

# matplotlib

October 23, 2019

```
[24]: import pandas as pd
import matplotlib.pyplot as plt
```

```
[19]: stp = pd.read_csv('stock_prices.csv')
```

```
[61]: stp
```

```
[61]:
```

|    | Stock    | Date | Open        | High        | Low         | Close \     |
|----|----------|------|-------------|-------------|-------------|-------------|
| 0  | APPLE    | 0    | 219.050003  | 222.360001  | 170.259995  | 178.580002  |
| 1  | APPLE    | 1    | 184.460007  | 184.940002  | 146.589996  | 157.740005  |
| 2  | APPLE    | 2    | 154.889999  | 169.000000  | 142.000000  | 166.440002  |
| 3  | APPLE    | 3    | 166.960007  | 175.869995  | 165.929993  | 173.149994  |
| 4  | APPLE    | 4    | 174.279999  | 197.690002  | 169.500000  | 189.949997  |
| 5  | APPLE    | 5    | 191.639999  | 208.479996  | 188.380005  | 200.669998  |
| 6  | APPLE    | 6    | 209.880005  | 215.309998  | 174.990005  | 175.070007  |
| 7  | APPLE    | 7    | 175.600006  | 201.570007  | 170.270004  | 197.919998  |
| 8  | APPLE    | 8    | 203.169998  | 221.369995  | 198.410004  | 213.039993  |
| 9  | APPLE    | 9    | 213.899994  | 218.029999  | 192.580002  | 208.740005  |
| 10 | APPLE    | 10   | 206.429993  | 226.419998  | 204.220001  | 223.970001  |
| 11 | APPLE    | 11   | 225.070007  | 242.199997  | 215.130005  | 239.960007  |
| 12 | AMAZON   | 0    | 1623.530029 | 1784.000000 | 1420.000000 | 1690.170044 |
| 13 | AMAZON   | 1    | 1769.459961 | 1778.339966 | 1307.000000 | 1501.969971 |
| 14 | AMAZON   | 2    | 1465.199951 | 1736.410034 | 1460.930054 | 1718.729980 |
| 15 | AMAZON   | 3    | 1638.880005 | 1673.060059 | 1566.760010 | 1639.829956 |
| 16 | AMAZON   | 4    | 1655.130005 | 1823.750000 | 1586.569946 | 1780.750000 |
| 17 | AMAZON   | 5    | 1800.109985 | 1956.339966 | 1798.729980 | 1926.520020 |
| 18 | AMAZON   | 6    | 1933.089966 | 1964.400024 | 1772.699951 | 1775.069946 |
| 19 | AMAZON   | 7    | 1760.010010 | 1935.199951 | 1672.000000 | 1893.630005 |
| 20 | AMAZON   | 8    | 1922.979980 | 2035.800049 | 1849.439941 | 1866.780029 |
| 21 | AMAZON   | 9    | 1871.719971 | 1897.920044 | 1743.510010 | 1776.290039 |
| 22 | AMAZON   | 10   | 1770.000000 | 1853.660034 | 1709.219971 | 1735.910034 |
| 23 | AMAZON   | 11   | 1746.000000 | 1798.849976 | 1685.060059 | 1765.729980 |
| 24 | FACEBOOK | 0    | 151.520004  | 154.130005  | 126.849998  | 140.610001  |
| 25 | FACEBOOK | 1    | 143.000000  | 147.190002  | 123.019997  | 131.089996  |
| 26 | FACEBOOK | 2    | 128.990005  | 171.679993  | 128.559998  | 166.690002  |
| 27 | FACEBOOK | 3    | 165.839996  | 172.470001  | 159.589996  | 161.449997  |
| 28 | FACEBOOK | 4    | 162.600006  | 174.300003  | 159.279999  | 166.690002  |

|    |          |    |             |             |             |             |
|----|----------|----|-------------|-------------|-------------|-------------|
| 29 | FACEBOOK | 5  | 167.830002  | 198.479996  | 167.279999  | 193.399994  |
| 30 | FACEBOOK | 6  | 194.779999  | 196.179993  | 177.160004  | 177.470001  |
| 31 | FACEBOOK | 7  | 175.000000  | 198.880005  | 160.839996  | 193.000000  |
| 32 | FACEBOOK | 8  | 195.210007  | 208.660004  | 191.929993  | 194.229996  |
| 33 | FACEBOOK | 9  | 194.169998  | 198.470001  | 176.660004  | 185.669998  |
| 34 | FACEBOOK | 10 | 184.000000  | 193.100006  | 175.660004  | 178.080002  |
| 35 | FACEBOOK | 11 | 179.149994  | 191.490005  | 173.089996  | 182.339996  |
| 36 | GOOGLE   | 0  | 1075.800049 | 1095.569946 | 996.020020  | 1094.430054 |
| 37 | GOOGLE   | 1  | 1123.140015 | 1124.650024 | 970.109985  | 1035.609985 |
| 38 | GOOGLE   | 2  | 1016.570007 | 1117.329956 | 1014.070007 | 1116.369995 |
| 39 | GOOGLE   | 3  | 1112.400024 | 1147.000000 | 1086.000000 | 1119.920044 |
| 40 | GOOGLE   | 4  | 1124.900024 | 1231.790039 | 1123.300049 | 1173.310059 |
| 41 | GOOGLE   | 5  | 1184.099976 | 1289.270020 | 1175.000000 | 1188.479980 |
| 42 | GOOGLE   | 6  | 1188.050049 | 1190.849976 | 1100.180054 | 1103.630005 |
| 43 | GOOGLE   | 7  | 1065.500000 | 1124.109985 | 1025.000000 | 1080.910034 |
| 44 | GOOGLE   | 8  | 1098.000000 | 1265.550049 | 1093.703003 | 1216.680054 |
| 45 | GOOGLE   | 9  | 1214.030029 | 1234.109985 | 1140.140015 | 1188.099976 |
| 46 | GOOGLE   | 10 | 1177.030029 | 1248.300049 | 1163.199951 | 1219.000000 |
| 47 | GOOGLE   | 11 | 1219.000000 | 1263.324951 | 1162.430054 | 1242.800049 |

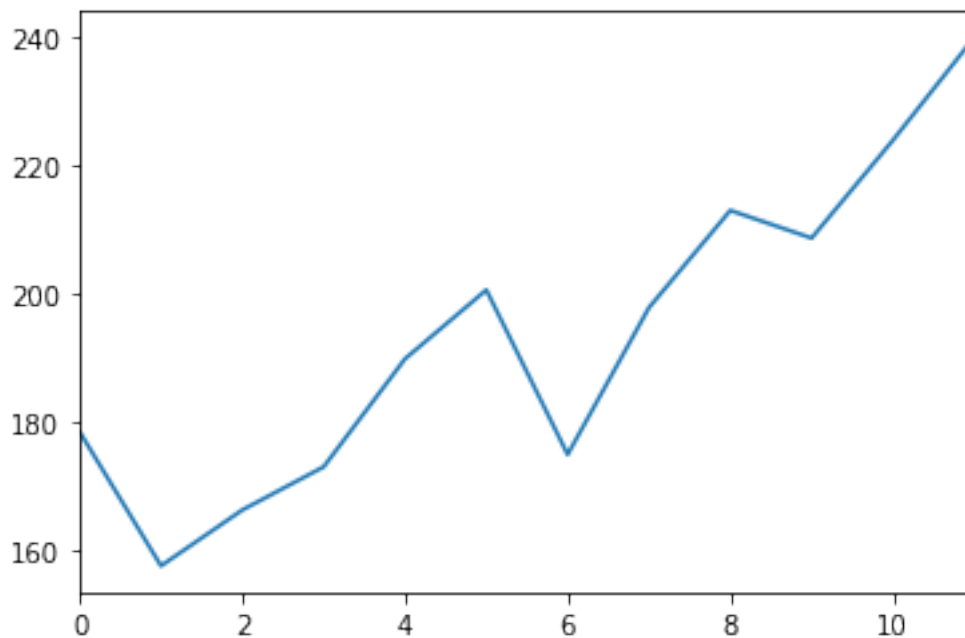
|    | Adj Close   | Volume    |
|----|-------------|-----------|
| 0  | 175.851181  | 961326400 |
| 1  | 155.871613  | 898922500 |
| 2  | 164.468567  | 828087400 |
| 3  | 171.099075  | 472540600 |
| 4  | 188.505081  | 650981400 |
| 5  | 199.143539  | 506117700 |
| 6  | 173.738281  | 739456600 |
| 7  | 197.170853  | 515218700 |
| 8  | 212.233627  | 473851700 |
| 9  | 207.949905  | 681081600 |
| 10 | 223.970001  | 542567100 |
| 11 | 239.960007  | 427883300 |
| 12 | 1690.170044 | 139290000 |
| 13 | 1501.969971 | 154812700 |
| 14 | 1718.729980 | 134001700 |
| 15 | 1639.829956 | 80936900  |
| 16 | 1780.750000 | 100832200 |
| 17 | 1926.520020 | 81239200  |
| 18 | 1775.069946 | 98214400  |
| 19 | 1893.630005 | 74746500  |
| 20 | 1866.780029 | 73148800  |
| 21 | 1776.290039 | 79771200  |
| 22 | 1735.910034 | 61172900  |
| 23 | 1765.729980 | 42933400  |
| 24 | 140.610001  | 518151700 |
| 25 | 131.089996  | 558786200 |

|    |             |           |
|----|-------------|-----------|
| 26 | 166.690002  | 527547900 |
| 27 | 161.449997  | 302243200 |
| 28 | 166.690002  | 387936100 |
| 29 | 193.399994  | 381985300 |
| 30 | 177.470001  | 286821500 |
| 31 | 193.000000  | 426428600 |
| 32 | 194.229996  | 351020900 |
| 33 | 185.669998  | 294694900 |
| 34 | 178.080002  | 264538500 |
| 35 | 182.339996  | 196178200 |
| 36 | 1094.430054 | 36735100  |
| 37 | 1035.609985 | 40257600  |
| 38 | 1116.369995 | 30714000  |
| 39 | 1119.920044 | 28932700  |
| 40 | 1173.310059 | 31609300  |
| 41 | 1188.479980 | 27855200  |
| 42 | 1103.630005 | 33317400  |
| 43 | 1080.910034 | 34096800  |
| 44 | 1216.680054 | 32948600  |
| 45 | 1188.099976 | 28882400  |
| 46 | 1219.000000 | 26899400  |
| 47 | 1242.800049 | 18241400  |

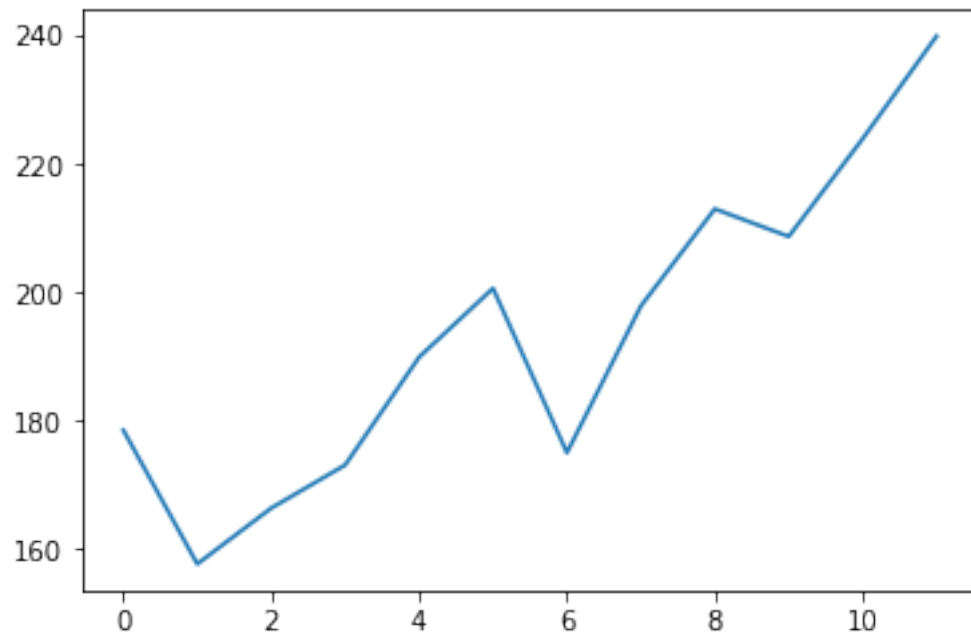
```
[21]: apple=stp[stp['Stock']=='APPLE']
```

```
[25]: apple['Close'].plot()
```

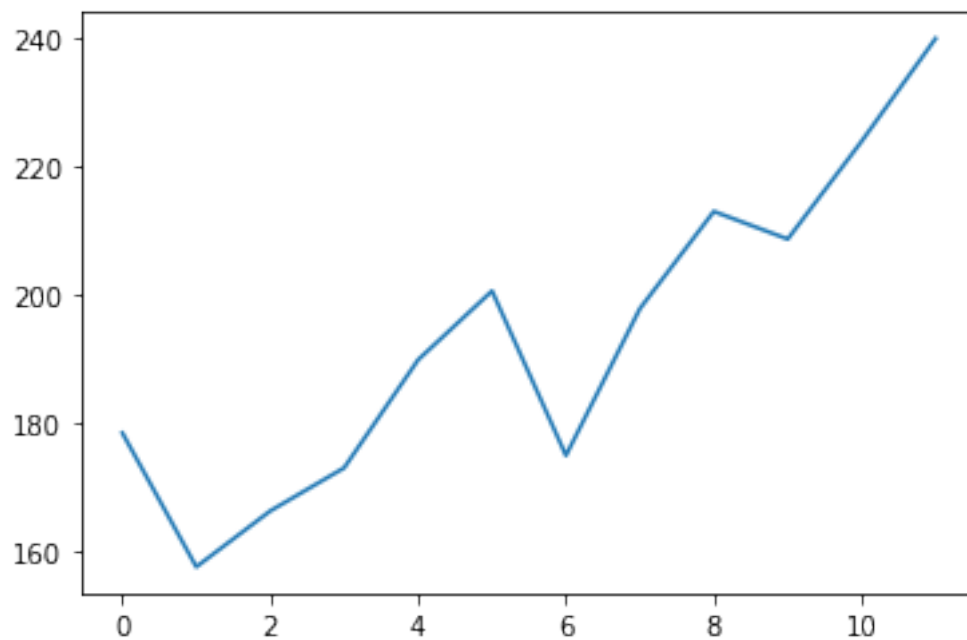
```
[25]: <matplotlib.axes._subplots.AxesSubplot at 0x7fd0bc3a5c18>
```



```
[27]: plt.plot(apple['Close'])  
plt.show()
```

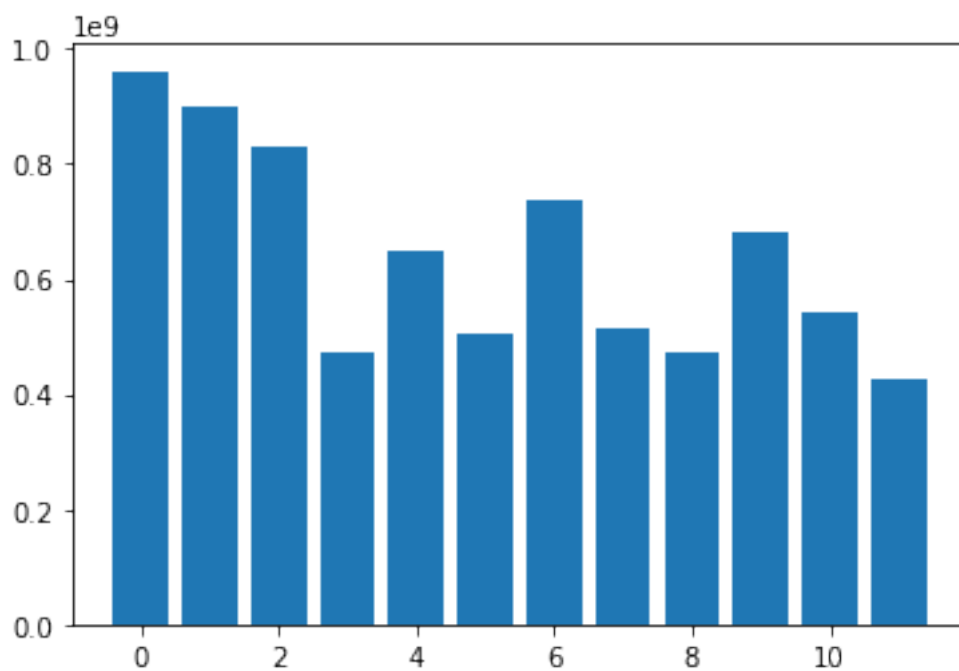


```
[26]: plt.plot(apple['Date'],apple['Close'])  
plt.show()
```

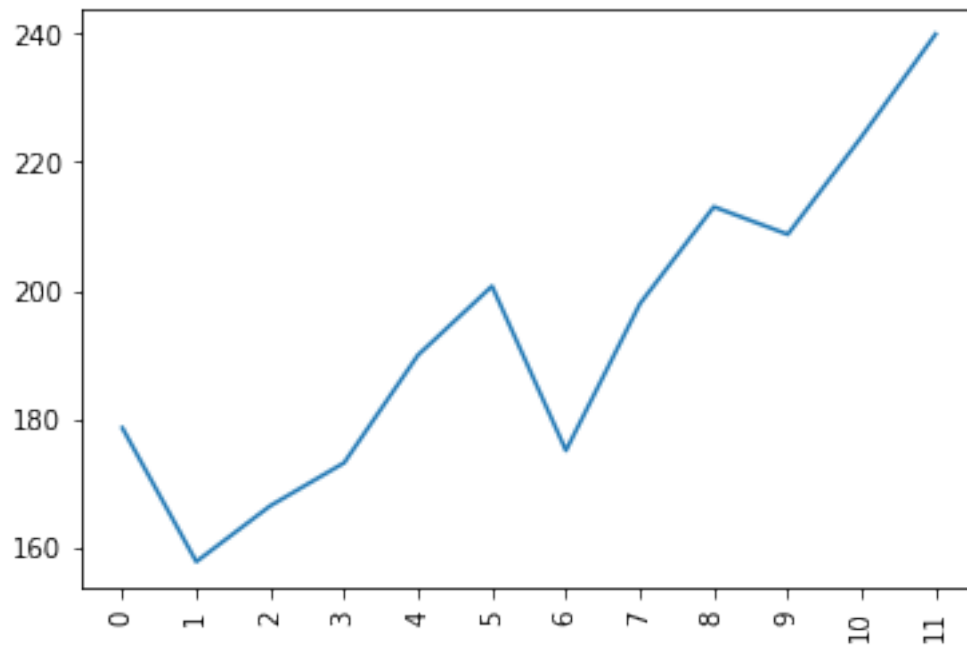


```
[60]: plt.bar(stp[stp['Stock']=='APPLE']['Date'],stp[stp['Stock']=='APPLE']['Volume'])
```

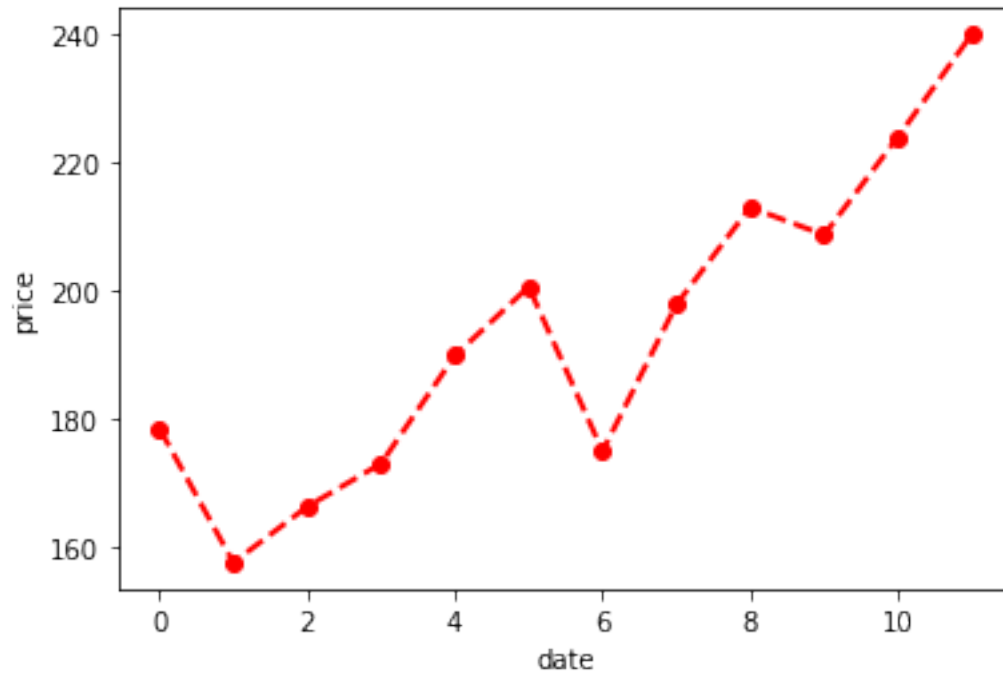
```
[60]: <BarContainer object of 12 artists>
```



```
[28]: plt.plot(apple['Date'],apple['Close'])  
plt.xticks(apple['Date'], rotation='vertical')  
plt.show()
```

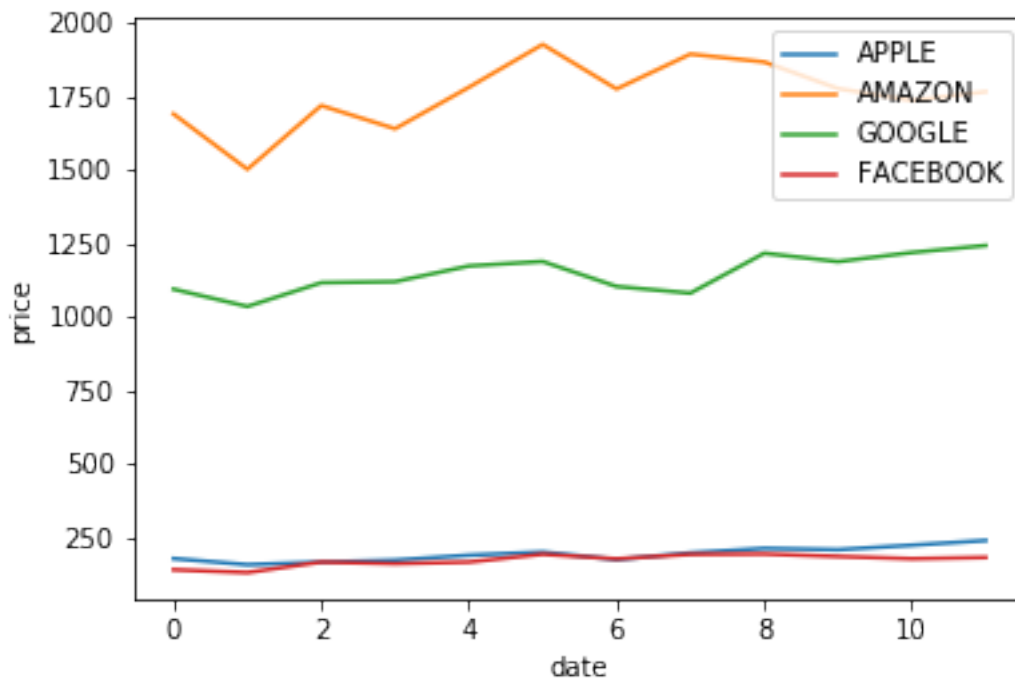


```
[30]: plt.  
    →plot(apple['Date'],apple['Close'],marker='o',color='r',linestyle='--',linewidth=2)  
plt.ylabel('price')  
plt.xlabel('date')  
plt.show()
```



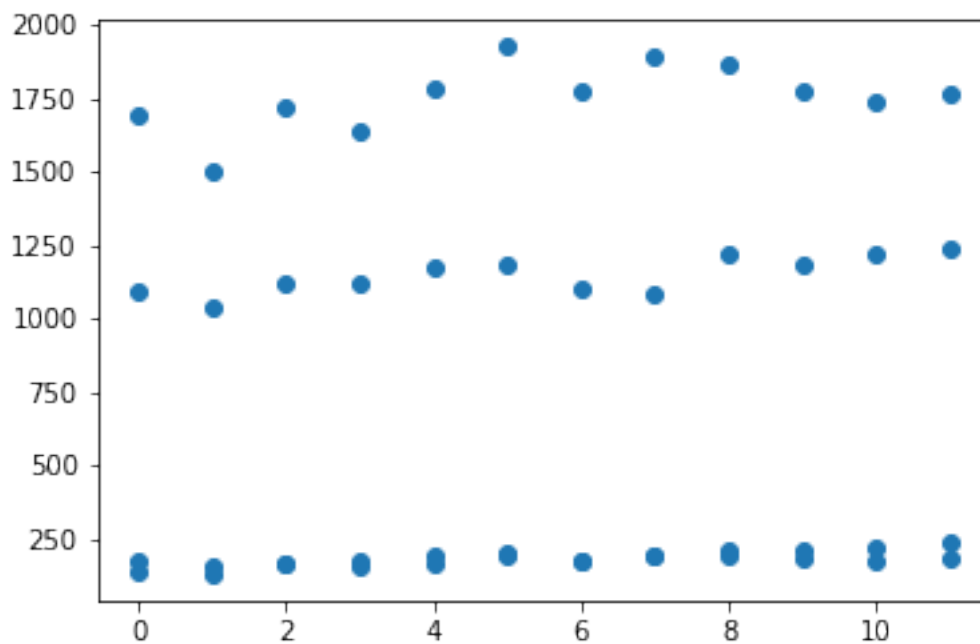
[31]:

```
plt.
    ↳plot(stp[stp['Stock']=='APPLE']['Date'],stp[stp['Stock']=='APPLE']['Close'],label='APPLE')
plt.
    ↳plot(stp[stp['Stock']=='AMAZON']['Date'],stp[stp['Stock']=='AMAZON']['Close'],label='AMAZON')
plt.
    ↳plot(stp[stp['Stock']=='GOOGLE']['Date'],stp[stp['Stock']=='GOOGLE']['Close'],label='GOOGLE')
plt.
    ↳plot(stp[stp['Stock']=='FACEBOOK']['Date'],stp[stp['Stock']=='FACEBOOK']['Close'],label='FACEBOOK')
plt.ylabel('price')
plt.xlabel('date')
plt.legend()
plt.show()
```



```
[32]: plt.scatter(stp['Date'],stp['Close'])
```

```
[32]: <matplotlib.collections.PathCollection at 0x7fd0bc125d30>
```

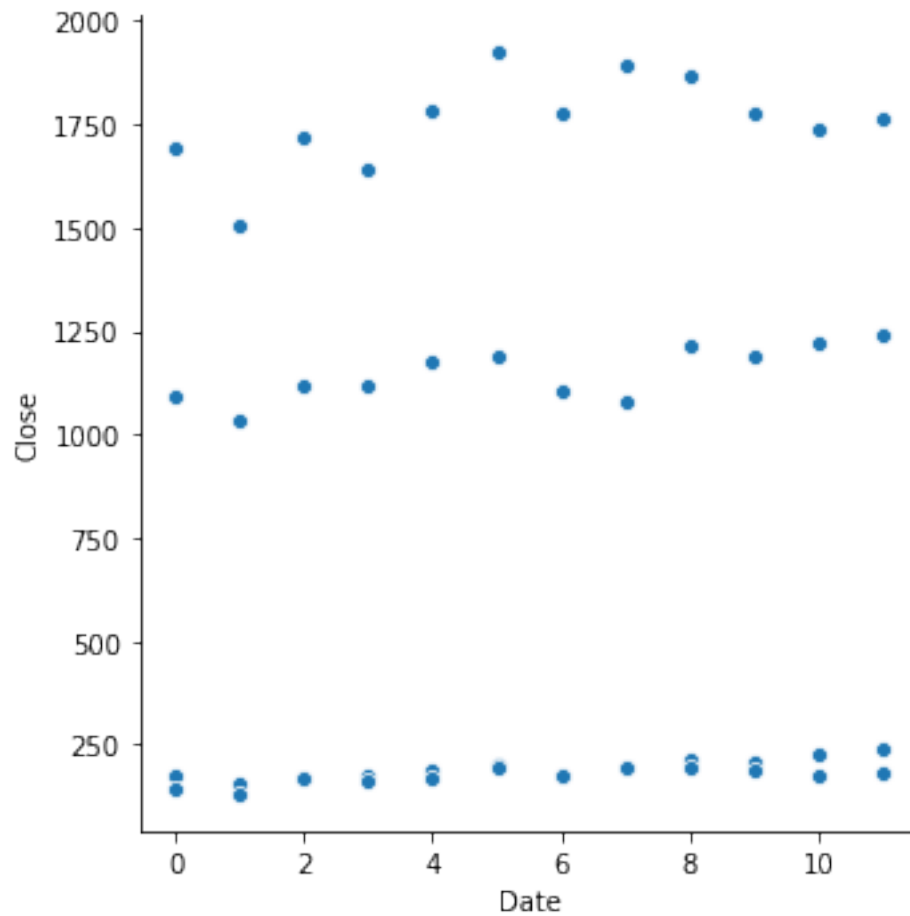




```
[33]: import seaborn as sns
```

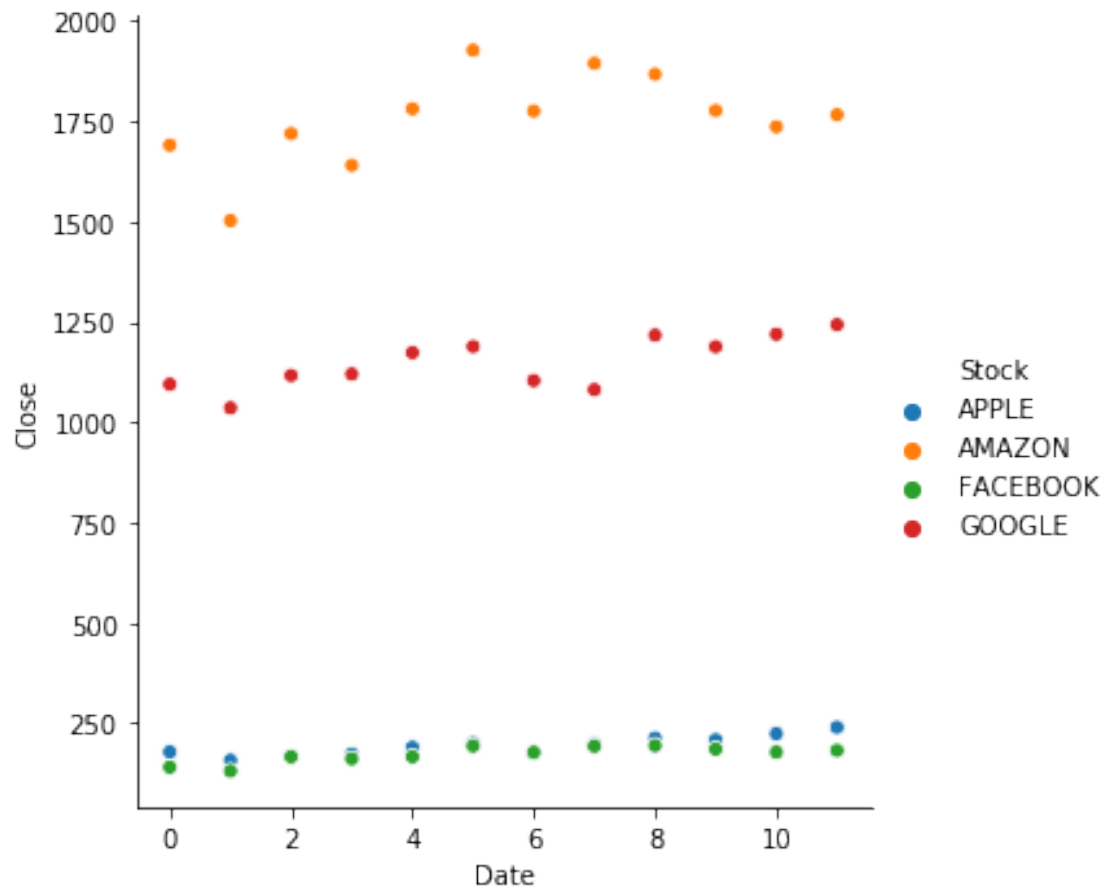
```
[45]: sns.relplot(x='Date',y='Close',kind='scatter',data=stp)
```

```
[45]: <seaborn.axisgrid.FacetGrid at 0x7fd0b538f898>
```



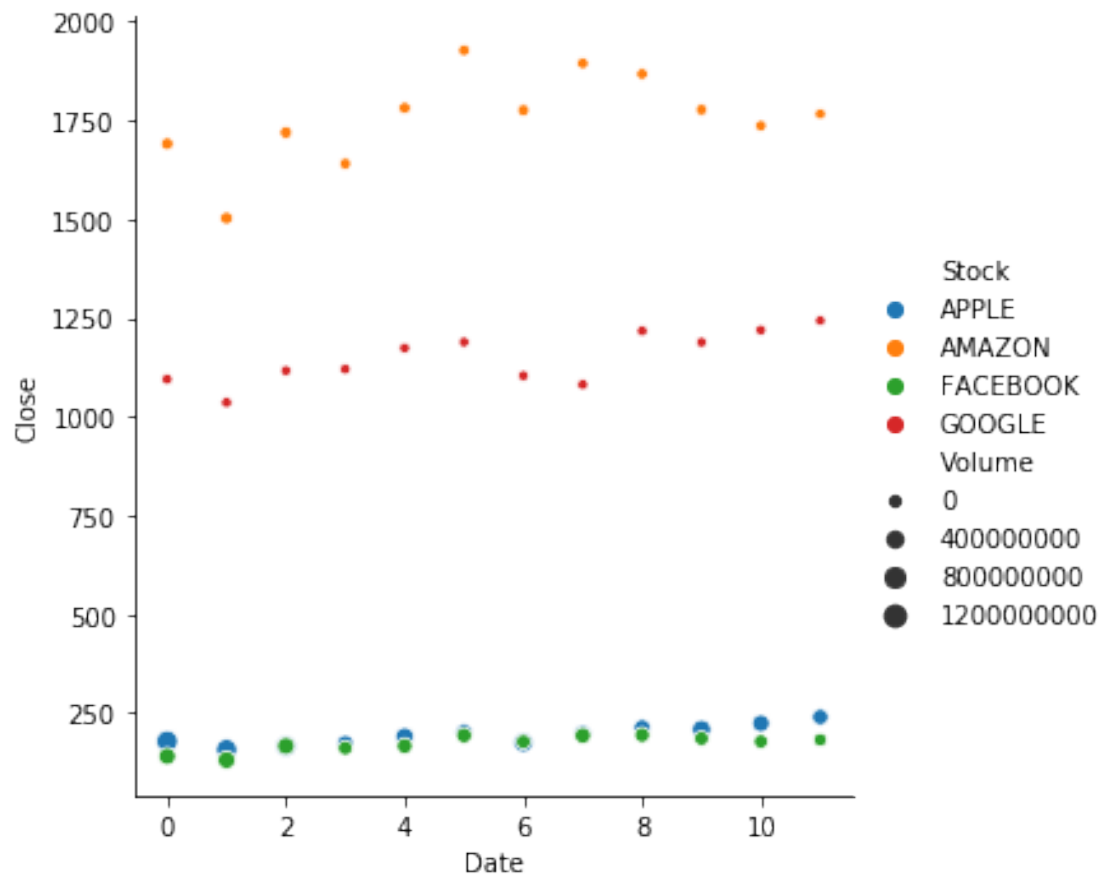
```
[44]: sns.relplot(x='Date',y='Close',hue='Stock',kind='scatter',data=stp)
```

```
[44]: <seaborn.axisgrid.FacetGrid at 0x7fd0b53b2e80>
```



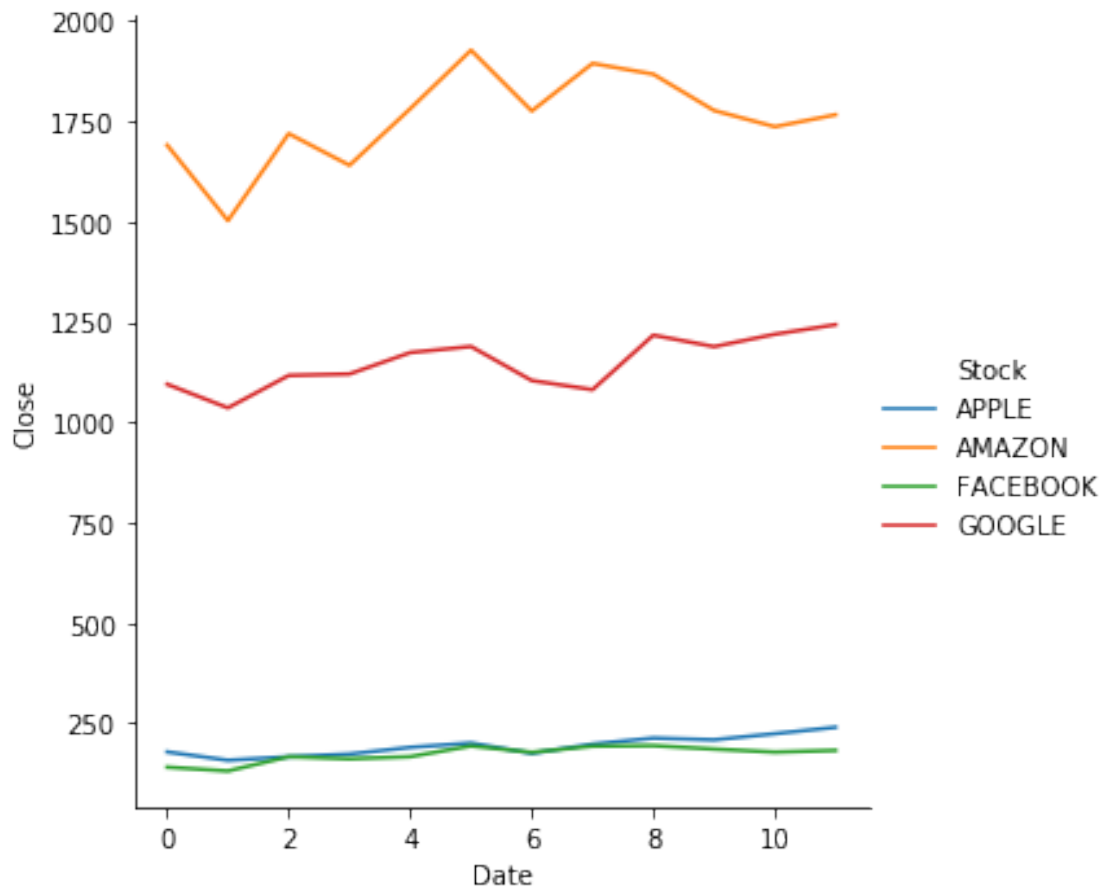
```
[43]: sns.  
      ↪relplot(x='Date',y='Close',hue='Stock',size='Volume',kind='scatter',data=stp)
```

```
[43]: <seaborn.axisgrid.FacetGrid at 0x7fd0bc23a160>
```



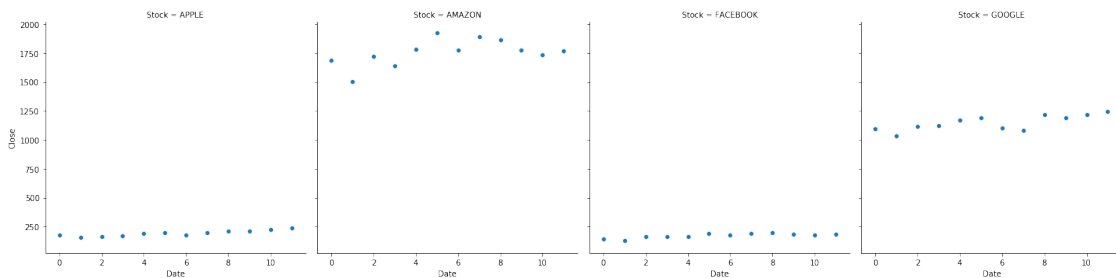
```
[42]: sns.relplot(x='Date',y='Close',hue='Stock',kind='line',data=stp)
```

```
[42]: <seaborn.axisgrid.FacetGrid at 0x7fd0bc211390>
```



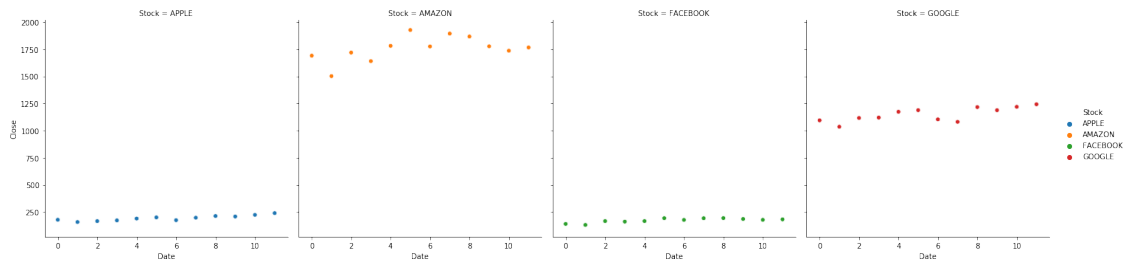
```
[41]: sns.relplot(x='Date',y='Close',col='Stock',kind='scatter',data=stp)
```

```
[41]: <seaborn.axisgrid.FacetGrid at 0x7fd0bc14e7f0>
```



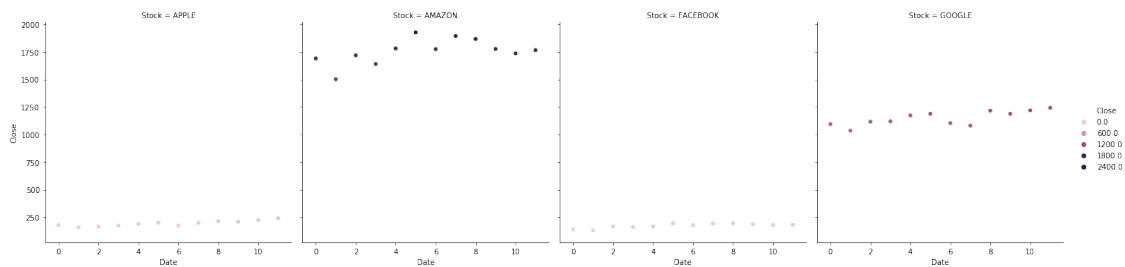
```
[49]: sns.relplot(x='Date',y='Close',col='Stock',hue='Stock',kind='scatter',data=stp)
```

```
[49]: <seaborn.axisgrid.FacetGrid at 0x7fd0b5d81748>
```



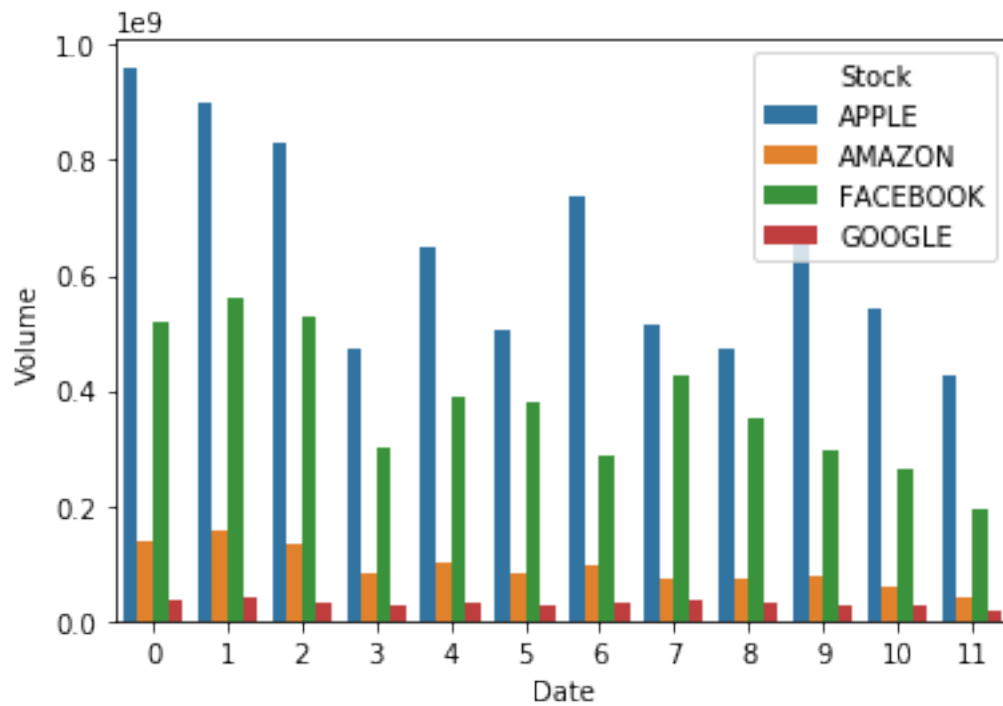
```
[51]: sns.relplot(x='Date',y='Close',col='Stock',hue='Close',kind='scatter',data=stp)
```

```
[51]: <seaborn.axisgrid.FacetGrid at 0x7fd0b4b7cc18>
```



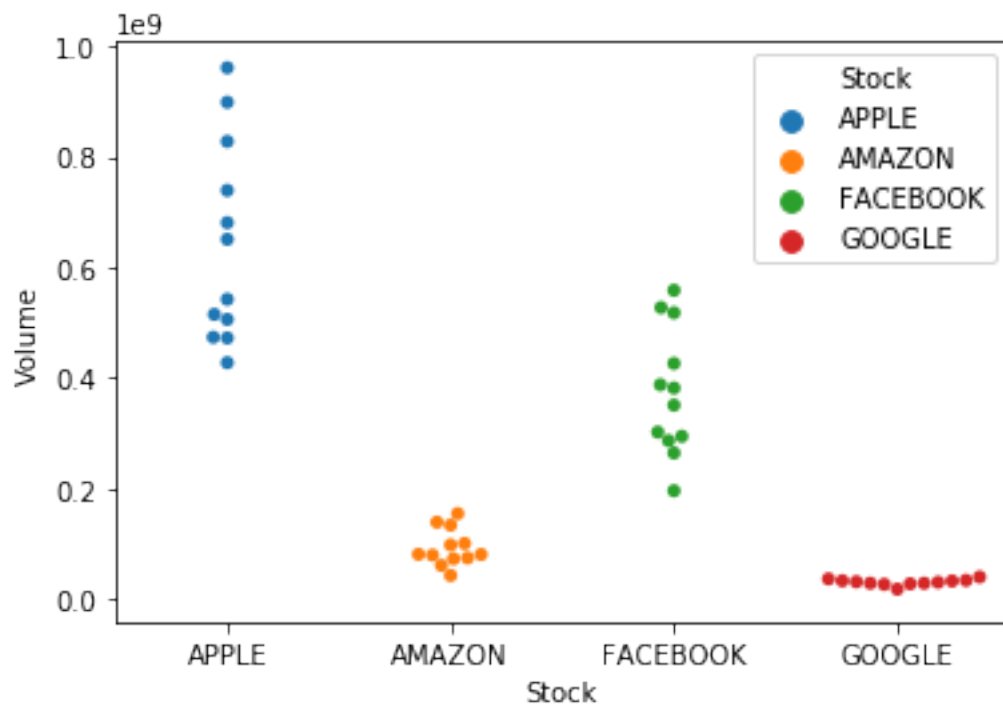
```
[55]: sns.barplot(x='Date',y='Volume',hue='Stock',data=stp)
```

```
[55]: <matplotlib.axes._subplots.AxesSubplot at 0x7fd0b43bff98>
```



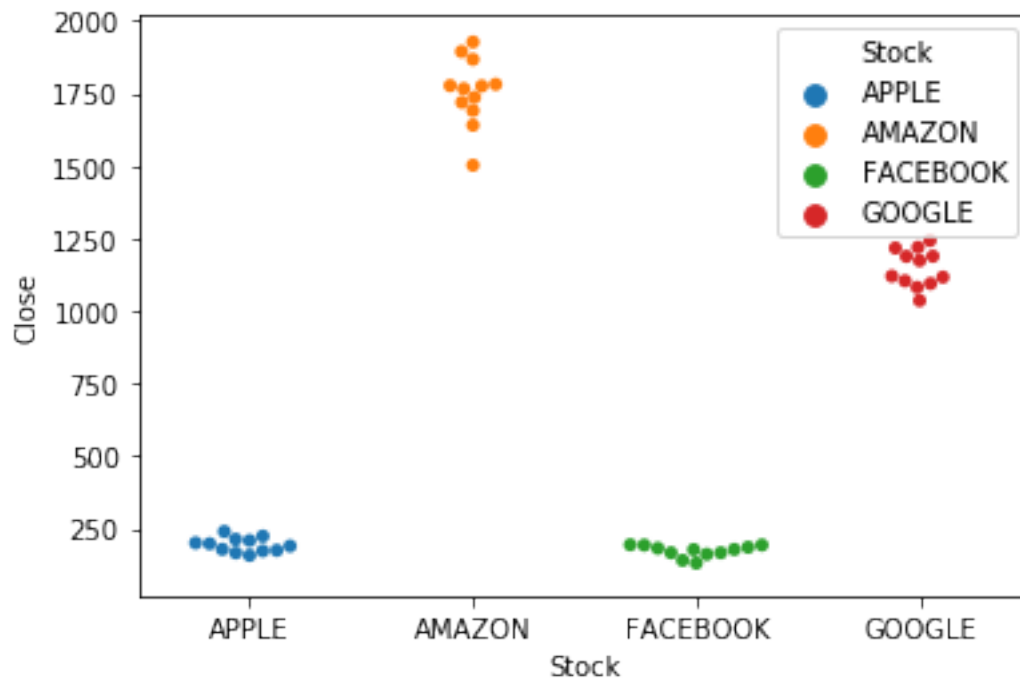
```
[59]: sns.swarmplot(x='Stock',y='Volume',hue='Stock',data=stp)
```

```
[59]: <matplotlib.axes._subplots.AxesSubplot at 0x7fd0b4f2a5f8>
```



```
[64]: sns.swarmplot(x='Stock',y='Close',hue='Stock',data=stp)
```

```
[64]: <matplotlib.axes._subplots.AxesSubplot at 0x7fd0b41f0a58>
```



Házi feladat: Használva az sns tips dataframe-jét, ábrázold nap szerint a borraivalót (tip) swarm plot-ban, naponként külön színnel. Étkezési napszak (time) és dohányzás szerinti bontásban ábrázoljuk a borraivalót a teljes összeg függvényében, relplot-tal, scatter plot-ban.

```
[68]: tips = sns.load_dataset("tips")
tips
```

```
[68]:
```

|     | total_bill | tip  | sex    | smoker | day | time   | size |
|-----|------------|------|--------|--------|-----|--------|------|
| 0   | 16.99      | 1.01 | Female | No     | Sun | Dinner | 2    |
| 1   | 10.34      | 1.66 | Male   | No     | Sun | Dinner | 3    |
| 2   | 21.01      | 3.50 | Male   | No     | Sun | Dinner | 3    |
| 3   | 23.68      | 3.31 | Male   | No     | Sun | Dinner | 2    |
| 4   | 24.59      | 3.61 | Female | No     | Sun | Dinner | 4    |
| ..  | ...        | ...  | ...    | ...    | ... | ...    | ...  |
| 239 | 29.03      | 5.92 | Male   | No     | Sat | Dinner | 3    |
| 240 | 27.18      | 2.00 | Female | Yes    | Sat | Dinner | 2    |
| 241 | 22.67      | 2.00 | Male   | Yes    | Sat | Dinner | 2    |
| 242 | 17.82      | 1.75 | Male   | No     | Sat | Dinner | 2    |

|     |       |      |        |    |      |        |   |
|-----|-------|------|--------|----|------|--------|---|
| 243 | 18.78 | 3.00 | Female | No | Thur | Dinner | 2 |
|-----|-------|------|--------|----|------|--------|---|

[244 rows x 7 columns]