#PYTHON MINI PROJECT

```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
%matplotlib inline

import pandas_datareader as web

!pip install pandas_datareader
```

```
Requirement already satisfied: pandas_datareader in c:\users\user\
appdata\roaming\python\python39\site-packages (0.10.0)
Requirement already satisfied: lxml in c:\programdata\anaconda3\lib\
site-packages (from pandas_datareader) (4.8.0)
Requirement already satisfied: pandas>=0.23 in c:\programdata\
anaconda3\lib\site-packages (from pandas_datareader) (1.4.2)
Requirement already satisfied: requests>=2.19.0 in c:\programdata\
anaconda3\lib\site-packages (from pandas_datareader) (2.27.1)
Requirement already satisfied: python-dateutil>=2.8.1 in c:\
programdata\anaconda3\lib\site-packages (from pandas>=0.23-
>pandas_datareader) (2.8.2)
Requirement already satisfied: pytz>=2020.1 in c:\programdata\
anaconda3\lib\site-packages (from pandas>=0.23->pandas_datareader)
(2021.3)
Requirement already satisfied: numpy>=1.18.5 in c:\programdata\
anaconda3\lib\site-packages (from pandas>=0.23->pandas_datareader)
(1.21.5)
Requirement already satisfied: six>=1.5 in c:\programdata\anaconda3\
lib\site-packages (from python-dateutil>=2.8.1->pandas>=0.23-
>pandas_datareader) (1.16.0)
Requirement already satisfied: idna<4,>=2.5 in c:\programdata\
anaconda3\lib\site-packages (from requests>=2.19.0->pandas_datareader)
(3.3)
Requirement already satisfied: charset-normalizer~=2.0.0 in c:\
programdata\anaconda3\lib\site-packages (from requests>=2.19.0-
>pandas_datareader) (2.0.4)
Requirement already satisfied: certifi>=2017.4.17 in c:\programdata\
anaconda3\lib\site-packages (from requests>=2.19.0->pandas_datareader)
(2021.10.8)
Requirement already satisfied: urllib3<1.27,>=1.21.1 in c:\
programdata\anaconda3\lib\site-packages (from requests>=2.19.0-
>pandas_datareader) (1.26.9)
```

```
import datetime as date

company_list=['APPLE','GOOGLE','MICROSOFT','AMAZON']

start=date.datetime(2021,8,21)
end=date.datetime(2022,8,21)
```

```
for stk in company_list:
    globals()[stk]=web.DataReader(stock,'yahoo',start,end,)
```

```
AMAZON
```

```
                  High         Low        Open       Close      Volume
\
Date

2021-08-20  160.390503  158.787994  160.193497  159.997498  67168000.0

2021-08-23  164.044998  160.500504  160.595001  163.293503  65362000.0

2021-08-24  165.774506  163.729004  164.000000  165.289001  51036000.0

2021-08-25  166.050003  164.307495  165.493500  164.959000  33606000.0

2021-08-26  166.600006  164.800003  164.949997  165.800003  41976000.0

...                ...         ...         ...         ...         ...

2022-08-15  143.759995  141.490005  142.800003  143.179993  39014600.0

2022-08-16  146.570007  142.000000  143.910004  144.779999  59102900.0

2022-08-17  143.380005  140.779999  142.690002  142.100006  48149800.0

2022-08-18  142.770004  140.380005  141.320007  142.300003  37458700.0

2022-08-19  141.110001  137.910004  140.470001  138.229996  47727300.0


             Adj Close
Date
2021-08-20  159.997498
2021-08-23  163.293503
2021-08-24  165.289001
2021-08-25  164.959000
2021-08-26  165.800003
...                ...
2022-08-15  143.179993
2022-08-16  144.779999
2022-08-17  142.100006
2022-08-18  142.300003
2022-08-19  138.229996

[252 rows x 6 columns]
```

```
APPLE['COMPANY']="APPLE"
GOOGLE['COMPANY']="GOOGLE"
MICROSOFT['COMPANY']="MICROSOFFT"
AMAZON['COMPANY']="AMAZON"
stocks=pd.concat([APPLE,GOOGLE,MICROSOFT,AMAZON])
stocks
```

Date	High	Low	Open	Close	Volume	Adj Close	COMPANY
2021-08-20	160.390503	158.787994	160.193497	159.997498	67168000.0	159.997498	APPLE
2021-08-23	164.044998	160.500504	160.595001	163.293503	65362000.0	163.293503	APPLE
2021-08-24	165.774506	163.729004	164.000000	165.289001	51036000.0	165.289001	APPLE
2021-08-25	166.050003	164.307495	165.493500	164.959000	33606000.0	164.959000	APPLE
2021-08-26	166.600006	164.800003	164.949997	165.800003	41976000.0	165.800003	APPLE
...	...	...	...	...	...	...	...
2022-08-15	143.759995	141.490005	142.800003	143.179993	39014600.0	143.179993	AMAZON
2022-08-16	146.570007	142.000000	143.910004	144.779999	59102900.0	144.779999	AMAZON
2022-08-17	143.380005	140.779999	142.690002	142.100006	48149800.0	142.100006	AMAZON
2022-08-18	142.770004	140.380005	141.320007	142.300003	37458700.0	142.300003	AMAZON
2022-08-19	141.110001	137.910004	140.470001	138.229996	47727300.0	138.229996	AMAZON

[1008 rows x 7 columns]

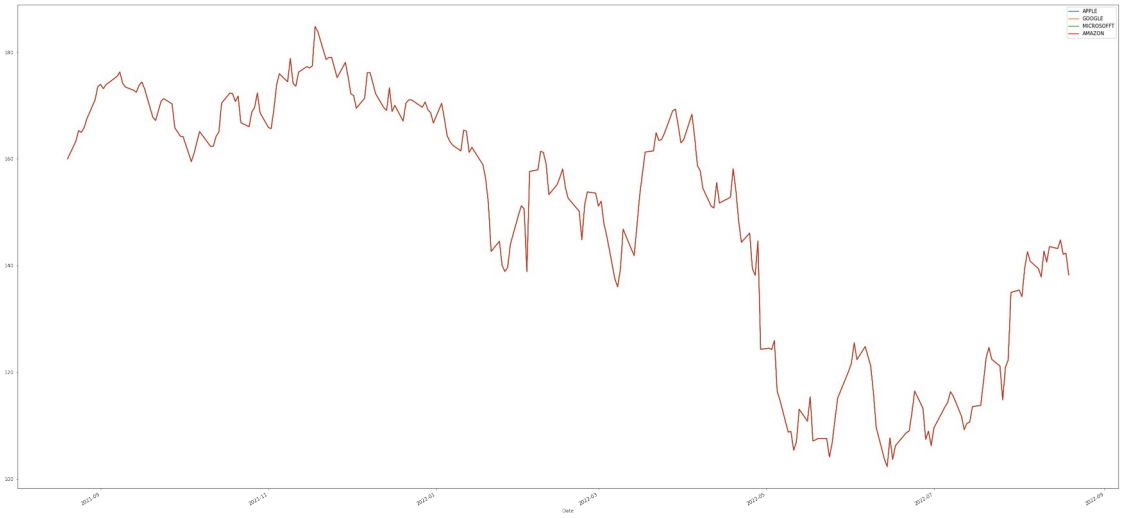
```
stocks.head()
```

```
                  High         Low        Open       Close      Volume
\
Date

2021-08-20  160.390503  158.787994  160.193497  159.997498  67168000.0

2021-08-23  164.044998  160.500504  160.595001  163.293503  65362000.0

2021-08-24  165.774506  163.729004  164.000000  165.289001  51036000.0

2021-08-25  166.050003  164.307495  165.493500  164.959000  33606000.0

2021-08-26  166.600006  164.800003  164.949997  165.800003  41976000.0


             Adj Close COMPANY
Date
2021-08-20  159.997498   APPLE
2021-08-23  163.293503   APPLE
2021-08-24  165.289001   APPLE
2021-08-25  164.959000   APPLE
2021-08-26  165.800003   APPLE
```

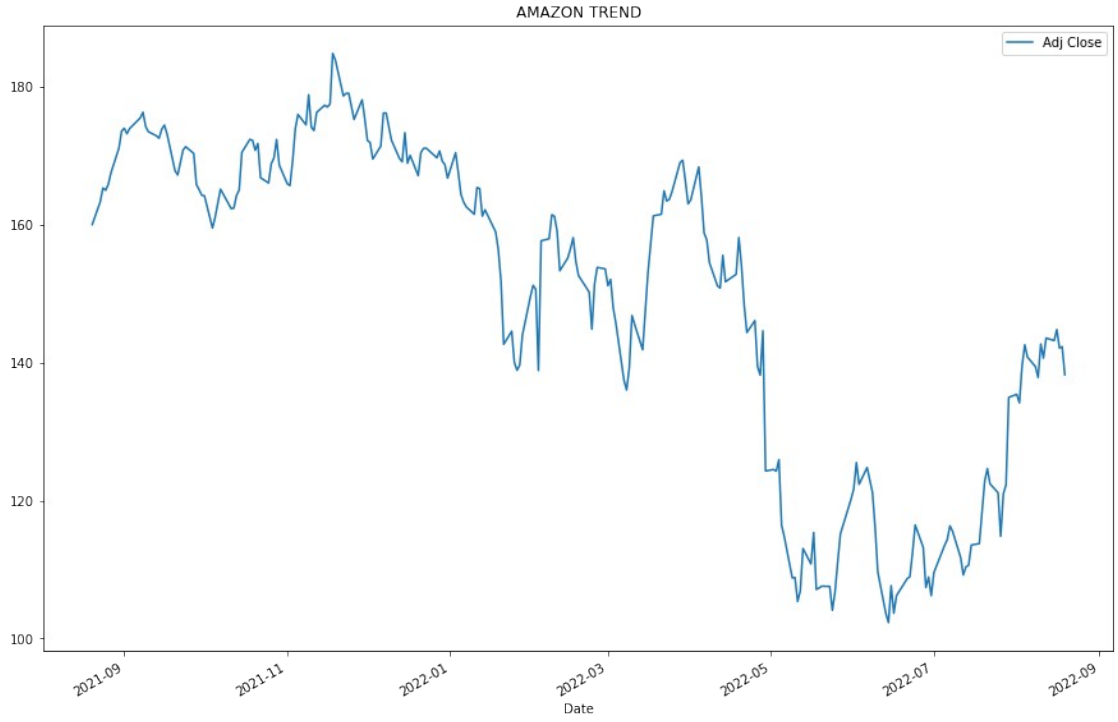
```
company=stocks['COMPANY'].drop_duplicates().values
company
```

```
array(['APPLE', 'GOOGLE', 'MICROSOFFT', 'AMAZON'], dtype=object)
```

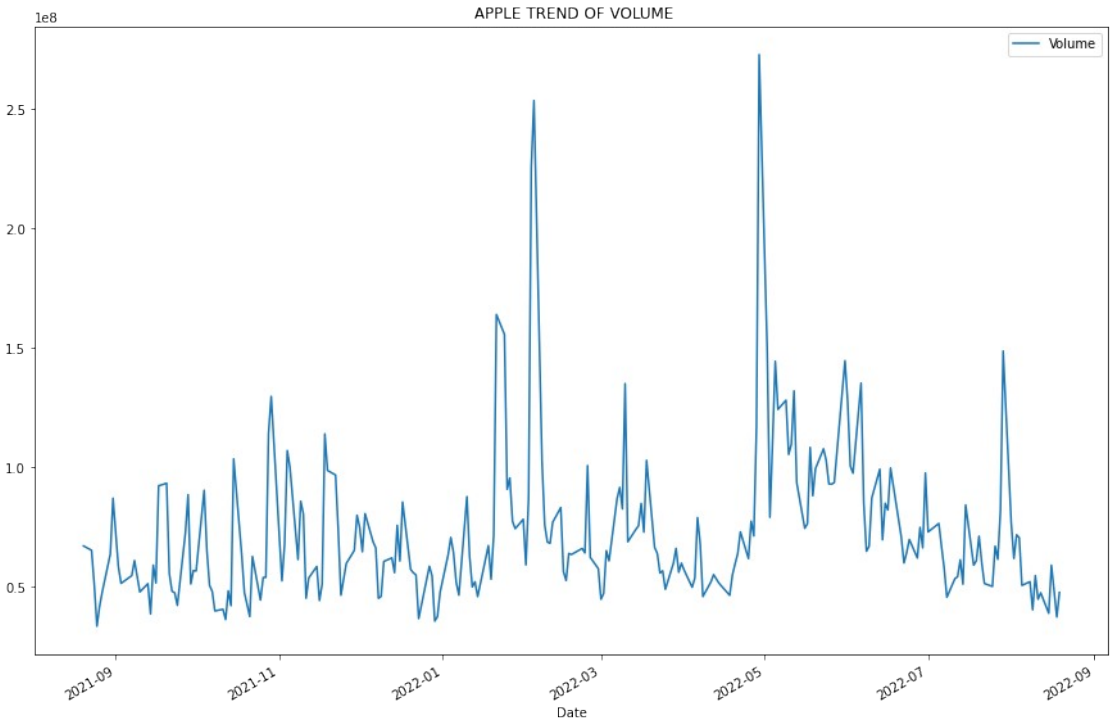
```
group=stocks.groupby('COMPANY')
fig,ax=plt.subplots()
for com in company:
    stk=group.get_group(com)
    stk["Adj Close"].plot(legend=True,figsize=(40,20),ax=ax)
    ax.legend(company)
```




```
AMAZON["Adj Close"].plot(legend=True,figsize=(15,10),title="AMAZON
TREND")
plt.show()
```




```
APPLE["Volume"].plot(legend=True,figsize=(15,10),title=" APPLE TREND
OF VOLUME")
plt.show()
```




```
APPLE['MA10']=APPLE['Adj Close'].rolling(10).mean()
APPLE.tail()
```

Date	High	Low	Open	Close	Volume
2022-08-15	143.759995	141.490005	142.800003	143.179993	39014600.0
2022-08-16	146.570007	142.000000	143.910004	144.779999	59102900.0
2022-08-17	143.380005	140.779999	142.690002	142.100006	48149800.0
2022-08-18	142.770004	140.380005	141.320007	142.300003	37458700.0
2022-08-19	141.110001	137.910004	140.470001	138.229996	47727300.0

Date	Adj Close	COMPANY	MA10
2022-08-15	143.179993	APPLE	140.435002
2022-08-16	144.779999	APPLE	141.497002
2022-08-17	142.100006	APPLE	141.755002
2022-08-18	142.300003	APPLE	141.728001
2022-08-19	138.229996	APPLE	141.471001

```
GOOGLE['MA10']=GOOGLE['Adj Close'].rolling(10).mean()
GOOGLE.tail()
```

Date	High	Low	Open	Close	Volume
2022-08-15	143.759995	141.490005	142.800003	143.179993	39014600.0
2022-08-16	146.570007	142.000000	143.910004	144.779999	59102900.0
2022-08-17	143.380005	140.779999	142.690002	142.100006	48149800.0
2022-08-18	142.770004	140.380005	141.320007	142.300003	37458700.0
2022-08-19	141.110001	137.910004	140.470001	138.229996	47727300.0

Date	Adj Close	COMPANY	MA10
2022-08-15	143.179993	GOOGLE	140.435002
2022-08-16	144.779999	GOOGLE	141.497002
2022-08-17	142.100006	GOOGLE	141.755002
2022-08-18	142.300003	GOOGLE	141.728001
2022-08-19	138.229996	GOOGLE	141.471001

```
AMAZON['MA10']=APPLE['Adj Close'].rolling(10).mean()
APPLE.tail()
```

Date	High	Low	Open	Close	Volume
2022-08-15	143.759995	141.490005	142.800003	143.179993	39014600.0
2022-08-16	146.570007	142.000000	143.910004	144.779999	59102900.0
2022-08-17	143.380005	140.779999	142.690002	142.100006	48149800.0
2022-08-18	142.770004	140.380005	141.320007	142.300003	37458700.0
2022-08-19	141.110001	137.910004	140.470001	138.229996	47727300.0

Date	Adj Close	COMPANY	MA10
2022-08-15	143.179993	APPLE	140.435002
2022-08-16	144.779999	APPLE	141.497002
2022-08-17	142.100006	APPLE	141.755002

```
2022-08-18  142.300003   APPLE  141.728001
2022-08-19  138.229996   APPLE  141.471001
```

```
MICROSOFT['MA10']=MICROSOFT['Adj Close'].rolling(10).mean()
MICROSOFT.tail()
```

```
                  High         Low        Open       Close      Volume
\
Date

2022-08-15  143.759995  141.490005  142.800003  143.179993  39014600.0

2022-08-16  146.570007  142.000000  143.910004  144.779999  59102900.0

2022-08-17  143.380005  140.779999  142.690002  142.100006  48149800.0

2022-08-18  142.770004  140.380005  141.320007  142.300003  37458700.0

2022-08-19  141.110001  137.910004  140.470001  138.229996  47727300.0


             Adj Close     COMPANY        MA10
Date
2022-08-15  143.179993  MICROSOFFT  140.435002
2022-08-16  144.779999  MICROSOFFT  141.497002
2022-08-17  142.100006  MICROSOFFT  141.755002
2022-08-18  142.300003  MICROSOFFT  141.728001
2022-08-19  138.229996  MICROSOFFT  141.471001
```

```
AMAZON["DAILY RETURN"]=AMAZON["Adj Close"].pct_change()
AMAZON.tail()
```

```
                  High         Low        Open       Close      Volume
\
Date

2022-08-15  143.759995  141.490005  142.800003  143.179993  39014600.0

2022-08-16  146.570007  142.000000  143.910004  144.779999  59102900.0

2022-08-17  143.380005  140.779999  142.690002  142.100006  48149800.0

2022-08-18  142.770004  140.380005  141.320007  142.300003  37458700.0

2022-08-19  141.110001  137.910004  140.470001  138.229996  47727300.0


             Adj Close COMPANY        MA10  DAILY RETURN
```

```
Date
2022-08-15  143.179993  AMAZON  140.435002     -0.002578
2022-08-16  144.779999  AMAZON  141.497002      0.011175
2022-08-17  142.100006  AMAZON  141.755002     -0.018511
2022-08-18  142.300003  AMAZON  141.728001      0.001407
2022-08-19  138.229996  AMAZON  141.471001     -0.028602
```

```
fully_adj=pd.concat([APPLE["Adj Close"],GOOGLE["Adj
Close"],MICROSOFT["Adj Close"],AMAZON["Adj Close"]],axis=1)
fully_adj
```

```
             Adj Close   Adj Close   Adj Close   Adj Close
Date
2021-08-20  159.997498  159.997498  159.997498  159.997498
2021-08-23  163.293503  163.293503  163.293503  163.293503
2021-08-24  165.289001  165.289001  165.289001  165.289001
2021-08-25  164.959000  164.959000  164.959000  164.959000
2021-08-26  165.800003  165.800003  165.800003  165.800003
...                ...         ...         ...         ...
2022-08-15  143.179993  143.179993  143.179993  143.179993
2022-08-16  144.779999  144.779999  144.779999  144.779999
2022-08-17  142.100006  142.100006  142.100006  142.100006
2022-08-18  142.300003  142.300003  142.300003  142.300003
2022-08-19  138.229996  138.229996  138.229996  138.229996

[252 rows x 4 columns]
```