**Stock Market Analysis**

**Background**

SMU Data Science Boot Camp Visual Basic Activity

**Instructions**

* Create a script that will loop through all the stocks for one year for each run and take the following information.
  + The ticker symbol.
  + Yearly change from opening price at the beginning of a given year to the closing price at the end of that year.
  + The percent change from opening price at the beginning of a given year to the closing price at the end of that year.
  + The total stock volume of the stock.
* You should also have conditional formatting that will highlight positive change in green and negative change in red.

**CHALLENGES**

1. Your solution will also be able to return the stock with the "Greatest % increase", "Greatest % Decrease" and "Greatest total volume".
2. Make the appropriate adjustments to your VBA script that will allow it to run on every worksheet, i.e., every year, just by running the VBA script once.

### Other Considerations

* Use the sheet alphabetical\_testing.xlsx while developing your code. This data set is smaller and will allow you to test faster. Your code should run on this file in less than 3-5 minutes.
* Make sure that the script acts the same on each sheet. The joy of VBA is to take the tediousness out of repetitive task and run over and over again with a click of the button.

*Source:* <https://smu.bootcampcontent.com/SMU-Coding-Bootcamp/SMU-DAL-DATA-PT-11-2019-U-C/blob/master/02-Homework/02-VBA-Scripting/Instructions/README.md>

**Decompose the Ask**

Given

***Restatement of the problem:*** *NA*

Given

**Identify Data Sources**

Given

**Define Strategy and Metrics**

Given

**Build Data Retrieval Plan**

* Initialize the data structures and variables

For each sheet…

* + 1. 1st sort the data set by <date>
    2. 2nd sort the data set by <ticker>

*The data should now be (1) grouped by <ticker>, ordered by <date> within each ticker group.*

* + 1. Declare & initialize the following variables
       - ticker[] String = “----"
       - yearBeginPrice[] Double = 0.01 // to avoid dividing by ‘0.00’ later
       - yearEndPrice[] Double = 0.00
       - totalVolume[] Integer = 0
       - priceChangeUSD[] Double = 0.00
       - priceChangePercent[] Double = 0.00
       - tickerIndex Integer = 0
* Begin automated analysis

***\*\*\* Pseudocode for part 1 \*\*\****

// Loop through all records for a sheet. Store array index ‘i’ to iterate through arrays  
(loop) While more records (i)

// Initialize tickerIndex to store first ticker value  
tickerIndex = i

Read in 1st record (1st alphanumeric ticker, 1st reporting day for this ticker)

// If we have not captured data for this ticker   
if ticker[tickerIndex] != <ticker>

// Calculate price change (dollars) for begin year open to end year close  
priceChangeUSD[i] = yearBeginPrice[i] - yearEndPrice[i]

// Calculate price change (%) for begin year open to end year close  
 priceChangePercent[i] = (yearEndPrice[i] - yearBeginPrice[i]) / yearBeginPrice[i]

// Output the following to an excel table (see example from instructions).  
 Ticker, Yearly Change, Percent Change, Total Stock Volume

// Move to next position in ticker array to store values for the next symbol  
tickerIndex++

// Store the next ticker symbol  
 ticker[tickerIndex] = <ticker>

// Store the beginning year opening price  
 yearBeginPrice[i] = <open>

// start tracking volume  
 totalVolume[i] += <vol>

// If we are capturing data for the same ticker value at index ‘i’  
else if ticker[i] = <ticker> // not sure I need ‘else if’. May just need ‘else’

// Capture the closing price… this will change ‘til all records for the ticker viewed  
 yearEndPrice[i] = <close>

// continue adding tracking volume to total volume  
totalVolume += <vol>

***\*\*\* Pseudocode for part 2 \*\*\****

*See output from part 1  
…conditional formatting that will highlight positive change in green and negative change in red*

***\*\*\* Pseudocode for Challenge 1 \*\*\****

*Your solution will also be able to return the stock with the "Greatest % increase", "Greatest % Decrease" and "Greatest total volume".*

See output from part 1

***\*\*\* Pseudocode for Challenge 2 \*\*\****

*Make the appropriate adjustments to your VBA script that will allow it to run on every worksheet, i.e., every year, just by running the VBA script once.*

Research how to reference tabs in script. Run code above, starting with the first tabs, while there are still tabs to process.

**Retrieve the Data**

See VB Scripts in Repo

**Assemble and Clean**

See VBA Excel Docs

**Analyze for Trends**

See VBA Excel Docs

**Acknowledge Limitations**

TBD

**Make the Call or Tell the Story**

NA