Dimensional arrays for specific values and pass them between classes. I learned more about GUIs and how they correspond with my code. I learned more about making JUnit tests and debugging on eclipse.

What did you struggle with?

I struggled with the readFile and writeToFile methods. I had forgotten what I learned about reading and writing to files. I spent lots of time finding guides and YouTube videos about reading and writing to files. Luckily, I was able to have these 2 methods work the way that I wanted them to. I was a little bit confused with the calculateTotalHolidayBonus method. I thought that I was calculating the total plus the bonus. I realized that this was a mistake because my output was not the same as the pictures provided in the assignment description. I reread the java doc and realized what I needed to do and fixed the error.

What would you do differently on your next project?

I was very stressed that I would not finish this assignment on time. For my next project, I would start it earlier so I can get a head start and be able to submit it before it is due.

What parts of this assignment were you successful with, and what parts (if any) were you not successful with?

In the end, I believe I was successful with everything.

Assignment 5 Check List (include Yes/No or N/A for each item)

|  |  |  |  |
| --- | --- | --- | --- |
| **#** |  | **Y/N or N/A** | **Comments** |
|  | **Assignment files:** |  |  |
|  | * FirstInitialLastName\_ Assignment5\_Moss.zip | **Yes** |  |
|  | * FirstInitialLastName\_Assignment5\_Complete.zip | **Yes** |  |
|  | **Program compiles** | **Yes** |  |
|  | **Program runs with desired outputs related to a Test Plan** | **Yes** |  |
|  | **Documentation file:** |  |  |
|  | * Comprehensive Test Plan | **Yes** | **See Student made JUnit tests** |
|  | * Screenshots for each Junit Test | **Yes** |  |
|  | * Screenshots for each Test case listed in the Test Plan | **Yes** |  |
|  | * Screenshots of your GitHub account with submitted Assignment# (if required) | **Yes** |  |
|  | * UML Diagram | **Yes** |  |
|  | * Algorithms/Pseudocode | **N/A** |  |
|  | * Flowchart (if required) | **N/A** |  |
|  | * Lessons Learned | **Yes** |  |
|  | * Checklist is completed and included in the Documentation | Yes |  |