Project 1: File I/O and ArrayList
Due Date: Sunday, May 24, 2020 at 11:59 pm eastern time.
Deliverables: Online your entire zipped Netbeans project to canvas

Note, I will not except late assignments and assignments not emailed through Canvas.

Objective
To master working with File handlers and ArrayLists

Overview
You are to read and parse the contents of the Stock_Data.txt. The Stock_Data.txt comma delimited file contains historical data on five stocks:

Date	X	GE	APPL	GOOG	F
8/9/17	23.93	24.69	158.59	922.9	10.36
8/10/17	23.69	24.29	153.54	907.24	10.22
8/11/17	23.01	24.2	155.68	914.39	10.22
8/14/17	23.18	24.35	158.02	922.67	10.35

You are to store the data for each stock into an ArrayList for example

```
ArrayList<Double> x_stockPrices = new ArrayList<Double>();
```

Then you need to calculate the correlation matrix and display it in the console. Note the correlation matrix is a 2D ArrayList i.e

```
ArrayList<ArrayList<Double>> correlationMatrix =  new ArrayList<ArrayList<Double>>();
```

Here are some useful formulas you need to complete the project. If you have any questions, please ask me. I am here to help you.

Standard Deviation

$$s_x = \sqrt{\frac{\sum (x - \bar{x})^2}{n-1}}.$$

Correlation

$$r = \frac{1}{n-1}\left(\frac{\sum_x \sum_y (x - \bar{x})(y - \bar{y})}{s_x s_y} \right)$$

What you need to do

1) You need to read store the stock price contents Stock_Data.txt for each stock into an ArrayList. Heads up remembered that the stock data file has a header that you need to deal with. Note, you will find the Stock_Data.txt file in the data folder of the Netbeans skeleton project provided to you.

Example:

```
ArrayList<Double> x_stockPrices = new ArrayList<Double>();
```

2) Implement the following methods:

- public static double findAverage(ArrayList<Double> prices)
- public static double findStandardDeviation(ArrayList<Double> prices)
- public static double findCorrelation(ArrayList<Double> firstPrices, ArrayList<Double> secondPrices)

3) Create ArrayList that store each stock correlation values against the other stocks.

Example:

```
ArrayList<Double> xCorrelations = new ArrayList<Double>();
```

4) Create a 2D ArrayList called correlationMatrix at stores all the stock correlations

Example:

```
ArrayList<ArrayList<Double>> correlationMatrix =  new ArrayList<ArrayList<Double>>();
```

5) Output the contents of the correlationMatrix to the console and print out the values:

Examples: