

# VBA

# Homework

# raulfloresp

## The VBA of Wall Street

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Course:

Data Analytics Boot Camp / ITESM

# Introduction VBA Homework

You are well on your way to becoming a programmer and Excel master! In this homework assignment you will use VBA scripting to analyze real stock market data. Depending on your comfort level with VBA, you may choose to challenge yourself with a few of the challenge tasks.

## Instructions - Solved

### MAIN INSTRUCTIONS

Main Instructions from the Homework

- Create a script that will loop through all the stocks for one year and output the following information.
  - The ticker symbols.
  - 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.
- The result should look as follows.

### CHALLENGES

Your solution will also be able to return the stock with the “Greatest % increase”, “Greatest % decrease” and “Greatest total volume”. The solution will look as follows:

### Results Year 2014

Print screen of results of Year 2014

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Clipboard Font Alignment Protection Number Styles Cells Editing Ideas

N4

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
	<ticker>	<date>	<open>	<high>	<low>	<close>	<vol>		Ticker	Yearly Change	Percent Chan	Total Stock	Volume			Ticker	Stock Value	
1	A	20140101	57.19	57.19	57.19	57.19	0	705714	A	16.71	-28.41%	572978100				Greatest % In DM	5581.16%	
2	A	20140102	57.1	57.1	56.15	56.21	1916100		AA	15.48	48.54%	5161412000				Greatest % Dv CBO	-95.73%	
3	A	20140103	56.39	57.35	56.26	56.92	1866600		AA-B	1.34	2.73%	21618200				Greatest Tota BAC	2.1595E+10	
4	A	20140106	57.4	57.7	56.56	56.64	1777400		AAC	10.92	54.60%	9789700						
5	A	20140107	56.95	57.63	56.93	57.45	1463200		AAN	1.17	3.98%	237929300						
6	A	20140108	57.33	58.54	57.17	58.39	2659400		AAP	48.6	43.91%	200376400						
7	A	20140109	58.4	58.68	57.87	58.41	1757600		AAT	8.38	26.66%	40207800						
8	A	20140110	58.51	59.01	58.14	58.93	1623300		AAV	0.45	10.37%	86658700						
9	A	20140111	58.77	59.1	58.6	58.93	2946700		AB	4.49	21.04%	83051600						
10	A	20140114	59.16	59.95	59.02	59.88	2562200		ABB	5.41	-20.37%	466820000						
11	A	20140115	59.82	60.37	59.59	60.34	2335100		ABBV	12.63	23.92%	2303237600						
12	A	20140116	60.24	60.5	60.04	60.5	1835900		ABC	19.85	28.23%	428969000						
13	A	20140117	60.83	60.83	60.33	60.71	1699500		ABEV	1.13	-15.37%	3208014300						
14	A	20140120	60.71	60.71	60.71	60.71	0	ABG	22.18	41.27%	81065600							
15	A	20140121	60.69	60.88	59.86	60.85	3008400		ABM	0.06	0.21%	52403000						
16	A	20140122	60.82	61.22	60.71	60.93	2769300		ABR	0.11	1.65%	28348400						
17	A	20140123	60.48	60.51	59.4	59.47	3063500		ABR-A	0.77	3.18%	1798500						
18	A	20140124	59.46	59.46	57.71	57.87	2656300		ABR-B	2.09	9.24%	1722000						
19	A	20140127	57.9	58.37	56.98	58.3	4669000		ABR-C	0.94	3.86%	1758200						
20	A	20140128	58.5	58.88	57.91	58.1	2536200		ABRN	0.49	2.04%	3451100						
21	A	20140129	57.67	58.22	57.41	57.65	2163000		ABT	6.69	17.45%	1516024700						
22	A	20140130	58.42	60.11	58.42	59.51	3743100		ABX	6.28	-39.02%	3085372400						
23	A	20140131	58.61	59.15	58.05	58.15	3529000		ACC	9.15	28.41%	180543400						
24	A	20140203	58.15	58.48	56.08	56.15	2929200		ACCO	2.29	34.08%	223248000						
25	A	20140204	56.32	57.88	56.09	57.81	2911800		ACH	2.82	32.41%	34117500						
26	A	20140205	57.58	57.7	56.96	57.43	2283800		ACM	0.94	3.19%	303393900						
27	A	20140206	57.51	58.35	57.46	58.29	1609400		ACN	7.09	8.62%	705479100						
28	A	20140207	58.46	59.47	58.13	59.42	1975200		ACP	3.43	-14.05%	14206700						
29	A	20140210	59.27	59.44	58.29	59.01	1760400		ACRE	1.62	-12.37%	44197000						
30	A	20140211	59	60	58.88	59.73	2148200		ACW	0.03	16.35%	60360500						

2016 2015 2014

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## Results Year 2015

Print screen of results of Year 2015

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A1

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
	<ticker>	<date>	<open>	<high>	<low>	<close>	<vol>		Ticker	Yearly Change	Percent Chan	Total Stock	Volume			Ticker	Stock Value	
1	A	20150101	40.94	40.94	40.94	40.94	0	760192	A	8.83	2.13%	645319200				Greatest % In ARR	491.30%	
2	A	20150102	41.18	41.31	40.37	40.56	1530700		AA	12.79	-37.49%	6449104200				Greatest % Dv KMLW	-98.59%	
3	A	20150105	40.32	40.46	39.7	39.8	2042200		AA-B	17.14	-33.97%	40441700				Greatest Tota BAC	2.1278E+10	
4	A	20150106	39.81	40.02	39.02	39.18	2084500		AAC	11.86	-38.36%	78122300						
5	A	20150107	39.52	39.81	39.29	39.7	3359600		AAN	8.18	-26.76%	179606700						
6	A	20150108	40.24	40.98	40.18	40.89	2116300		AAP	8.71	-5.51%	266930500						
7	A	20150109	41	41	40.29	40.59	1644900		AAT	1.46	-3.67%	48158100						
8	A	20150112	40.61	40.72	39.95	40.11	2771100		AAV	0.29	6.05%	30229400						
9	A	20150113	40.47	40.7	39.33	39.55	2013400		AB	1.96	-7.67%	71403800						
10	A	20150114	39.03	39.1	38.21	39.06	5134000		ABB	3.42	-16.17%	532805500						
11	A	20150115	39.33	39.41	37.99	38.01	2630200		ABBV	6.2	-9.47%	2643021600						
12	A	20150116	37.86	38.46	37.76	38.25	3003900		ABC	13.55	15.03%	516218400						
13	A	20150119	38.25	38.25	38.25	38.25	0	ABEV	1.76	-28.30%	3915345800							
14	A	20150120	38.43	38.66	37.76	37.93	5033600		ABG	8.48	-11.17%	82930400						
15	A	20150121	37.75	38.41	37.68	38.16	2721600		ABM	0.18	-0.63%	72539400						
16	A	20150122	38.51	39.86	38.12	39.65	4856500		ABR	0.38	5.61%	37916900						
17	A	20150123	39.6	39.6	38.76	38.81	1519200		ABR-A	0.49	-1.96%	1243100						
18	A	20150126	38.79	39.17	38.47	39.15	1511200		ABR-B	2.14	-8.66%	1022000						
19	A	20150127	38.7	39.25	38.58	38.75	1703500		ABR-C	0.12	-0.47%	634000						
20	A	20150128	39.01	39.05	37.96	38	2033500		ABRN	0.13	0.41%	2109900						
21	A	20150129	38	38.47	37.69	38.46	2329900		ABT	0.11	-0.24%	1469310700						
22	A	20150130	38.01	38.32	37.71	37.77	3054300		ABX	3.17	-31.35%	4289215100						
23	A	20150202	37.9	38.76	37.71	38.69	2508400		AC	3	3.39%	437700						
24	A	20150203	39.04	39.63	38.92	39.62	2950300		ACC	0.02	-0.05%	228980000						
25	A	20150204	39.33	39.46	38.82	39.11	2567400		ACCO	1.88	-20.87%	167330800						
26	A	20150205	39.22	39.82	39.22	39.53	1826300		ACH	3.28	-28.47%	35801000						
27	A	20150206	39.54	39.81	39.23	39.34	2697200		ACM	0.34	-1.12%	362299600						
28	A	20150209	39.23	39.43	38.95	39.04	3586100		ACN	15.19	17.01%	626565000						
29	A	20150210	39.31	39.76	38.78	39.67	1408700		ACP	3.76	-24.88%	14348400						
30	A	20150211	39.64	39.81	39.23	39.33	3337000		ACRE	0.04	-0.35%	39118800						

2016 2015 2014

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# Results Year 2016

Print screen of results of Year 2016

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
	<ticker>	<date>	<open>	<high>	<low>	<close>	<vol>	797711	Ticker	Yearly Change	Percent Chan	Total Stock Volume						
2	A	20160101	41.81	41.81	41.81	41.81	0		A	3.25	8.97%	528576200					Greatest % In SD	11675.00%
3	A	20160104	41.06	41.19	40.34	40.69	3287300		AA	-1.54	-5.17%	5208239000					Greatest % Dv DYN.W	-91.49%
4	A	20160105	40.73	40.95	40.34	40.55	2587200		AAC	-11.82	-62.01%	57179800					Greatest Tota BAC	2.7429E+10
5	A	20160106	40.24	40.99	40.05	40.73	2103600		AAN	9.6	42.88%	184809000						
6	A	20160107	40.14	40.15	38.81	39	3504300		AAP	18.61	12.36%	262665300						
7	A	20160108	39.22	39.71	38.47	38.59	3736700		AAT	4.73	12.33%	49026400						
8	A	20160111	38.71	38.9	37.41	37.94	2818600		AAV	1.67	32.87%	27358200						
9	A	20160112	38.43	38.58	37.65	38.19	1989300		AB	-8.4	-1.68%	64736300						
10	A	20160113	38.35	38.47	36.72	36.86	4206600		ABB	3.34	18.84%	503779400						
11	A	20160114	36.94	37.88	36.55	37.61	2893300		ABBV	3.38	5.71%	2034231800						
12	A	20160115	36.67	37.56	36.55	37.11	2994300		ABC	-25.52	-24.61%	647239900						
13	A	20160118	37.11	37.11	37.11	37.11	0		ABEV	0.45	10.09%	4199335100						
14	A	20160119	37.64	37.92	36.79	37.2	2506500		ABG	-5.74	-8.51%	89828200						
15	A	20160120	36.68	37.61	36.13	37.26	2469000		ABM	12.37	43.45%	79787400						
16	A	20160121	37.35	37.83	36.81	37.23	2298300		ABR	0.31	4.34%	27556100						
17	A	20160122	37.91	38.18	37.58	37.98	1834400		ABR-A	0.57	2.33%	792500						
18	A	20160125	37.4	38.03	37.4	37.61	1831200		ABR-B	2.02	8.95%	795300						
19	A	20160126	37.89	37.96	37.36	37.51	1755000		ABR-C	0.18	0.72%	521300						
20	A	20160127	37.39	37.92	36.81	37.05	1479400		ABRN	0.7	2.85%	1759800						
21	A	20160128	37.27	37.27	36.01	36.11	3479400		ABT	-8.5	-14.47%	2298099600						
22	A	20160129	36.44	37.69	36.31	37.65	2959800		ABX	8.6	116.53%	4996990800						
23	A	20160201	37.37	37.95	37	37.69	2666500		AC	2.35	7.70%	6530000						
24	A	20160202	37.18	37.55	36.95	37.07	1742300		ACC	8.43	20.39%	258457600						
25	A	20160203	37.27	37.36	36.29	37.19	2128400		ACCO	5.92	83.03%	163653100						
26	A	20160204	37.15	37.79	36.97	37.42	2833400		ACH	1.97	23.91%	11563400						
27	A	20160205	37.26	37.31	35.83	36.04	4424600		ACM	6.33	21.08%	296759000						
28	A	20160208	35.61	35.78	34.39	34.8	3888600		ACN	12.63	12.09%	650155300						
29	A	20160209	34.21	35.77	34.15	35.37	3464400		ACP	2.08	18.33%	21179200						
30	A	20160210	35.63	36.73	35.53	35.85	3169900		ACRE	2.29	20.02%	35062000						
31	A	20160211	35.12	35.61	34.94	35.33	3224000		ACV	0.62	3.41%	12734300						

My VBA Code in the next section of this report.

# Code VBA

```
Option Explicit
```

```
Dim ws As Worksheet
```

```
Sub StockAnalysis()
```

```
' Loop to repite an action on all Excel sheets in the Active Workbook
```

```
' Reference used: https://powerspreadsheets.com/excel-vba-sheets-worksheets/
```

```
Dim LastRow As Long
```

```
For Each ws In ActiveWorkbook.Worksheets
```

```
    ws.Activate
```

```
' Read and get the last row in the worksheet
```

```
' Multiple ways to get the last row but I used the one with the less coding
```

```
' https://www.wallstreetmojo.com/vba-last-row/
```

```
LastRow = Cells(Rows.Count, "A").End(xlUp).Row
```

```
Range("H1").Value = LastRow
```

```
' I tried an other alternative to extract unique values on a range but I was not able to solve a loop issue.
```

```
' so I abandoned it
```

```
' https://www.listendata.com/2013/05/excel-3-ways-to-extract-unique-values.html
```

```
' ActiveSheet.Range("B2:B" & lastrow).AdvancedFilter _
```

```
' Action:=xlFilterCopy, _
```

```
' CopyToRange:=ActiveSheet.Range("D2"), _
```

```
' Unique:=True
```

```
' Define general variables
```

```
Dim Ticker As String
```

```
Dim Yearly_Change As Double
```

```
Dim Opening_Price As Double
```

```
Dim Closing_Price As Double
```

```
Dim Percent_Change As Double
```

```
Dim Volume As Double
```

```
Dim i As Double
```

```
Dim j As Double
```

```
Dim k As Double
```

```
Dim Row As Integer
```

```
Dim YearlyLastRow As Integer
```

```
'Assign Titles to our new columns
```

```
Cells(1, 9).Value = "Ticker"
```

```
Cells(1, 10).Value = "Yearly Change"
```

```
Cells(1, 11).Value = "Percent Change"
```

```
Cells(1, 12).Value = "Total Stock Volume"
```

```
' Set initial values and initial calculations outside the loop
```

```
Row = 2
```

```
Opening_Price = Cells(2, 3).Value
```

```
For i = 2 To LastRow
```

```
    ' Validate the Ticker value and check vs initial value
```

```
    If Cells(i + 1, 1).Value <> Cells(i, 1).Value Then
```

```
        ' Read and Add the Ticker Name
```

```
        Ticker = Cells(i, 1).Value
```

```
        Cells(Row, 9).Value = Ticker
```

```
        ' Add Closing Price
```

```
        Closing_Price = Cells(i, 6).Value
```

```
' Calculate and Add Yearly Change
```

```
Yearly_Change = Closing_Price - Opening_Price
```

```
Cells(Row, 10).Value = Yearly_Change
```

```
' Calculate and Add Percent Change
```

```
If (Opening_Price = 0 And Closing_Price = 0) Then
```

```
Percent_Change = 0
```

```
Elseif (Opening_Price = 0 And Closing_Price <> 0) Then
```

```
Percent_Change = 1
```

```
Else
```

```
Percent_Change = Yearly_Change / Opening_Price
```

```
Cells(Row, 11).Value = Percent_Change
```

```
Cells(Row, 11).NumberFormat = "0.00%"
```

```
End If
```

```
' Calculate and Add Total Volume
```

```
Volume = Volume + Cells(i, 7).Value
```

```
Cells(Row, 12).Value = Volume
```

```
' Update and Add one to the summary table row
```

```
Row = Row + 1
```

```
' reset the Open Price
```

```
Opening_Price = Cells(i + 1, 3)
```

```
' reset the Volumn Total
```

```
Volume = 0
```

```
'if cells are the same ticker
```

```
Else
```

```
Volume = Volume + Cells(i, 7).Value
```

```
End If
```

```
Next i
```

```
'Determine the Last Row of Yearly Change per WS
```

```
YearlyLastRow = ws.Cells(Rows.Count, 10).End(xlUp).Row
```

```
' conditional formatting that will highlight positive change in green and negative change in red
```

```
For j = 2 To YearlyLastRow
```

```
    If (Cells(j, 10).Value >= 0) Then
```

```
        Cells(j, 10).Interior.ColorIndex = 4
```

```
    ElseIf Cells(j, 10).Value < 0 Then
```

```
        Cells(j, 10).Interior.ColorIndex = 3
```

```
    End If
```

```
Next j
```

```
'Your solution will also be able to return the stock with the "Greatest % increase",
```

```
"Greatest % decrease" and "Greatest total volume".
```

```
' Set cell names for Greatest % increase, Greatest % decrease and Greatest total volume
```

```
Cells(2, 15).Value = "Greatest % Increase"
```

```
Cells(3, 15).Value = "Greatest % Decrease"
```

```
Cells(4, 15).Value = "Greatest Total Volume"
```

```
Cells(1, 16).Value = "Ticker"
```

```
Cells(1, 17).Value = "Stock Value"
```

```
' Loop through tickers to find the greatest increase, decrease, and volume, and associated tickers
```

```
' Reference of coding method:
```

```
https://docs.microsoft.com/en-us/office/vba/api/Excel.WorksheetFunction
```

```
For k = 2 To YearlyLastRow
```

```
    If Cells(k, 11).Value = Application.WorksheetFunction.Max(ws.Range("K2:K" & YearlyLastRow)) Then
```



```

Cells(2, 16).Value = Cells(k, 9).Value
Cells(2, 17).Value = Cells(k, 11).Value
Cells(2, 17).NumberFormat = "0.00%"

Elseif Cells(k, 11).Value = Application.WorksheetFunction.Min(ws.Range("K2:K" & YearlyLastRow)) Then
Cells(3, 16).Value = Cells(k, 9).Value
Cells(3, 17).Value = Cells(k, 11).Value
Cells(3, 17).NumberFormat = "0.00%"

Elseif Cells(k, 12).Value = Application.WorksheetFunction.Max(ws.Range("L2:L" & YearlyLastRow)) Then
Cells(4, 16).Value = Cells(k, 9).Value
Cells(4, 17).Value = Cells(k, 12).Value

End If
Next k

Next ws

End Sub

```

Fin de documentos