In [1]:
```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
```

In [3]:
```
# using glob - package for reading files with special extension
```

In [3]:
```
import glob
```

In [ ]:
```
glob.glob(r'C:\Users\me\Downloads\S&P_resources (1)\individual_stocks_5yr/*csv')
```

In [9]:
```
len(glob.glob(r'C:\Users\me\Downloads\S&P_resources (1)\individual_stocks_5yr/*csv'
```

Out[9]:
```
505
```

In [13]:
```
company_list=[
    r'C:\\Users\\me\\Downloads\\S&P_resources (1)\\individual_stocks_5yr\\AAPL_data
    r'C:\\Users\\me\\Downloads\\S&P_resources (1)\\individual_stocks_5yr\\AMZN_data
    r'C:\\Users\\me\\Downloads\\S&P_resources (1)\\individual_stocks_5yr\\GOOG_data
    r'C:\\Users\\me\\Downloads\\S&P_resources (1)\\individual_stocks_5yr\\MSFT_data
]
```

In [31]:
```
import warnings
from warnings import filterwarnings
filterwarnings('ignore')
```

In [35]:
```
all_data=[]

for file in company_list:
    current_df=pd.read_csv(file)
    all_data.append(current_df)
all_data=pd.concat(all_data,ignore_index=True)
```

In [37]:
```
all_data
```

Out[37]:

	date	open	high	low	close	volume	Name
0	2013-02-08	67.7142	68.4014	66.8928	67.8542	158168416	AAPL
1	2013-02-11	68.0714	69.2771	67.6071	68.5614	129029425	AAPL
2	2013-02-12	68.5014	68.9114	66.8205	66.8428	151829363	AAPL
3	2013-02-13	66.7442	67.6628	66.1742	66.7156	118721995	AAPL
4	2013-02-14	66.3599	67.3771	66.2885	66.6556	88809154	AAPL
...	...	...	...	...	...	...	...
4747	2018-02-01	94.7900	96.0700	93.5813	94.2600	47227882	MSFT
4748	2018-02-02	93.6400	93.9700	91.5000	91.7800	47867753	MSFT
4749	2018-02-05	90.5600	93.2400	88.0000	88.0000	51031465	MSFT
4750	2018-02-06	86.8900	91.4750	85.2500	91.3300	67998564	MSFT
4751	2018-02-07	90.4900	91.7700	89.2000	89.6100	41107592	MSFT

4752 rows × 7 columns

In [39]:
```
all_data.shape
```

Out[39]: (4752, 7)

In [41]:
```
all_data.head(5)
```

Out[41]:

	date	open	high	low	close	volume	Name
0	2013-02-08	67.7142	68.4014	66.8928	67.8542	158168416	AAPL
1	2013-02-11	68.0714	69.2771	67.6071	68.5614	129029425	AAPL
2	2013-02-12	68.5014	68.9114	66.8205	66.8428	151829363	AAPL
3	2013-02-13	66.7442	67.6628	66.1742	66.7156	118721995	AAPL
4	2013-02-14	66.3599	67.3771	66.2885	66.6556	88809154	AAPL

In [43]:
```
all_data['Name'].unique()
```

Out[43]: array(['AAPL', 'AMZN', 'GOOG', 'MSFT'], dtype=object)

In [45]:
```
all_data.isnull()
```

Out[45]:

	date	open	high	low	close	volume	Name
0	False	False	False	False	False	False	False
1	False	False	False	False	False	False	False
2	False	False	False	False	False	False	False
3	False	False	False	False	False	False	False
4	False	False	False	False	False	False	False
...	...	...	...	...	...	...	...
4747	False	False	False	False	False	False	False
4748	False	False	False	False	False	False	False
4749	False	False	False	False	False	False	False
4750	False	False	False	False	False	False	False
4751	False	False	False	False	False	False	False

4752 rows × 7 columns

In [47]:
```
all_data.isnull().sum()
```

Out[47]:
```
date      0
open      0
high      0
low       0
close     0
volume    0
Name      0
dtype: int64
```

In [49]:
```
all_data.dtypes
```

Out[49]:
```
date       object
open      float64
high      float64
low       float64
close     float64
volume      int64
Name       object
dtype: object
```

In [53]:
```
all_data['date']=pd.to_datetime(all_data['date'])
```

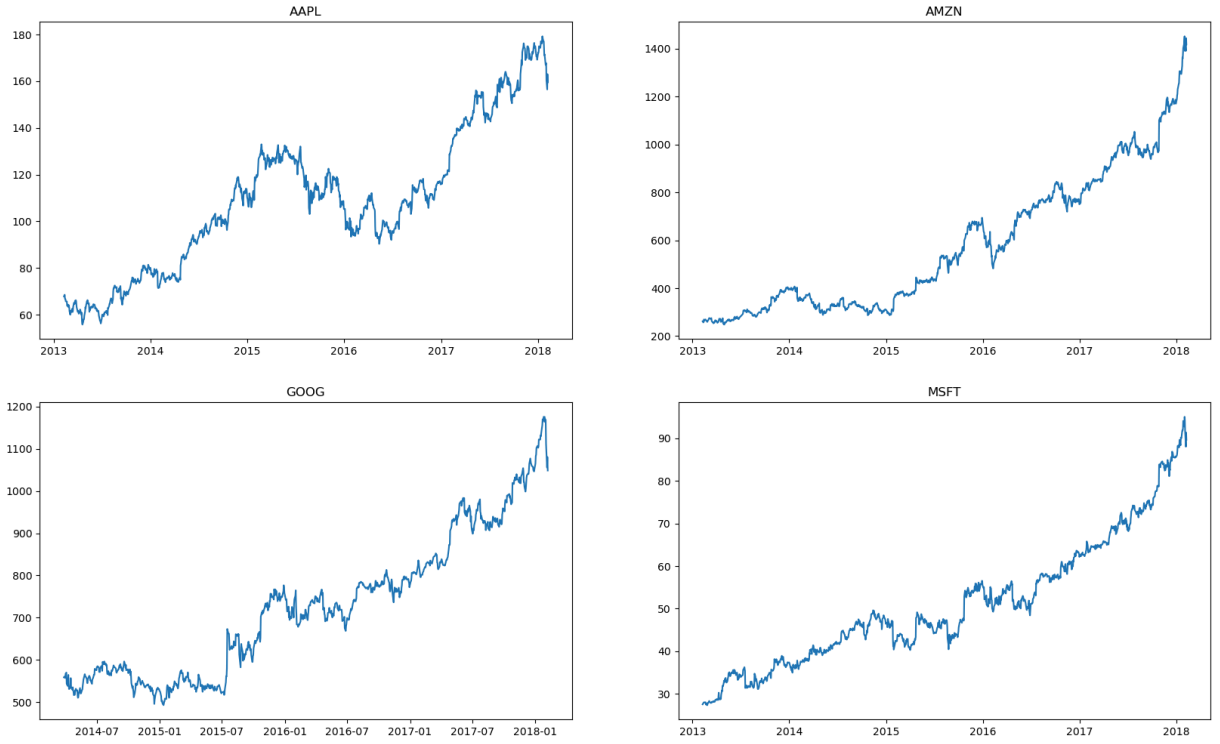
In [55]:
```
all_data['date']
```

Out[55]:
```
0       2013-02-08
1       2013-02-11
2       2013-02-12
3       2013-02-13
4       2013-02-14
           ...
4747    2018-02-01
4748    2018-02-02
4749    2018-02-05
4750    2018-02-06
4751    2018-02-07
Name: date, Length: 4752, dtype: datetime64[ns]
```

In [57]:
```
tech_list=all_data['Name'].unique()
```

In [ ]:
```
#Analysing change in price of the stock overtime !
```

In [71]:
```
plt.figure(figsize=(20,12))
for index,company in enumerate(tech_list,1):
    plt.subplot(2,2,index)
    filter1=all_data['Name']==company
    df=all_data[filter1]
    plt.plot(df['date'],df['close'])
    plt.title(company)
```



In [ ]:
```
# Analysing moving average of the various stocks !
```

In [ ]:
```
#moving average - statistic avg change in a data in some [a,b] interval
```

In [80]:
```
all_data.head(15)
```

Out[80]:

	date	open	high	low	close	volume	Name
0	2013-02-08	67.7142	68.4014	66.8928	67.8542	158168416	AAPL
1	2013-02-11	68.0714	69.2771	67.6071	68.5614	129029425	AAPL
2	2013-02-12	68.5014	68.9114	66.8205	66.8428	151829363	AAPL
3	2013-02-13	66.7442	67.6628	66.1742	66.7156	118721995	AAPL
4	2013-02-14	66.3599	67.3771	66.2885	66.6556	88809154	AAPL
5	2013-02-15	66.9785	67.1656	65.7028	65.7371	97924631	AAPL
6	2013-02-19	65.8714	66.1042	64.8356	65.7128	108854046	AAPL
7	2013-02-20	65.3842	65.3842	64.1142	64.1214	118891367	AAPL
8	2013-02-21	63.7142	64.1671	63.2599	63.7228	111596821	AAPL
9	2013-02-22	64.1785	64.5142	63.7999	64.4014	82583823	AAPL
10	2013-02-25	64.8356	65.0171	63.2242	63.2571	92899597	AAPL
11	2013-02-26	63.4028	64.5056	62.5228	64.1385	125096657	AAPL
12	2013-02-27	64.0614	64.6342	62.9499	63.5099	146674682	AAPL
13	2013-02-28	63.4357	63.9814	63.0571	63.0571	80532382	AAPL
14	2013-03-01	62.5714	62.5971	61.4257	61.4957	137899041	AAPL

In [89]:
```
all_data['close'].rolling(window=10).mean().head(14)
```

Out[89]:
```
0          NaN
1          NaN
2          NaN
3          NaN
4          NaN
5          NaN
6          NaN
7          NaN
8          NaN
9     66.03251
10    65.57280
11    65.13051
12    64.79722
13    64.43137
Name: close, dtype: float64
```

In [91]:
```
new_data=all_data.copy()
```

In [95]:
```
ma_day=[10,20,50]
for ma in ma_day:
    new_data['close_'+str(ma)]=new_data['close'].rolling(ma).mean()
```

In [97]:
```
new_data
```

Out[97]:

	date	open	high	low	close	volume	Name	close_10	close_20	clo
0	2013-02-08	67.7142	68.4014	66.8928	67.8542	158168416	AAPL	NaN	NaN	
1	2013-02-11	68.0714	69.2771	67.6071	68.5614	129029425	AAPL	NaN	NaN	
2	2013-02-12	68.5014	68.9114	66.8205	66.8428	151829363	AAPL	NaN	NaN	
3	2013-02-13	66.7442	67.6628	66.1742	66.7156	118721995	AAPL	NaN	NaN	
4	2013-02-14	66.3599	67.3771	66.2885	66.6556	88809154	AAPL	NaN	NaN	
...	...	...	...	...	...	...	...	...	...	
4747	2018-02-01	94.7900	96.0700	93.5813	94.2600	47227882	MSFT	92.765	90.6770	86
4748	2018-02-02	93.6400	93.9700	91.5000	91.7800	47867753	MSFT	92.943	90.9105	87
4749	2018-02-05	90.5600	93.2400	88.0000	88.0000	51031465	MSFT	92.582	90.9010	87
4750	2018-02-06	86.8900	91.4750	85.2500	91.3300	67998564	MSFT	92.525	91.0535	87
4751	2018-02-07	90.4900	91.7700	89.2000	89.6100	41107592	MSFT	92.304	91.1230	87

4752 rows × 10 columns

In [99]:
```
new_data.tail(7)
```

Out[99]:

	date	open	high	low	close	volume	Name	close_10	close_20	close_50
4745	2018-01-30	93.30	93.660	92.1000	92.74	38635053	MSFT	91.862	89.8285	86.5244
4746	2018-01-31	93.75	95.400	93.5100	95.01	48756338	MSFT	92.349	90.2815	86.7606
4747	2018-02-01	94.79	96.070	93.5813	94.26	47227882	MSFT	92.765	90.6770	86.9978
4748	2018-02-02	93.64	93.970	91.5000	91.78	47867753	MSFT	92.943	90.9105	87.1828
4749	2018-02-05	90.56	93.240	88.0000	88.00	51031465	MSFT	92.582	90.9010	87.2684
4750	2018-02-06	86.89	91.475	85.2500	91.33	67998564	MSFT	92.525	91.0535	87.4328
4751	2018-02-07	90.49	91.770	89.2000	89.61	41107592	MSFT	92.304	91.1230	87.5598

In [ ]:
```
#window10 higher change in values and vice versa
```

In [101…
```
new_data.set_index('date',inplace=True)
```

In [105…
```
new_data
```

Out[105…

date	open	high	low	close	volume	Name	close_10	close_20	close_50
2013-02-08	67.7142	68.4014	66.8928	67.8542	158168416	AAPL	NaN	NaN	NaN
2013-02-11	68.0714	69.2771	67.6071	68.5614	129029425	AAPL	NaN	NaN	NaN
2013-02-12	68.5014	68.9114	66.8205	66.8428	151829363	AAPL	NaN	NaN	NaN
2013-02-13	66.7442	67.6628	66.1742	66.7156	118721995	AAPL	NaN	NaN	NaN
2013-02-14	66.3599	67.3771	66.2885	66.6556	88809154	AAPL	NaN	NaN	NaN
…	…	…	…	…	…	…	…	…	…
2018-02-01	94.7900	96.0700	93.5813	94.2600	47227882	MSFT	92.765	90.6770	86.9978
2018-02-02	93.6400	93.9700	91.5000	91.7800	47867753	MSFT	92.943	90.9105	87.1828
2018-02-05	90.5600	93.2400	88.0000	88.0000	51031465	MSFT	92.582	90.9010	87.2684
2018-02-06	86.8900	91.4750	85.2500	91.3300	67998564	MSFT	92.525	91.0535	87.4328
2018-02-07	90.4900	91.7700	89.2000	89.6100	41107592	MSFT	92.304	91.1230	87.5598

4752 rows × 9 columns

In [109…

```
plt.figure(figsize=(20,15))
for index,company in enumerate(tech_list,1):
    plt.subplot(2,2,index)
    filter1=new_data['Name']==company
    df=new_data[filter1]
    df[['close_10','close_20','close_50']].plot(ax=plt.gca()) #get current axis
    plt.title(company)
```

In [ ]:
```
#Observing Closing price change in Apple stock !
```

In [111…
```
company_list
```

Out[111…
```
['C:\\\\Users\\\\me\\\\Downloads\\\\S&P_resources (1)\\\\individual_stocks_5yr
\\\\AAPL_data.csv',
 'C:\\\\Users\\\\me\\\\Downloads\\\\S&P_resources (1)\\\\individual_stocks_5yr
\\\\AMZN_data.csv',
 'C:\\\\Users\\\\me\\\\Downloads\\\\S&P_resources (1)\\\\individual_stocks_5yr
\\\\GOOG_data.csv',
 'C:\\\\Users\\\\me\\\\Downloads\\\\S&P_resources (1)\\\\individual_stocks_5yr
\\\\MSFT_data.csv']
```

In [113…
```
apple=pd.read_csv(r'C:\\\\Users\\\\me\\\\Downloads\\\\S&P_resources (1)\\\\individu
```

In [115…
```
apple
```

Out[115...

	date	open	high	low	close	volume	Name
0	2013-02-08	67.7142	68.4014	66.8928	67.8542	158168416	AAPL
1	2013-02-11	68.0714	69.2771	67.6071	68.5614	129029425	AAPL
2	2013-02-12	68.5014	68.9114	66.8205	66.8428	151829363	AAPL
3	2013-02-13	66.7442	67.6628	66.1742	66.7156	118721995	AAPL
4	2013-02-14	66.3599	67.3771	66.2885	66.6556	88809154	AAPL
...	...	...	...	...	...	...	...
1254	2018-02-01	167.1650	168.6200	166.7600	167.7800	47230787	AAPL
1255	2018-02-02	166.0000	166.8000	160.1000	160.5000	86593825	AAPL
1256	2018-02-05	159.1000	163.8800	156.0000	156.4900	72738522	AAPL
1257	2018-02-06	154.8300	163.7200	154.0000	163.0300	68243838	AAPL
1258	2018-02-07	163.0850	163.4000	159.0685	159.5400	51608580	AAPL

1259 rows × 7 columns

In [117...
```
apple.head(5)
```

Out[117...

	date	open	high	low	close	volume	Name
0	2013-02-08	67.7142	68.4014	66.8928	67.8542	158168416	AAPL
1	2013-02-11	68.0714	69.2771	67.6071	68.5614	129029425	AAPL
2	2013-02-12	68.5014	68.9114	66.8205	66.8428	151829363	AAPL
3	2013-02-13	66.7442	67.6628	66.1742	66.7156	118721995	AAPL
4	2013-02-14	66.3599	67.3771	66.2885	66.6556	88809154	AAPL

In [129...
```
apple['Daily return(in %)']=apple['close'].pct_change()*100
```

In [145...
```
apple.head(4)
```

Out[145…

	date	open	high	low	close	volume	Name	Daily return(in %)
0	2013-02-08	67.7142	68.4014	66.8928	67.8542	158168416	AAPL	NaN
1	2013-02-11	68.0714	69.2771	67.6071	68.5614	129029425	AAPL	1.042235
2	2013-02-12	68.5014	68.9114	66.8205	66.8428	151829363	AAPL	-2.506658
3	2013-02-13	66.7442	67.6628	66.1742	66.7156	118721995	AAPL	-0.190297

In [123…
```
import plotly.express as px
```

In [143…
```
apple = apple.drop('Daily return(in%)', axis=1)
```

In [133…
```
px.line(apple,x="date",y="Daily return(in %)")
```

In [ ]:
```
#Performing resampling Analysis of closing price..
```

In [147…
```
apple.dtypes
```

Out[147…
```
date                   object
open                  float64
high                  float64
low                   float64
close                 float64
volume                  int64
Name                   object
Daily return(in %)    float64
dtype: object
```

In [149…
```
apple['date']=pd.to_datetime(apple['date'])
```

In [153…
```
apple.dtypes
```

Out[153…
```
date                  datetime64[ns]
open                         float64
high                         float64
low                          float64
close                        float64
volume                         int64
Name                          object
Daily return(in %)           float64
dtype: object
```

In [155…
```
apple.head(4)
```

Out[155…

	date	open	high	low	close	volume	Name	Daily return(in %)
0	2013-02-08	67.7142	68.4014	66.8928	67.8542	158168416	AAPL	NaN
1	2013-02-11	68.0714	69.2771	67.6071	68.5614	129029425	AAPL	1.042235
2	2013-02-12	68.5014	68.9114	66.8205	66.8428	151829363	AAPL	-2.506658
3	2013-02-13	66.7442	67.6628	66.1742	66.7156	118721995	AAPL	-0.190297

In [157…
```
apple.set_index('date',inplace=True)
```

In [159…
```
apple.head(4)
```

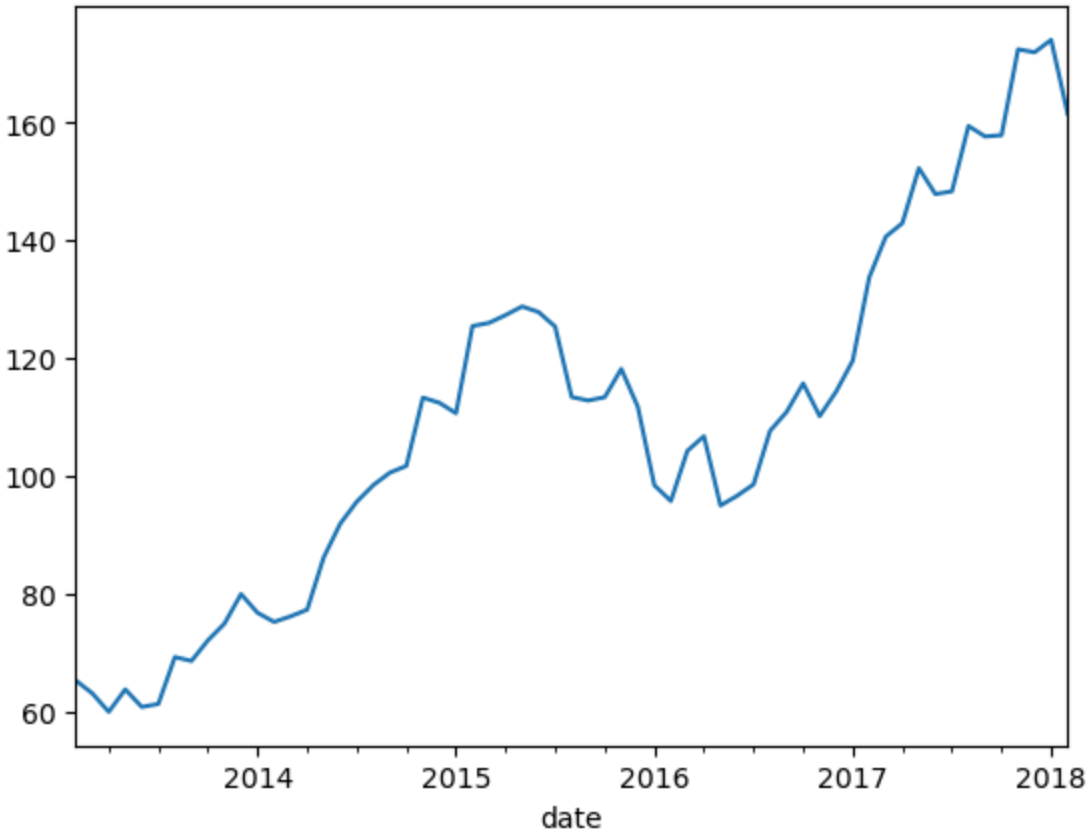
Out[159…

date	open	high	low	close	volume	Name	Daily return(in %)
2013-02-08	67.7142	68.4014	66.8928	67.8542	158168416	AAPL	NaN
2013-02-11	68.0714	69.2771	67.6071	68.5614	129029425	AAPL	1.042235
2013-02-12	68.5014	68.9114	66.8205	66.8428	151829363	AAPL	-2.506658
2013-02-13	66.7442	67.6628	66.1742	66.7156	118721995	AAPL	-0.190297

In [ ]:
```
#average closing price on monthly basis
```

In [161…
```
apple['close'].resample('M').mean().plot()
```

Out[161…
```
<Axes: xlabel='date'>
```

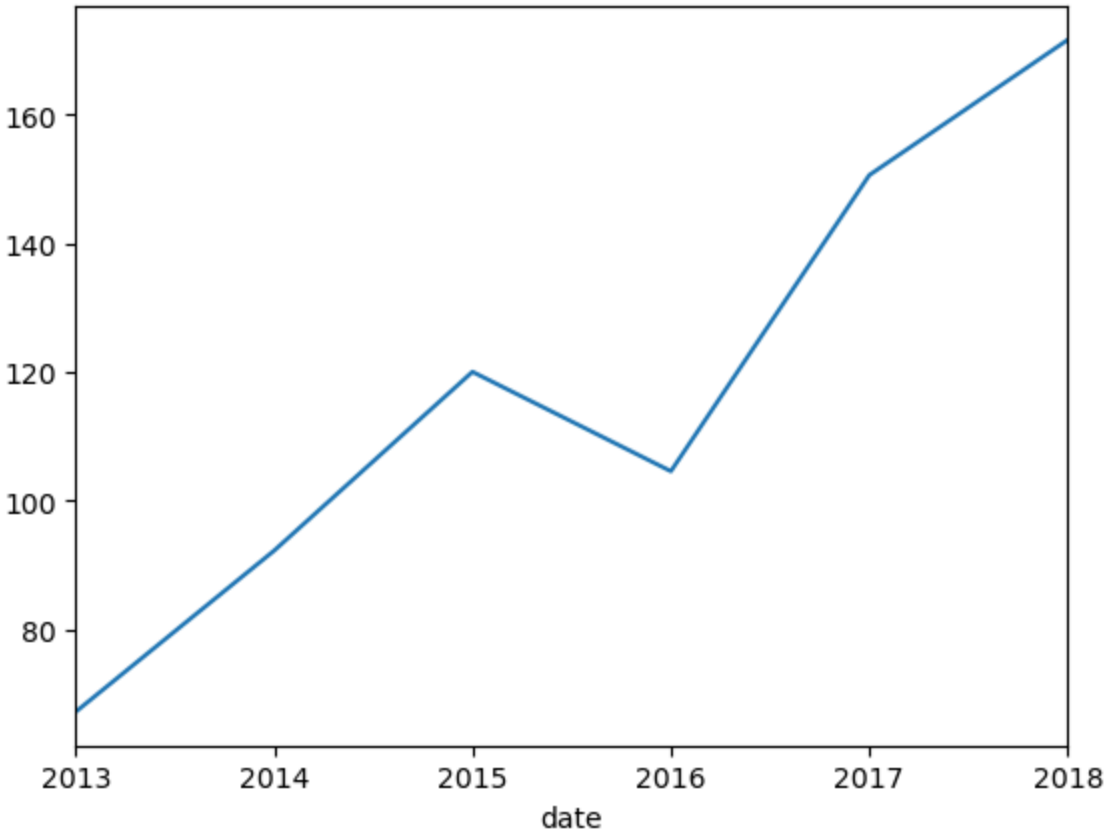


In [163…
```
apple['close'].resample('Y').mean()
```

Out[163…
```
date
2013-12-31     67.237839
2014-12-31     92.264531
2015-12-31    120.039861
2016-12-31    104.604008
2017-12-31    150.585080
2018-12-31    171.594231
Freq: YE-DEC, Name: close, dtype: float64
```

In [165…
```
apple['close'].resample('Y').mean().plot()
```

Out[165…
```
<Axes: xlabel='date'>
```

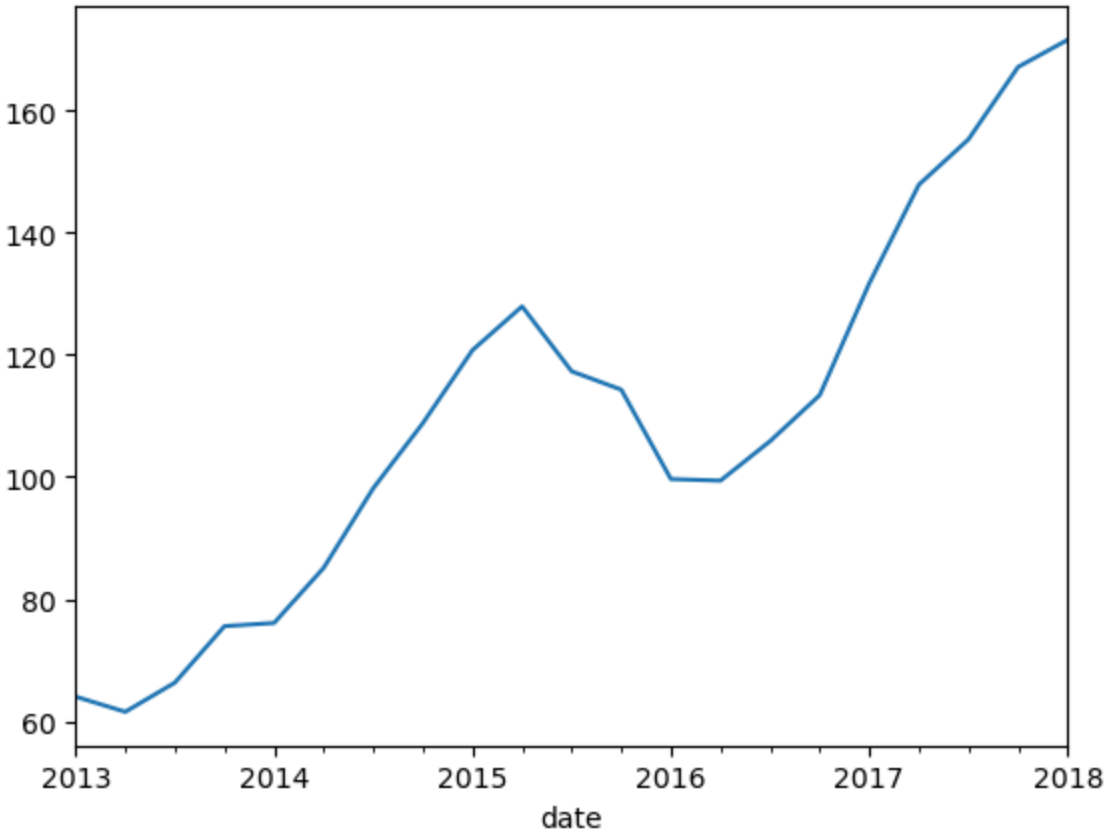


In [167…
```
apple['close'].resample('Q').mean()
```

Out[167…
```
date
2013-03-31     64.020291
2013-06-30     61.534692
2013-09-30     66.320670
2013-12-31     75.567478
2014-03-31     76.086293
2014-06-30     85.117475
2014-09-30     98.163311
2014-12-31    108.821016
2015-03-31    120.776721
2015-06-30    127.937937
2015-09-30    117.303438
2015-12-31    114.299297
2016-03-31     99.655082
2016-06-30     99.401250
2016-09-30    105.866094
2016-12-31    113.399048
2017-03-31    131.712500
2017-06-30    147.875397
2017-09-30    155.304603
2017-12-31    167.148254
2018-03-31    171.594231
Freq: QE-DEC, Name: close, dtype: float64
```

In [169…
```
apple['close'].resample('Q').mean().plot()
```

Out[169…
```
<Axes: xlabel='date'>
```



In [ ]:
```
#Checking if the closing prices of these tech companies (amazon,apple,googlec,micro
```

In [171…
```
company_list[0]
```

Out[171…
```
'C:\\\\Users\\\\me\\\\Downloads\\\\S&P_resources (1)\\\\individual_stocks_5yr\\\\AAPL_data.csv'
```

In [185…
```
app=pd.read_csv(company_list[0])
amzn=pd.read_csv(company_list[1])
google=pd.read_csv(company_list[2])
msft=pd.read_csv(company_list[3])
```

In [187…
```
closing_price=pd.DataFrame() #defining blank dataframe
```

In [189…
```
closing_price['apple_close']=app['close']
closing_price['amzn_close']=amzn['close']
closing_price['goog_close']=google['close']
closing_price['msft_close']=msft['close']
```

In [191…
```
closing_price
```

Out[191…

	apple_close	amzn_close	goog_close	msft_close
0	67.8542	261.95	558.46	27.55
1	68.5614	257.21	559.99	27.86
2	66.8428	258.70	556.97	27.88
3	66.7156	269.47	567.16	28.03
4	66.6556	269.24	567.00	28.04
…	…	…	…	…
1254	167.7800	1390.00	NaN	94.26
1255	160.5000	1429.95	NaN	91.78
1256	156.4900	1390.00	NaN	88.00
1257	163.0300	1442.84	NaN	91.33
1258	159.5400	1416.78	NaN	89.61

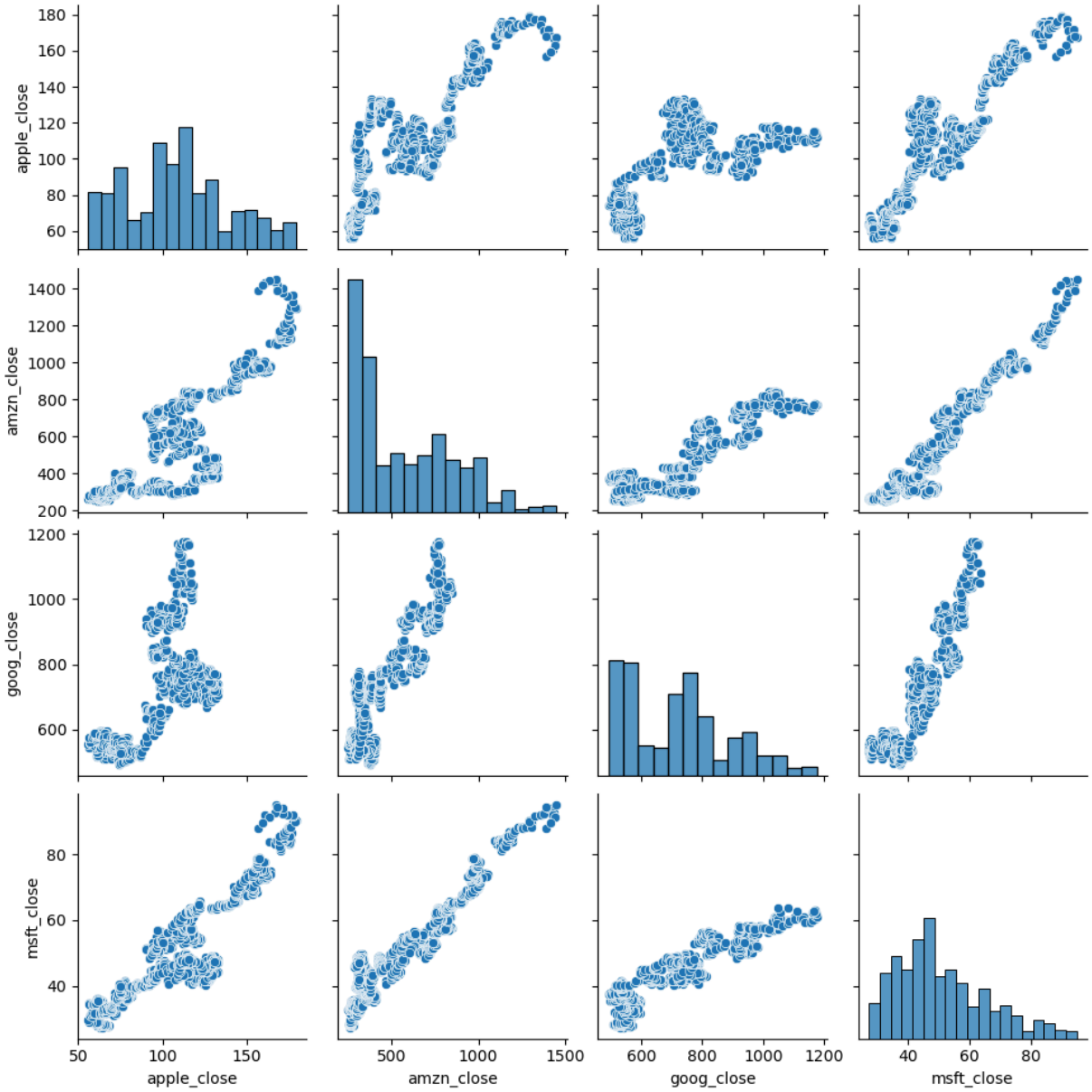
1259 rows × 4 columns

In [193…

```
sns.pairplot(closing_price)
```

Out[193…

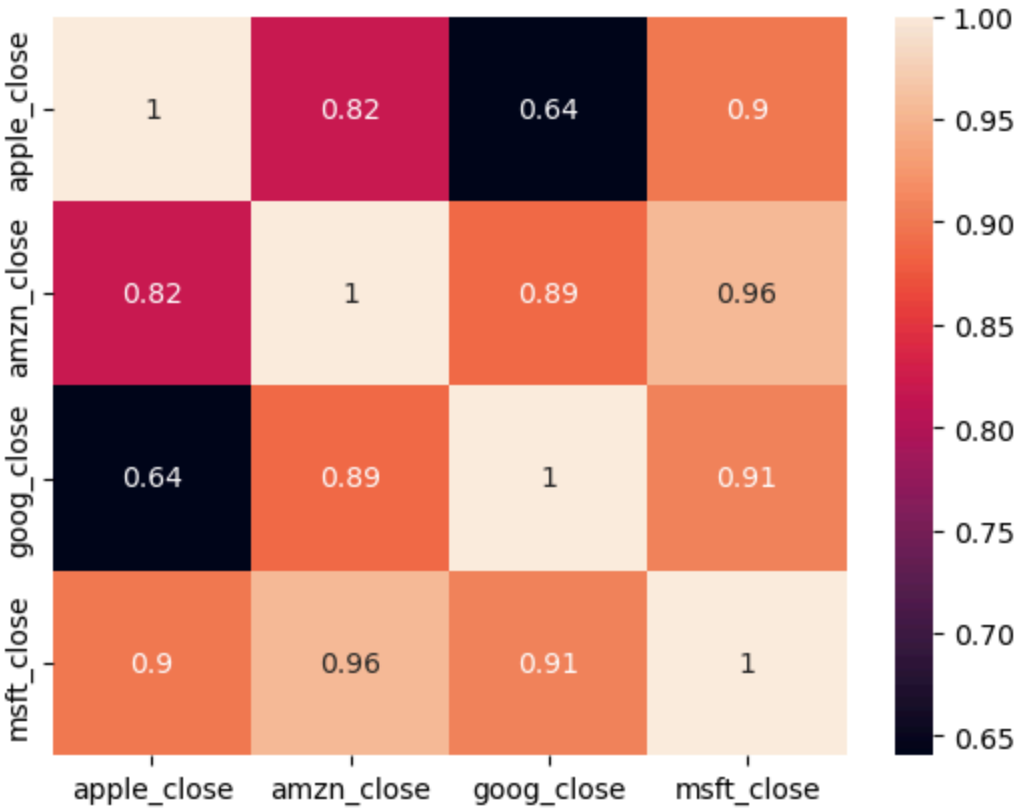
```
<seaborn.axisgrid.PairGrid at 0x284f0c268a0>
```



In [ ]:
```
# if amazon closed price inc then microsoft also inc they ahving strline graph
```

In [195…
```
sns.heatmap(closing_price.corr(),annot=True)
```

Out[195…
```
<Axes: >
```



In [ ]:
```
#Lighter the color higher the correlation
```

In [ ]:
```
#Analyze whether daily change in closing price of stocks or Daily return in stock a
```

In [197…
```
closing_price
```

Out[197…

	apple_close	amzn_close	goog_close	msft_close
0	67.8542	261.95	558.46	27.55
1	68.5614	257.21	559.99	27.86
2	66.8428	258.70	556.97	27.88
3	66.7156	269.47	567.16	28.03
4	66.6556	269.24	567.00	28.04
...	...	...	...	...
1254	167.7800	1390.00	NaN	94.26
1255	160.5000	1429.95	NaN	91.78
1256	156.4900	1390.00	NaN	88.00
1257	163.0300	1442.84	NaN	91.33
1258	159.5400	1416.78	NaN	89.61

1259 rows × 4 columns

In [199…
```
closing_price['apple_close']
```

Out[199…
```
0        67.8542
1        68.5614
2        66.8428
3        66.7156
4        66.6556
          ...
1254    167.7800
1255    160.5000
1256    156.4900
1257    163.0300
1258    159.5400
Name: apple_close, Length: 1259, dtype: float64
```

In [201…
```
closing_price['apple_close'].shift(1)
```

Out[201…
```
0           NaN
1       67.8542
2       68.5614
3       66.8428
4       66.7156
          ...
1254    167.4300
1255    167.7800
1256    160.5000
1257    156.4900
1258    163.0300
Name: apple_close, Length: 1259, dtype: float64
```

In [209…
```
(closing_price['apple_close']-closing_price['apple_close'].shift(1))/closing_price[
```

Out[209…
```
0           NaN
1      1.042235
2     -2.506658
3     -0.190297
4     -0.089934
          ...
1254   0.209043
1255  -4.339015
1256  -2.498442
1257   4.179181
1258  -2.140710
Name: apple_close, Length: 1259, dtype: float64
```

In [211…
```
closing_price.columns
```

Out[211…
```
Index(['apple_close', 'amzn_close', 'goog_close', 'msft_close'], dtype='object')
```

In [213…
```
for col in closing_price.columns:
    closing_price[col+'_pct_change']=(closing_price[col]-closing_price[col].shift(1
```

In [215…
```
closing_price
```

Out[215...

	apple_close	amzn_close	goog_close	msft_close	apple_close_pct_change	amzn_close
0	67.8542	261.95	558.46	27.55	NaN	
1	68.5614	257.21	559.99	27.86	1.042235	
2	66.8428	258.70	556.97	27.88	-2.506658	
3	66.7156	269.47	567.16	28.03	-0.190297	
4	66.6556	269.24	567.00	28.04	-0.089934	
...	...	...	...	...	...	
1254	167.7800	1390.00	NaN	94.26	0.209043	
1255	160.5000	1429.95	NaN	91.78	-4.339015	
1256	156.4900	1390.00	NaN	88.00	-2.498442	
1257	163.0300	1442.84	NaN	91.33	4.179181	
1258	159.5400	1416.78	NaN	89.61	-2.140710	

1259 rows × 8 columns

In [217...
```
closing_price.columns
```

Out[217...
```
Index(['apple_close', 'amzn_close', 'goog_close', 'msft_close',
       'apple_close_pct_change', 'amzn_close_pct_change',
       'goog_close_pct_change', 'msft_close_pct_change'],
      dtype='object')
```

In [219...
```
clsing_p=closing_price[[ 'apple_close_pct_change', 'amzn_close_pct_change',
       'goog_close_pct_change', 'msft_close_pct_change']]
```

In [221...
```
clsing_p
```

Out[221…

	apple_close_pct_change	amzn_close_pct_change	goog_close_pct_change	msft_close_pc
0	NaN	NaN	NaN	
1	1.042235	-1.809506	0.273968	
2	-2.506658	0.579293	-0.539295	
3	-0.190297	4.163123	1.829542	
4	-0.089934	-0.085353	-0.028211	
...	...	...	...	
1254	0.209043	-4.196734	NaN	
1255	-4.339015	2.874101	NaN	
1256	-2.498442	-2.793804	NaN	
1257	4.179181	3.801439	NaN	
1258	-2.140710	-1.806160	NaN	

1259 rows × 4 columns

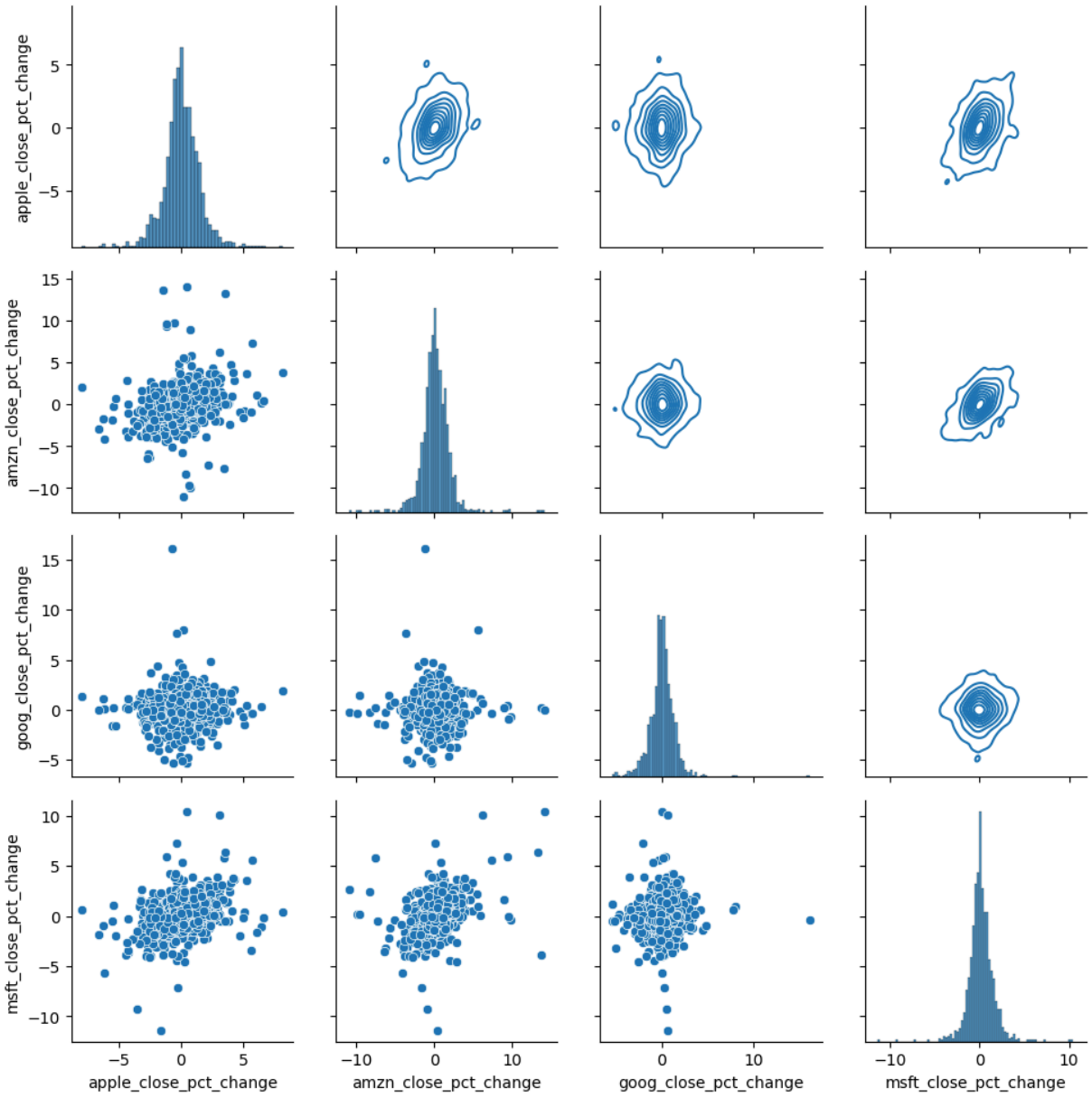
In [ ]:

In [225…

```
g=sns.PairGrid(data=clsing_p)
g.map_diag(sns.histplot)
g.map_lower(sns.scatterplot)
g.map_upper(sns.kdeplot)
```

Out[225…

```
<seaborn.axisgrid.PairGrid at 0x284f2684050>
```



In [227…
```
clsing_p.corr()
```

Out[227…

	apple_close_pct_change	amzn_close_pct_change	goog_close_pct_chai
apple_close_pct_change	1.000000	0.287659	0.036
amzn_close_pct_change	0.287659	1.000000	0.027
goog_close_pct_change	0.036202	0.027698	1.000
msft_close_pct_change	0.366598	0.402678	0.038

In [ ]:
```
#0.402678 if the amazn price decrease then theres 40 % change that msft price also
```

In [2]:
```
pip install nbconvert[webpdf]
```

```
Requirement already satisfied: nbconvert[webpdf] in c:\users\me\anaconda3\lib\site-p
ackages (7.10.0)
Requirement already satisfied: beautifulsoup4 in c:\users\me\anaconda3\lib\site-pack
ages (from nbconvert[webpdf]) (4.12.3)
Requirement already satisfied: bleach!=5.0.0 in c:\users\me\anaconda3\lib\site-packa
ges (from nbconvert[webpdf]) (4.1.0)
Requirement already satisfied: defusedxml in c:\users\me\anaconda3\lib\site-packages
(from nbconvert[webpdf]) (0.7.1)
Requirement already satisfied: jinja2>=3.0 in c:\users\me\anaconda3\lib\site-package
s (from nbconvert[webpdf]) (3.1.4)
Requirement already satisfied: jupyter-core>=4.7 in c:\users\me\anaconda3\lib\site-p
ackages (from nbconvert[webpdf]) (5.7.2)
Requirement already satisfied: jupyterlab-pygments in c:\users\me\anaconda3\lib\site
-packages (from nbconvert[webpdf]) (0.1.2)
Requirement already satisfied: markupsafe>=2.0 in c:\users\me\anaconda3\lib\site-pac
kages (from nbconvert[webpdf]) (2.1.3)
Requirement already satisfied: mistune<4,>=2.0.3 in c:\users\me\anaconda3\lib\site-p
ackages (from nbconvert[webpdf]) (2.0.4)
Requirement already satisfied: nbclient>=0.5.0 in c:\users\me\anaconda3\lib\site-pac
kages (from nbconvert[webpdf]) (0.8.0)
Requirement already satisfied: nbformat>=5.7 in c:\users\me\anaconda3\lib\site-packa
ges (from nbconvert[webpdf]) (5.9.2)
Requirement already satisfied: packaging in c:\users\me\anaconda3\lib\site-packages
(from nbconvert[webpdf]) (23.2)
Requirement already satisfied: pandocfilters>=1.4.1 in c:\users\me\anaconda3\lib\sit
e-packages (from nbconvert[webpdf]) (1.5.0)
Requirement already satisfied: pygments>=2.4.1 in c:\users\me\anaconda3\lib\site-pac
kages (from nbconvert[webpdf]) (2.15.1)
Requirement already satisfied: tinycss2 in c:\users\me\anaconda3\lib\site-packages
(from nbconvert[webpdf]) (1.2.1)
Requirement already satisfied: traitlets>=5.1 in c:\users\me\anaconda3\lib\site-pack
ages (from nbconvert[webpdf]) (5.14.3)
Collecting playwright (from nbconvert[webpdf])
  Downloading playwright-1.48.0-py3-none-win_amd64.whl.metadata (3.5 kB)
Requirement already satisfied: six>=1.9.0 in c:\users\me\anaconda3\lib\site-packages
(from bleach!=5.0.0->nbconvert[webpdf]) (1.16.0)
Requirement already satisfied: webencodings in c:\users\me\anaconda3\lib\site-packag
es (from bleach!=5.0.0->nbconvert[webpdf]) (0.5.1)
Requirement already satisfied: platformdirs>=2.5 in c:\users\me\anaconda3\lib\site-p
ackages (from jupyter-core>=4.7->nbconvert[webpdf]) (3.10.0)
Requirement already satisfied: pywin32>=300 in c:\users\me\anaconda3\lib\site-packag
es (from jupyter-core>=4.7->nbconvert[webpdf]) (305.1)
Requirement already satisfied: jupyter-client>=6.1.12 in c:\users\me\anaconda3\lib\s
ite-packages (from nbclient>=0.5.0->nbconvert[webpdf]) (8.6.0)
Requirement already satisfied: fastjsonschema in c:\users\me\anaconda3\lib\site-pack
ages (from nbformat>=5.7->nbconvert[webpdf]) (2.16.2)
Requirement already satisfied: jsonschema>=2.6 in c:\users\me\anaconda3\lib\site-pac
kages (from nbformat>=5.7->nbconvert[webpdf]) (4.19.2)
Requirement already satisfied: soupsieve>1.2 in c:\users\me\anaconda3\lib\site-packa
ges (from beautifulsoup4->nbconvert[webpdf]) (2.5)
Collecting greenlet==3.1.1 (from playwright->nbconvert[webpdf])
  Downloading greenlet-3.1.1-cp312-cp312-win_amd64.whl.metadata (3.9 kB)
Collecting pyee==12.0.0 (from playwright->nbconvert[webpdf])
  Downloading pyee-12.0.0-py3-none-any.whl.metadata (2.8 kB)
Requirement already satisfied: typing-extensions in c:\users\me\anaconda3\lib\site-p
ackages (from pyee==12.0.0->playwright->nbconvert[webpdf]) (4.11.0)
```

```
Requirement already satisfied: attrs>=22.2.0 in c:\users\me\anaconda3\lib\site-packa
ges (from jsonschema>=2.6->nbformat>=5.7->nbconvert[webpdf]) (23.1.0)
Requirement already satisfied: jsonschema-specifications>=2023.03.6 in c:\users\me\a
naconda3\lib\site-packages (from jsonschema>=2.6->nbformat>=5.7->nbconvert[webpdf])
(2023.7.1)
Requirement already satisfied: referencing>=0.28.4 in c:\users\me\anaconda3\lib\site
-packages (from jsonschema>=2.6->nbformat>=5.7->nbconvert[webpdf]) (0.30.2)
Requirement already satisfied: rpds-py>=0.7.1 in c:\users\me\anaconda3\lib\site-pack
ages (from jsonschema>=2.6->nbformat>=5.7->nbconvert[webpdf]) (0.10.6)
Requirement already satisfied: python-dateutil>=2.8.2 in c:\users\me\anaconda3\lib\s
ite-packages (from jupyter-client>=6.1.12->nbclient>=0.5.0->nbconvert[webpdf]) (2.9.
0.post0)
Requirement already satisfied: pyzmq>=23.0 in c:\users\me\anaconda3\lib\site-package
s (from jupyter-client>=6.1.12->nbclient>=0.5.0->nbconvert[webpdf]) (25.1.2)
Requirement already satisfied: tornado>=6.2 in c:\users\me\anaconda3\lib\site-packag
es (from jupyter-client>=6.1.12->nbclient>=0.5.0->nbconvert[webpdf]) (6.4.1)
Downloading playwright-1.48.0-py3-none-win_amd64.whl (30.0 MB)
   ---------------------------------------- 0.0/30.0 MB ? eta -:--:--
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    --------------------------------------- 0.5/30.0 MB 6.0 MB/s eta 0:00:05
   - -------------------------------------- 1.0/30.0 MB 8.1 MB/s eta 0:00:04
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   ----------------------------------- ----  30.0/30.0 MB 9.9 MB/s eta 0:00:01
   ---------------------------------------- 30.0/30.0 MB 9.1 MB/s eta 0:00:00
Downloading greenlet-3.1.1-cp312-cp312-win_amd64.whl (299 kB)
   ---------------------------------------- 0.0/299.7 kB ? eta -:--:--
   ---------------------------------------- 299.7/299.7 kB 9.3 MB/s eta 0:00:00
Downloading pyee-12.0.0-py3-none-any.whl (14 kB)
Installing collected packages: pyee, greenlet, playwright
  Attempting uninstall: greenlet
    Found existing installation: greenlet 3.0.1
    Uninstalling greenlet-3.0.1:
      Successfully uninstalled greenlet-3.0.1
Successfully installed greenlet-3.1.1 playwright-1.48.0 pyee-12.0.0
Note: you may need to restart the kernel to use updated packages.
  WARNING: Failed to remove contents in a temporary directory 'C:\Users\me\anaconda3
\Lib\site-packages\~reenlet'.
  You can safely remove it manually.
```

In [6]:
```
playwright install
```

```
  Cell In[6], line 1
    playwright install
                  ^
SyntaxError: invalid syntax
```

In [ ]: