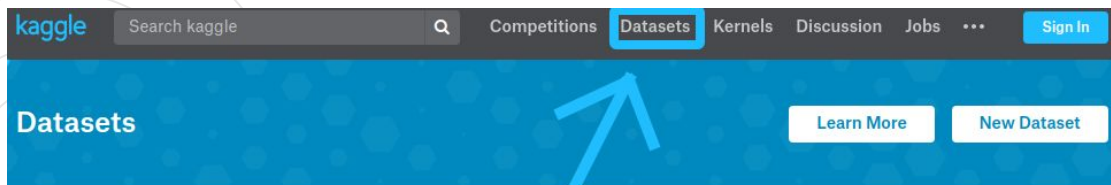UE17CS203-
INTRODUCTION TO DATA SCIENCE

EXPLORATORY ANALYSIS ON GAFA STOCK PRICES

Kirthika Gurumurthy and Richa

INTRODUCTION

DATASET

This year has been an all time high for the fantastic 4 of the tech industry: Google, Amazon, Facebook and Apple (GAFA).

	A	B	C	D	E	F	G	H
1	Stock	Date	Open	High	Low	Close	Adj Close	Volume
2	Google	19/08/200	49.6769	51.69378	47.66995	49.8458	49.8458	44994500
3	Google	20/08/200	50.17864	54.18756	49.92529	53.80505	53.80505	23005800
4	Google	23/08/200	55.01717	56.37334	54.17266	54.34653	54.34653	18393200
3491	Apple	20/02/1981	0.435268	0.435268	0.433036	0.433036	0.019701	6092800
3492	Apple	23/02/1981	0.439732	0.441964	0.439732	0.439732	0.020006	3528000
3493	Apple	24/02/1981	0.428571	0.428571	0.424107	0.424107	0.019295	4244800
3494	Apple	25/02/1981	0.450893	0.453125	0.450893	0.450893	0.020514	4872000
13203	Facebook	25/09/2013	49.23	49.54	48.46	49.46	49.46	87879700
13204	Facebook	26/09/2013	50.01	50.6	49.5	50.39	50.39	98220100
13205	Facebook	27/09/2013	50.29	51.28	49.86	51.24	51.24	81410500
14355	Amazon	16/05/1997	1.96875	1.979167	1.708333	1.729167	1.729167	14700000
14356	Amazon	19/05/1997	1.760417	1.770833	1.625	1.708333	1.708333	6106800
14357	Amazon	20/05/1997	1.729167	1.75	1.635417	1.635417	1.635417	5467200

GAFA(Google,Apple,Facebook,Amazon) stock prices in the time period of 1981 (Apple) to 2018 (all)

kaggle™

YAHOO! FINANCE

QUESTIONS ASKED

- ❖ How is the volume and the adjusted close of the stocks of the Google, Amazon, Facebook and Apple distributed?
- ❖ How does the adjusted close vary with the year and the month for each of the big four and possible reasons for the variation in the same?
- ❖ How does the adjusted close differ from the close?
- ❖ Why is there a sudden spike in Amazon's open, high, low, close and adj close?
- ❖ Is there any trend or seasonality observed for these specs and what is the reason for the same?
- ❖ What is the strength and maturity or stage of the current trend?
- ❖ Are the company's revenues growing?
- ❖ Is the company actually making a profit?
- ❖ Can the company beat its competitors in the future?
- ❖ Will the company's stock be a good investment?

PROCESSING

START DATE: 5 May, 2012
END DATE: 20 April, 2018
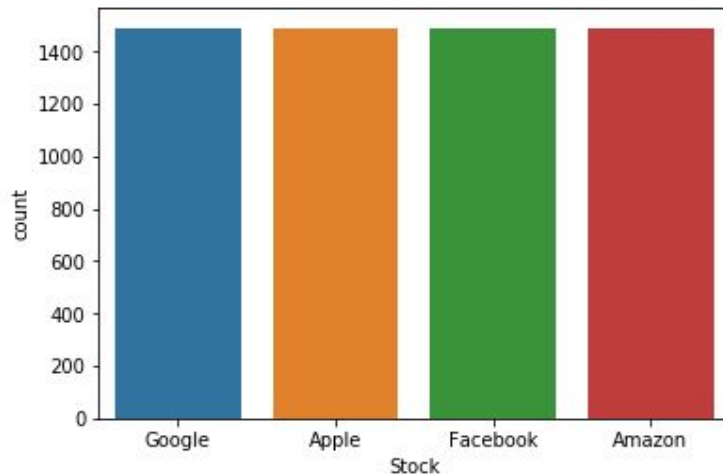

Before setting the start date to be equal

```
Apple       9420
Amazon      5268
Google      3442
Facebook    1490
Name: Stock, dtype: int64
```
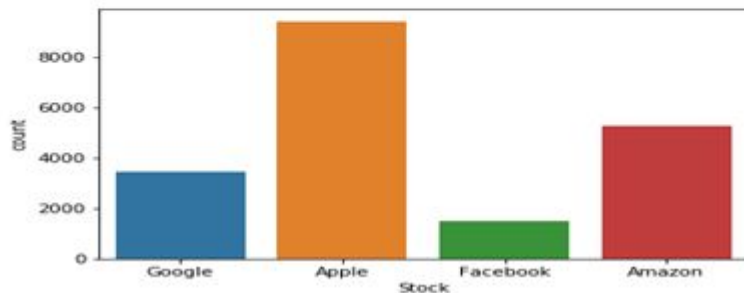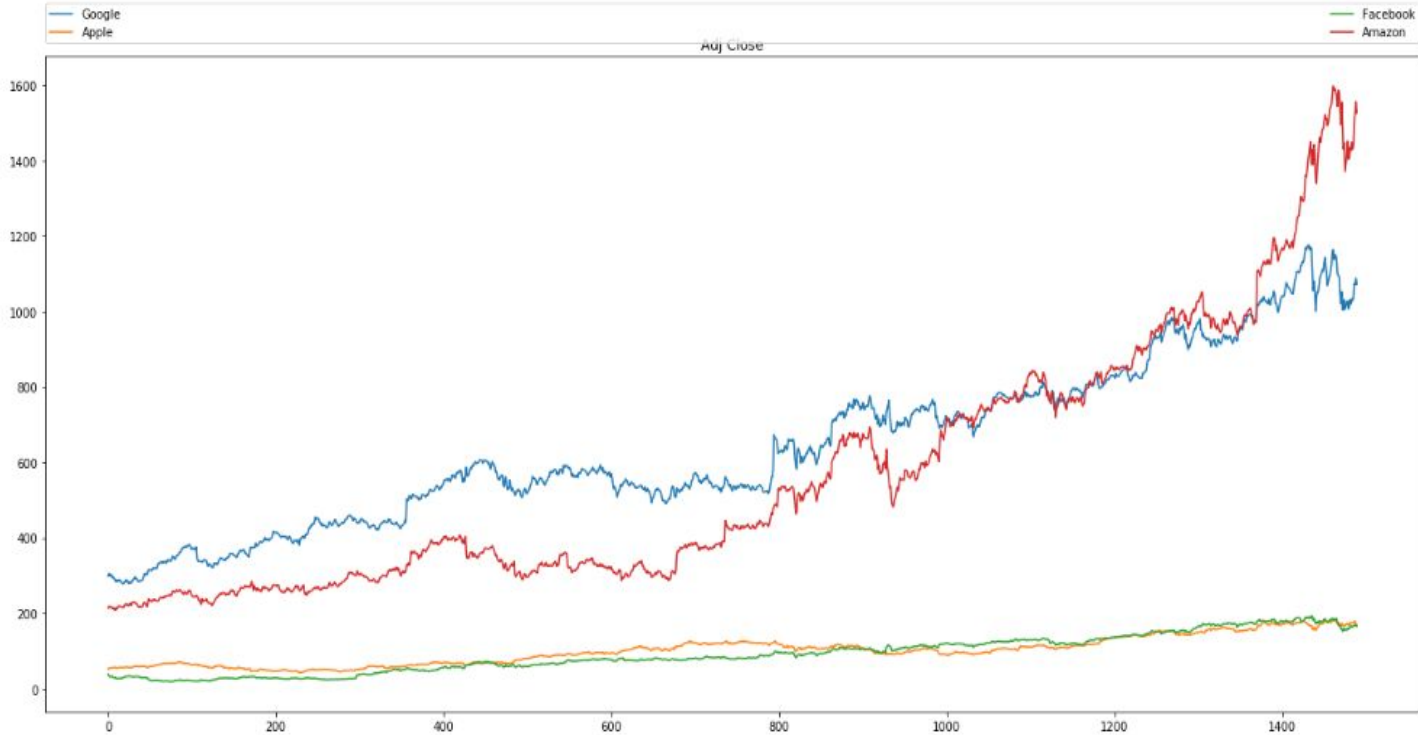
After setting the start date to be equal

```
Apple       1490
Facebook    1490
Amazon      1490
Google      1490
Name: Stock, dtype: int64
```

EXPLORATORY ANALYSIS

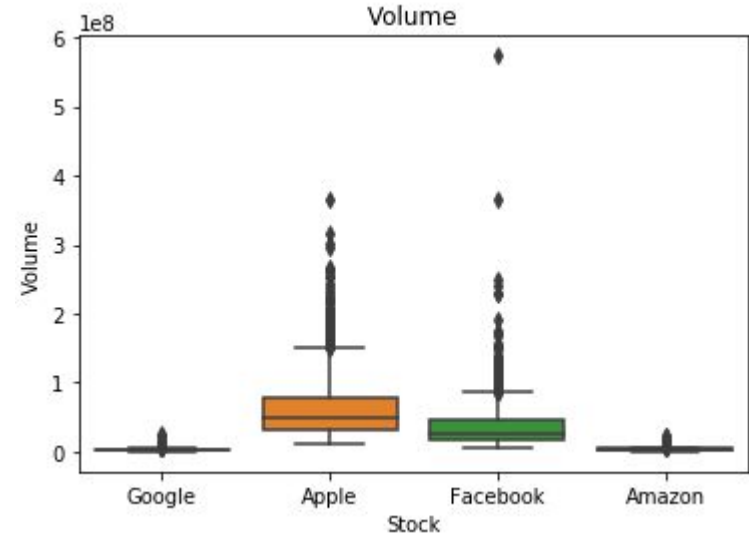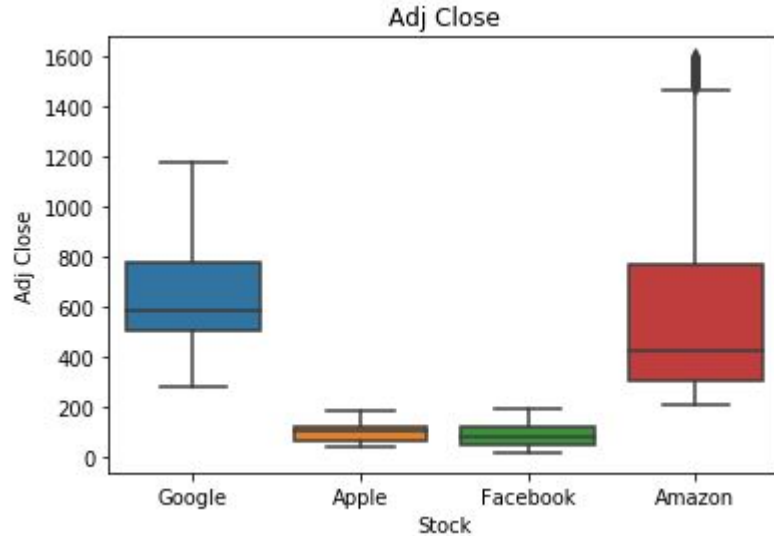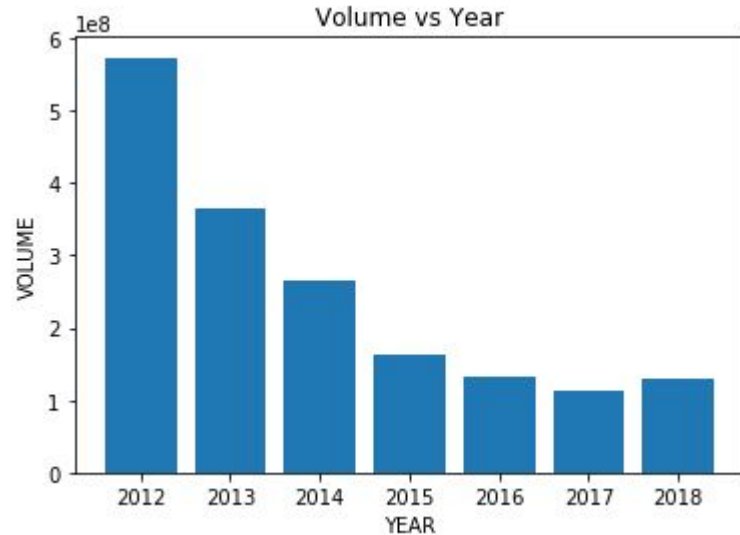➤ Line Chart to show the pattern in the "Adj Close" for all four companies
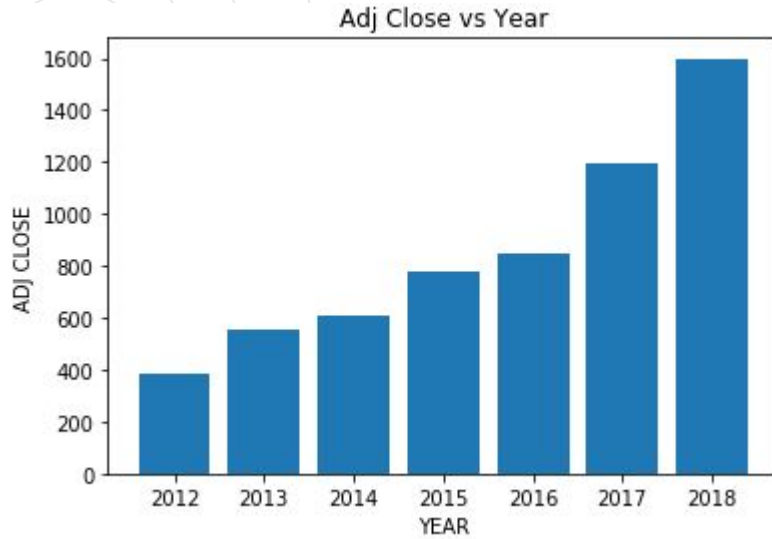

PRICE CHART

EXPLORATORY ANALYSIS

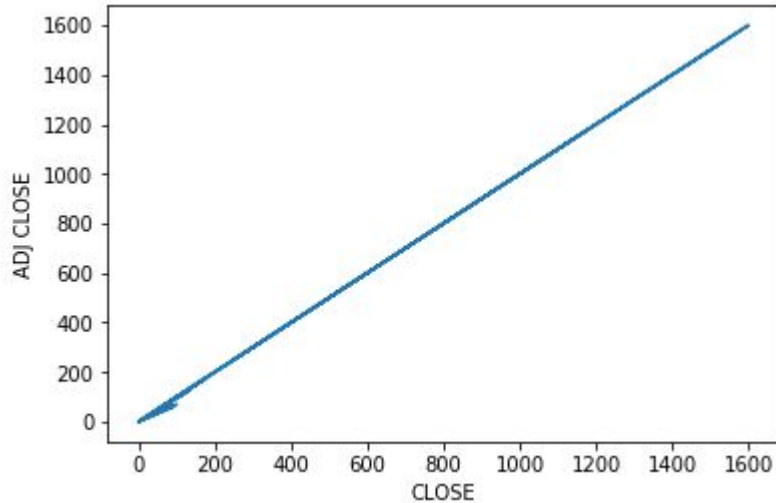➢ Box Plot to show the spread of data points in the dataset

EXPLORATORY ANALYSIS

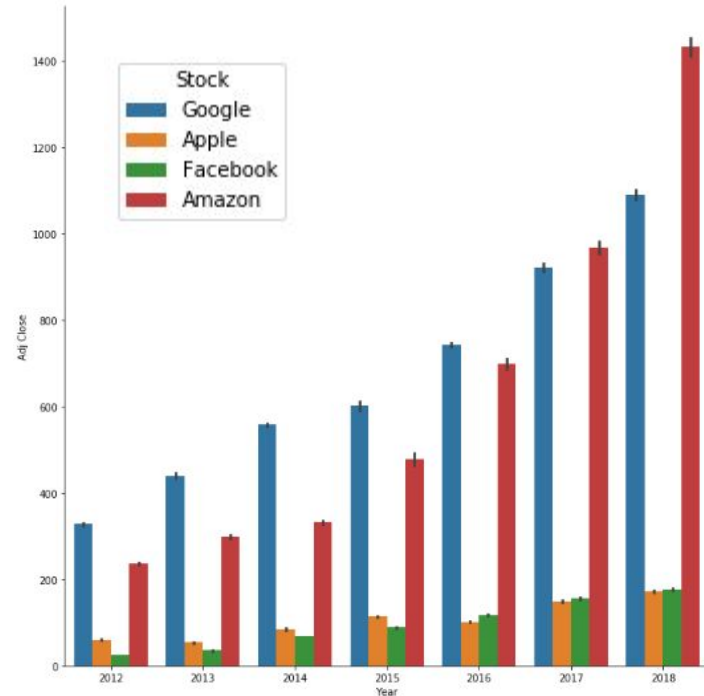➢ Bar Graphs where the cumulative "Adj Close" and "Volume" are plotted against "Year"

EXPLORATORY ANALYSIS

➢ Comparison between "Close" and "Adj Close"
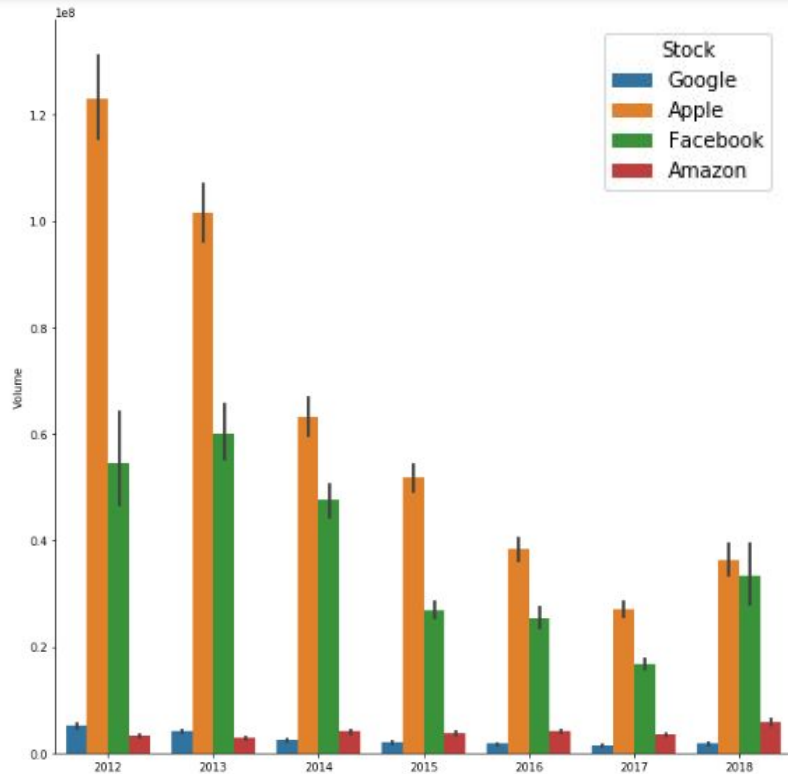
➢ Grouped Bar Chart

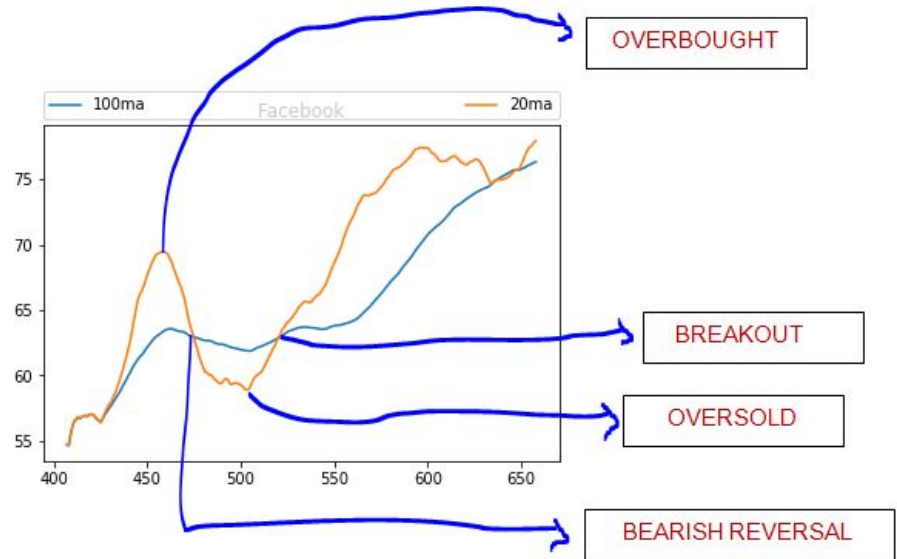"Adj Close" is plotted againt the "Year" for each stock

EXPLORATORY ANALYSIS
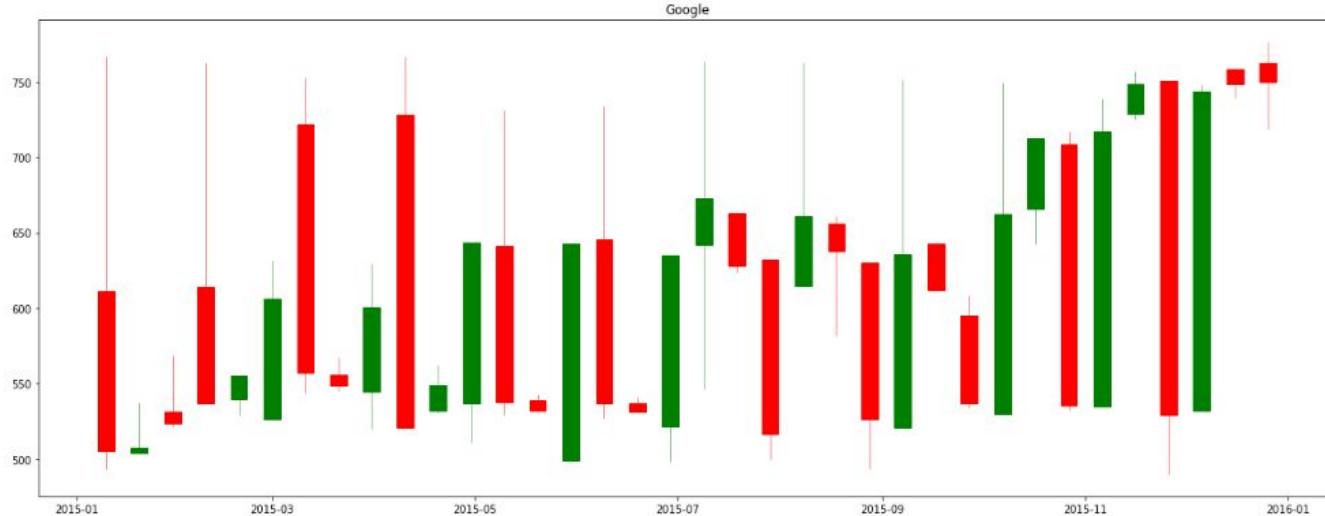
➤ Grouped Bar Chart- "Year" vs "Volume"

➤ Line Chart - Moving Average

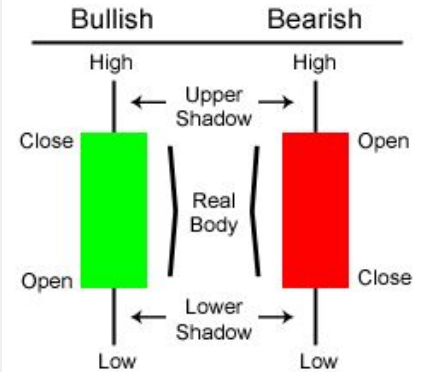
→ Reduces Noise
→ Helps us analyse patterns
→ Shows when the stocks were overbought and oversold
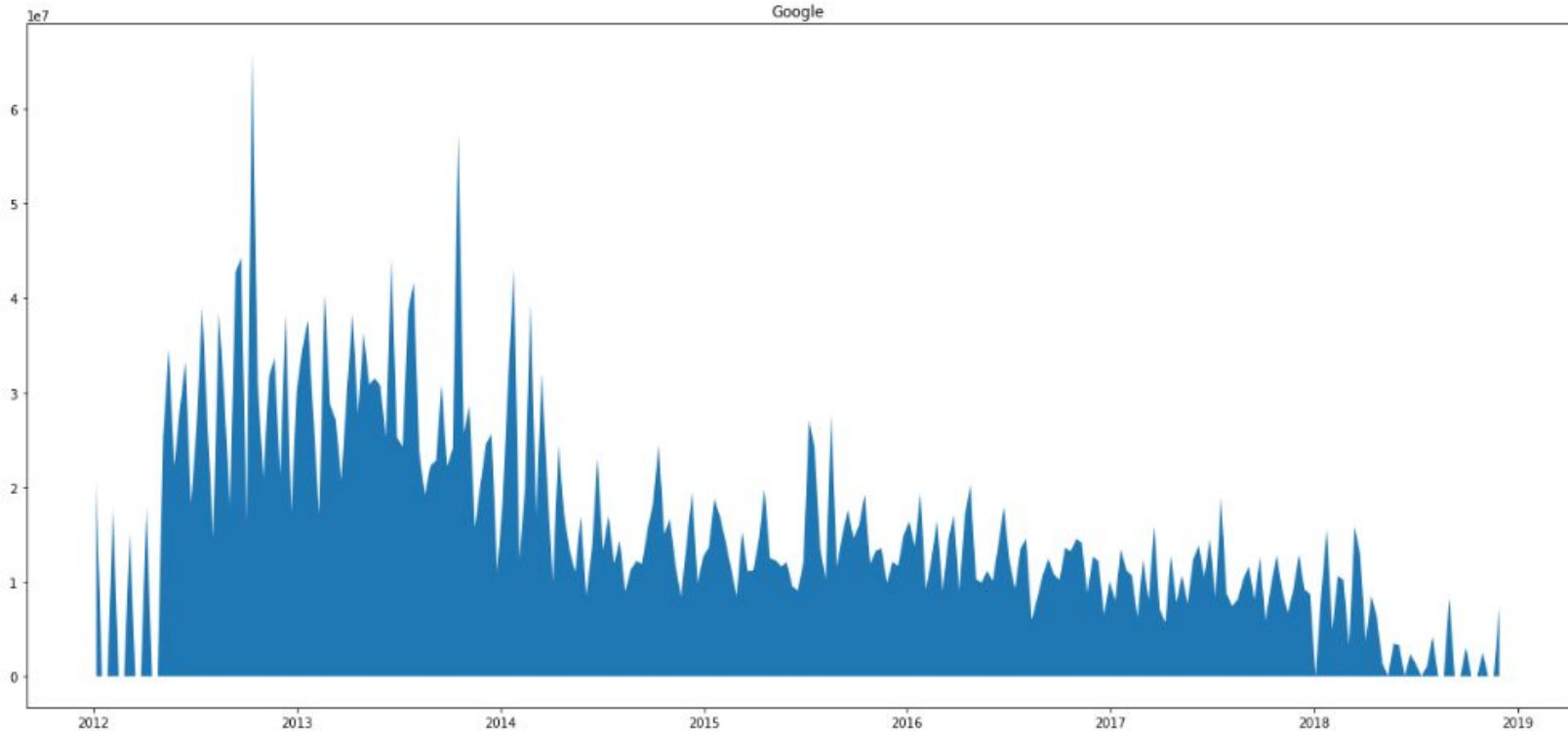
EXPLORATORY ANALYSIS

➤ Candlestick Analysis

→ Plots the open, high, low and close for each stock on a single bar.
→ Traders prefer candlestick graph because it is easy to decipher

EXPLORATORY ANALYSIS

➢ Filled Graph to show the variation in "Volume" for Google

EXPLORATORY ANALYSIS

➤ Heatmap

	Google	Apple	Facebook	Amazon
Google	1.000000	0.897827	0.975899	0.958161
Apple	0.897827	1.000000	0.933357	0.872446
Facebook	0.975899	0.933357	1.000000	0.935887
Amazon	0.958161	0.872446	0.935887	1.000000

→ Plotted using the correlation values of the "Adj Close" values for all four stocks
→ Helps us figure out which stock has maximum correlation
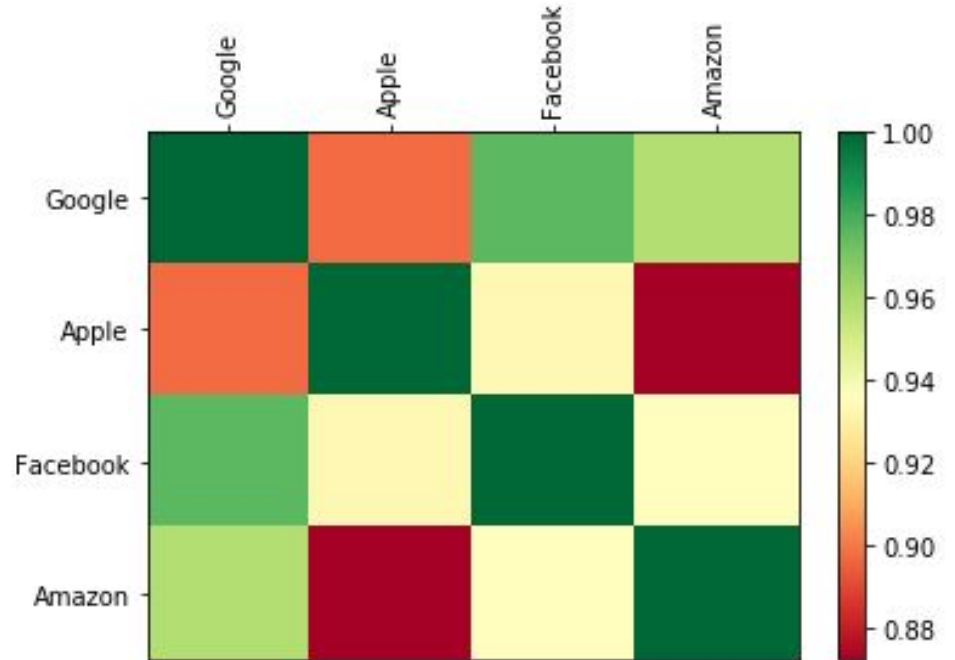
Conclusion

It can be concluded that seeing the overall trends investing in Amazon would have the best forecasted medium to long term gains, followed closely by Google.

THANK YOU!

Credits

Special thanks to **Preet ma'am** for giving us this assignment that helped us push our boundaries and dive deeper into the world of Data Science.