**Lab Assignment – 13**

**Total Points: 100**

**Due Date: 11/21 (Wednesday), 11.59 pm**

You can work in groups of up to 3 students each on this assignment. Each group will make only one submission. Any student from the group can make the submission along with the names of the group members. All the students in the group will receive the same grade.

**Multi-Dimensional Arrays**

1. Create a Class called SalesTax with the following ***static methods*** in it:

*Please note there are no instance variables and no non-static methods in this class. All the methods in the class are static methods just like the Math class.*

* + ***create2DArray( )*** - public static method that does not take any parameter and returns a 2-Dimensional array of values representing sales tax rates of 50 states for 10 years. Dimension 1 represents the state (there are 50 states) and dimension 2 represents the year. The sales tax values you would populate this structure will be a random value between 0.0 and 0.06 using Math.random( ) method.
  + ***getString( )*** - public static method that takes a 2D double array as a parameter and returns a string containing sales tax rates for all the 10 states for all the 50 states.
  + ***taxRatesForSpecificState( )*** - public static method that takes a 2D double array as a parameter and a int value representing the index of a specific state and returns a string containing the sales tax rates for all the 10 years for a specific state.
  + ***taxRatesForSpecificYear( )*** - public static method that that takes a 2D double array as a parameter and a int value representing the index representing a specific year and returns a string containing the sales tax rates for a specific year for all the 50 states.
  + ***stateWithHighestTaxRate( )*** - public static method that takes a 2D double array as a parameter and returns the index of the state that has the highest average tax rate over the years.
  + ***statesWithLowSalexTaxRate( )*** - public static method that that takes a 2D double array as a parameter and returns an array containing the indexes of the states that have had at least one year with tax rate less than 0.001. Hint: You would need to use a nested for loop.
  + ***statesHighestSalesTaxRate ( )*** - public static method that that takes a 2D double array as a parameter and returns an array containing the highest sales tax rate for each state over the 10 years.
  + Implement a ***main method*** in the same program and do the following inside the main method.
    1. Create a 2D double array variable named US-States and assign it the value returned by ***create2DArray( )*** static method.
    2. Print the string returned by ***getString( )*** static method on the output window.
    3. Print the string returned by ***taxRatesForSpecificState( )*** on the output window.
    4. Print the string returned by ***taxRatesForSpecificYear( )*** on the output window.
    5. Print the value returned by ***stateWithHighestTaxRate( )*** on the output window.
    6. Create an int array variable statesWithLowSalesTaxRate and assign it the value returned by ***statesWithLowSalexTaxRate( )***. Run a for loop on this array to print it’s contents on the output window.
    7. Create a double array variable ***statesHighestSalesTaxRate*** and assign it the value returned by ***statesHighestSalesTaxRate ( )***. Run a for loop on this array to print it’s contents on the output window.

Note: Please note to make your output verbose clearly describing each of the values that you are printing to the output window.

**Things to submit:**

* + In the word document, put the names of the group members at the top.
  + Copy and paste the source code.
  + Copy and paste the output of **two** runs of the program.
  + Copy and paste the screen shot of the program.
* Zip your NetBeans project folder and submit the same with word document.