

# Cloud\_Services\_Portfolio

September 29, 2021

## 1 Cloud Services Portfolio Risk and Returns

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

import warnings
warnings.filterwarnings("ignore")

# fix_yahoo_finance is used to fetch data
import fix_yahoo_finance as yf
yf.pdr_override()
```

```
[2]: # input
# Cloud Services Stock
symbols = 
→ ['AMZN', 'AAPL', 'GOOGL', 'FB', 'NFLX', 'CRM', 'INTC', 'DVM', 'ADBE', 'CLDR', 'EQIX', 'FEYE', 'FIVN', '']
start = '2016-01-01'
end = '2019-01-01'
```

```
[3]: df = yf.download(symbols,start,end)['Adj Close']
```

[\*\*\*\*\*100%\*\*\*\*\*] 14 of 14 downloaded

```
[4]: #df = pd.DataFrame()
#for s in symbols:
#    df[s] = yf.download(s,start,end)['Adj Close']
```

```
[5]: from datetime import datetime
from dateutil import relativedelta

d1 = datetime.strptime(start, "%Y-%m-%d")
d2 = datetime.strptime(end, "%Y-%m-%d")
delta = relativedelta.relativedelta(d2,d1)
print('How many years of investing?')
```

```
print('%s years' % delta.years)
```

How many years of investing?

3 years

```
[6]: number_of_years = delta.years
```

```
[7]: days = (df.index[-1] - df.index[0]).days
days
```

```
[7]: 1092
```

```
[8]: df.head()
```

```
[8]:
```

	AAPL	ADBE	AMZN	CLDR	CRM	EQIX	\
2016-01-04	98.446655	91.970001	636.989990	NaN	76.709999	272.723938	
2016-01-05	95.979675	92.339996	633.789978	NaN	77.050003	279.475769	
2016-01-06	94.101387	91.019997	632.650024	NaN	76.290001	284.744537	
2016-01-07	90.129868	89.110001	607.940002	NaN	74.300003	279.365265	
2016-01-08	90.606438	87.849998	607.049988	NaN	73.230003	285.352509	

	FB	FEYE	FIVN	GOOGL	INTC	NFLX	\
2016-01-04	102.220001	21.870001	8.25	759.440002	30.453503	109.959999	
2016-01-05	102.730003	21.639999	8.52	761.530029	30.310141	107.660004	
2016-01-06	102.970001	20.530001	8.41	759.330017	29.638180	117.680000	
2016-01-07	97.919998	19.010000	8.04	741.000000	28.527191	114.559998	
2016-01-08	97.330002	18.320000	8.02	730.909973	28.231529	111.389999	

	PAYC
2016-01-04	35.970001
2016-01-05	34.869999
2016-01-06	34.990002
2016-01-07	35.540001
2016-01-08	33.259998

```
[9]: df.tail()
```

```
[9]:
```

	AAPL	ADBE	AMZN	CLDR	CRM	\
2018-12-24	144.656540	205.160004	1343.959961	10.37	121.330002	
2018-12-26	154.843475	222.949997	1470.900024	11.00	130.839996	
2018-12-27	153.838562	225.139999	1461.640015	10.95	135.199997	
2018-12-28	153.917389	223.130005	1478.020020	10.88	134.679993	
2018-12-31	155.405045	226.240005	1501.969971	11.06	136.970001	

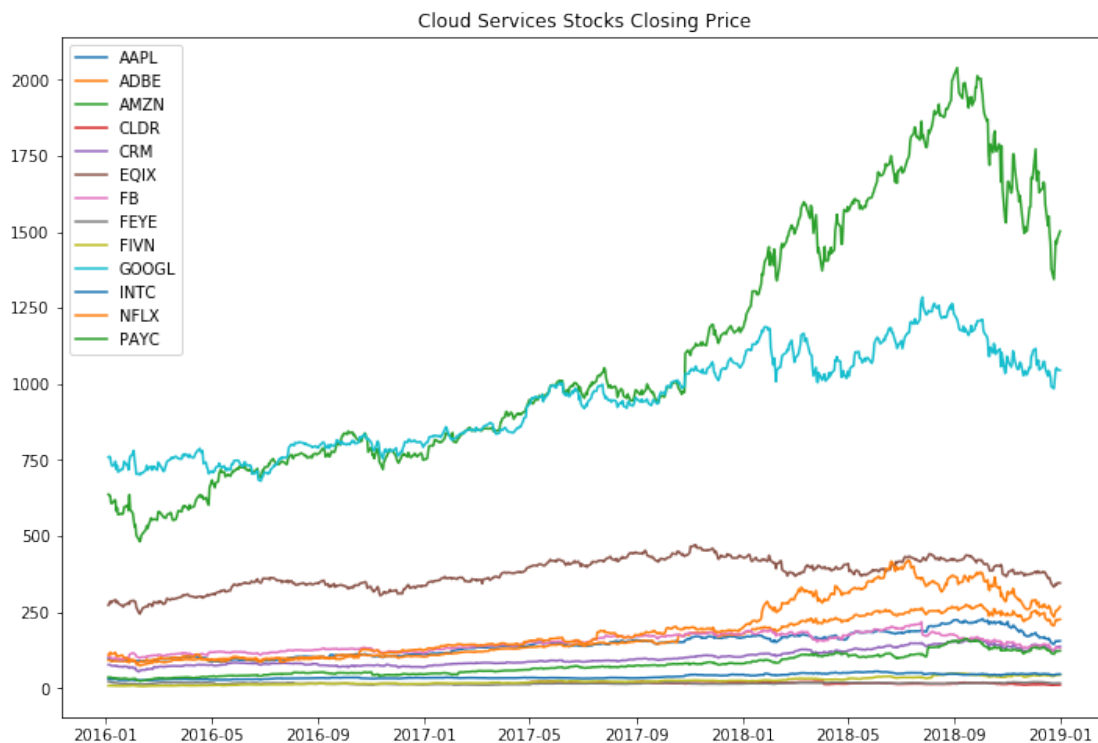
	EQIX	FB	FEYE	FIVN	GOOGL	\
2018-12-24	332.392975	124.059998	15.390000	39.259998	984.669983	
2018-12-26	342.442657	134.179993	16.090000	42.520000	1047.849976	

2018-12-27	339.618958	134.520004	16.180000	43.009998	1052.900024
2018-12-28	345.952637	133.199997	16.090000	43.209999	1046.680054
2018-12-31	345.668335	131.089996	16.209999	43.720001	1044.959961

	INTC	NFLX	PAYC
2018-12-24	42.528996	233.880005	111.540001
2018-12-26	45.065708	253.669998	120.220001
2018-12-27	45.231571	255.570007	121.750000
2018-12-28	45.612076	256.079987	121.239998
2018-12-31	45.787697	267.660004	122.449997

```
[10]: plt.figure(figsize=(12,8))
plt.plot(df)
plt.title('Cloud Services Stocks Closing Price')
plt.legend(labels=df.columns)
```

```
[10]: <matplotlib.legend.Legend at 0x25532b8f518>
```

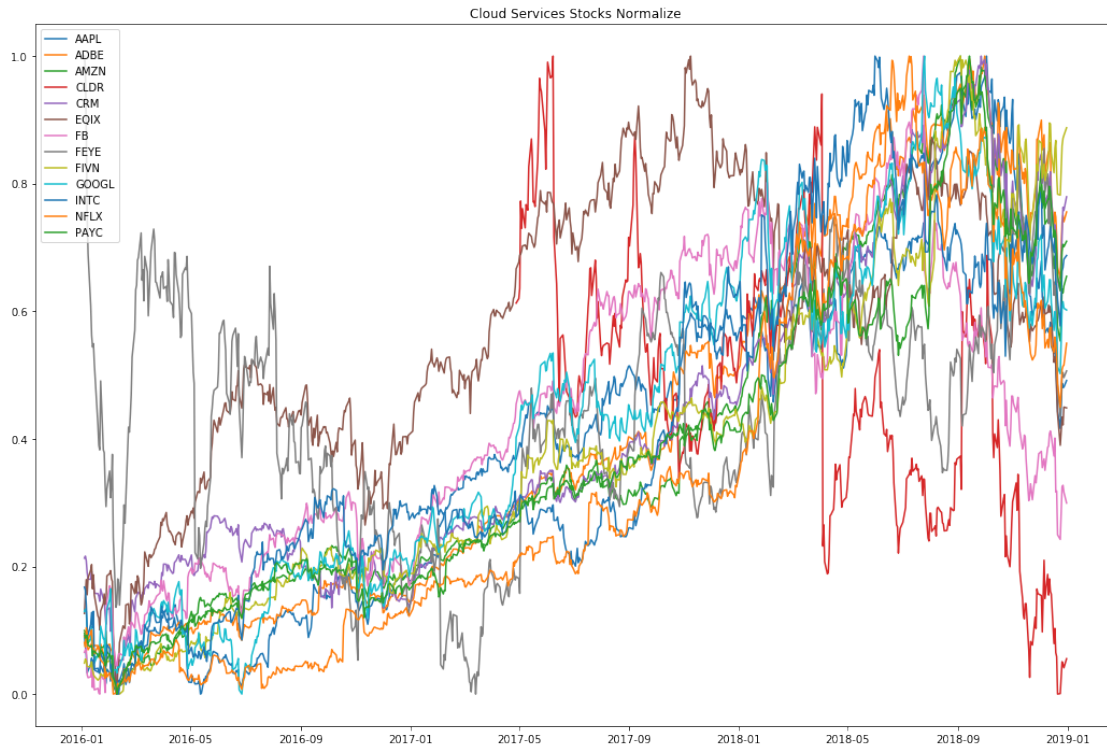


```
[11]: # Normalize the data
normalize = (df - df.min()) / (df.max() - df.min())
```

```
[12]: plt.figure(figsize=(18,12))
plt.plot(normalize)
```

```
plt.title('Cloud Services Stocks Normalize')
plt.legend(labels=normalize.columns)
```

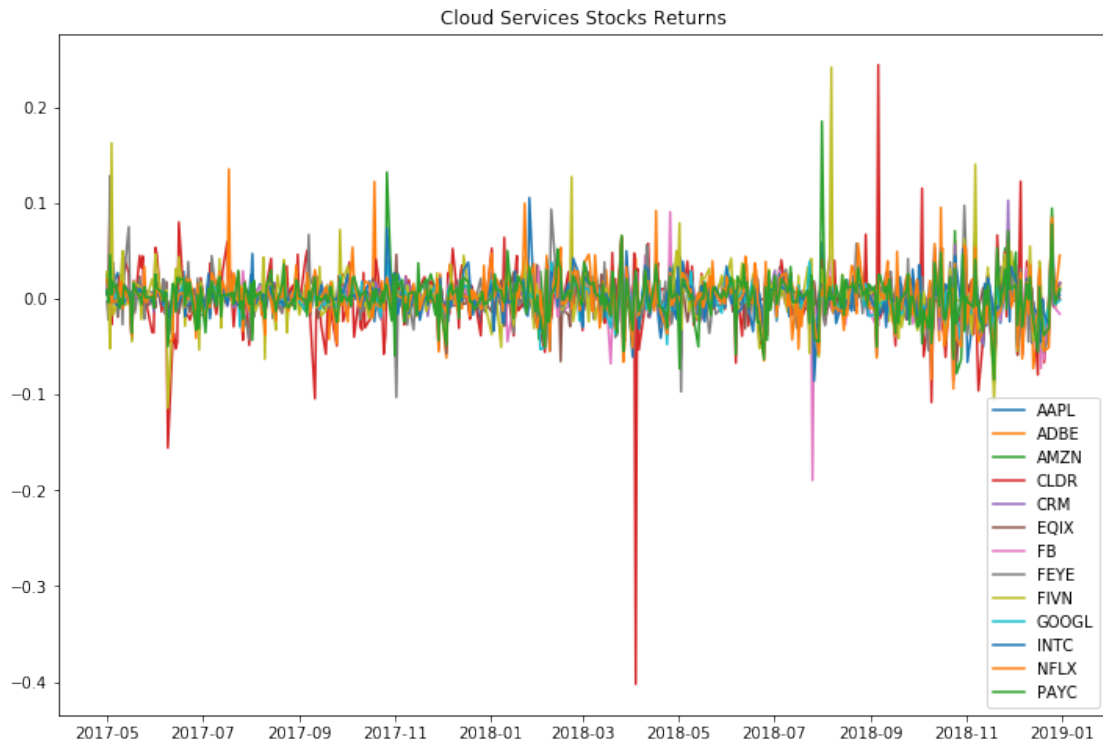
[12]: <matplotlib.legend.Legend at 0x25535e44358>



```
[13]: stock_returns = df.pct_change().dropna()
```

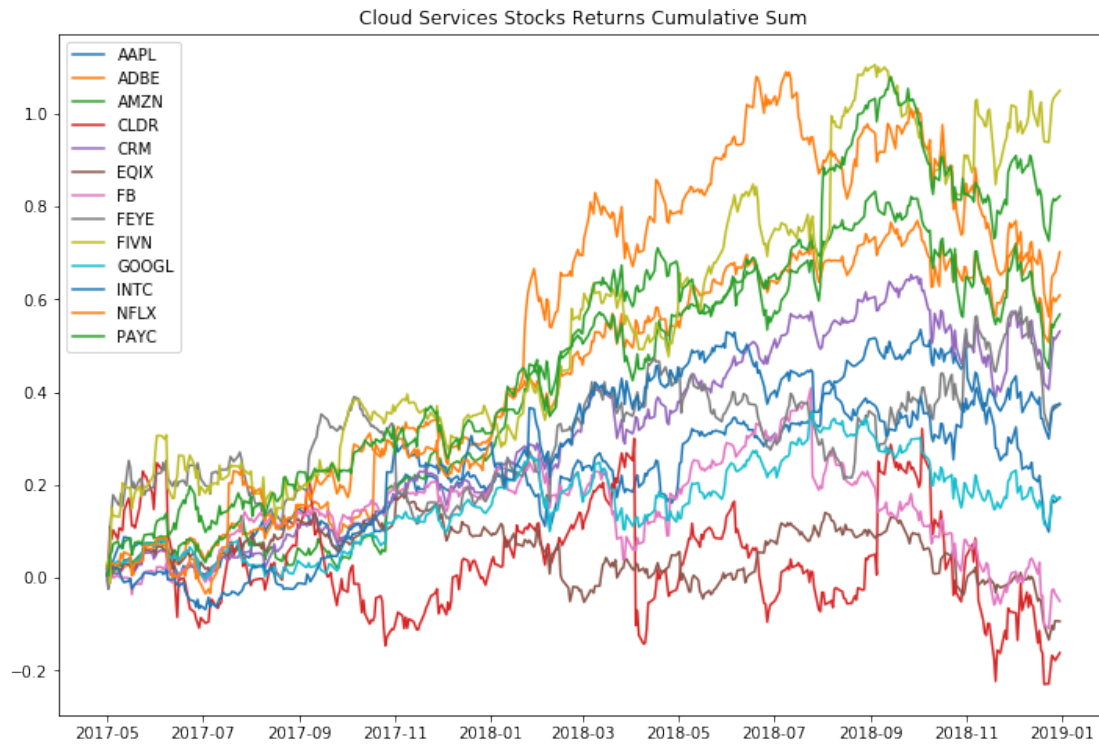
```
[14]: plt.figure(figsize=(12,8))
plt.plot(stock_returns)
plt.title('Cloud Services Stocks Returns')
plt.legend(labels=stock_returns.columns)
```

[14]: <matplotlib.legend.Legend at 0x25535c3b080>



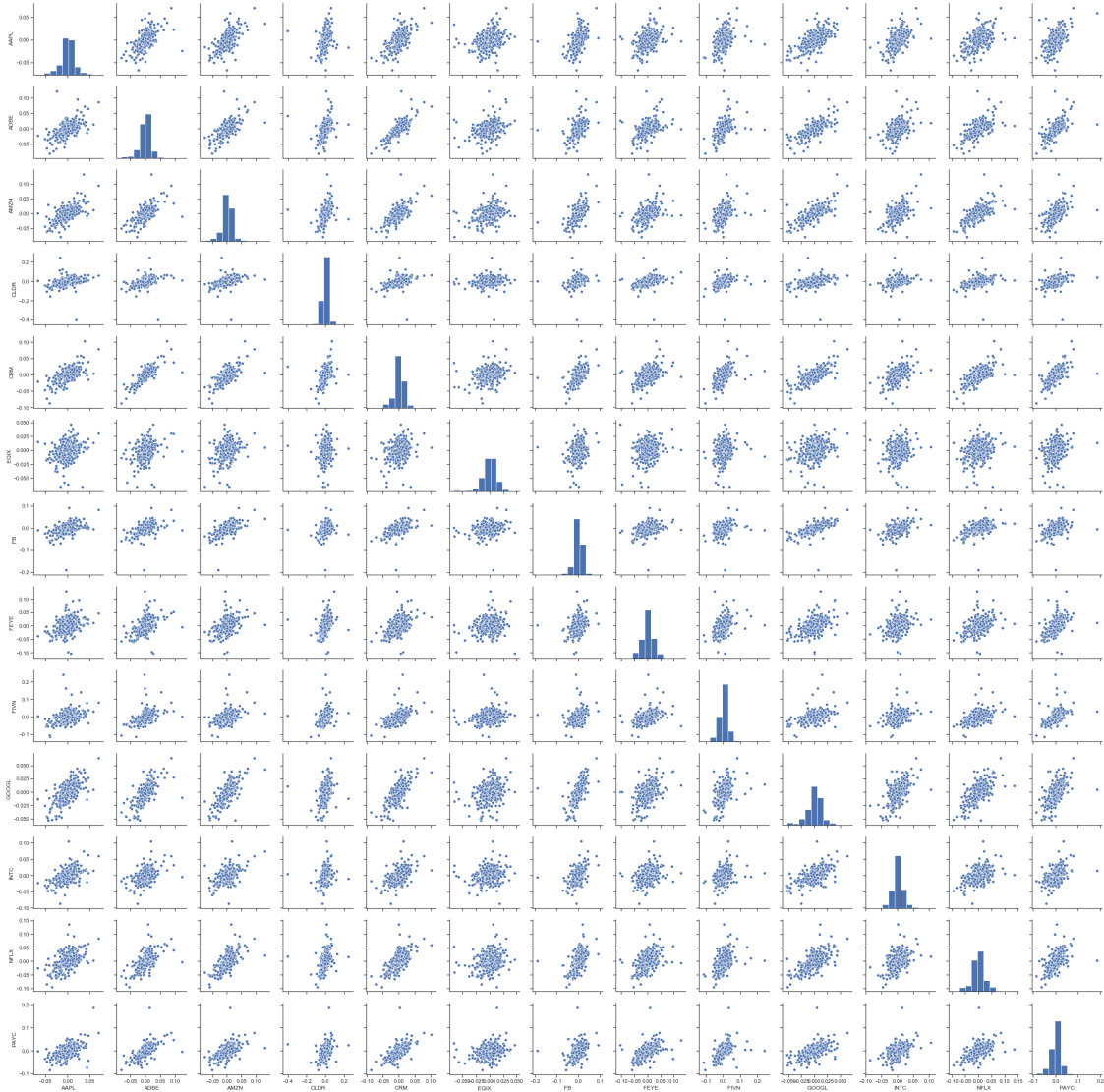
```
[15]: plt.figure(figsize=(12,8))  
plt.plot(stock_rets.cumsum())  
plt.title('Cloud Services Stocks Returns Cumulative Sum')  
plt.legend(labels=stock_rets.columns)
```

```
[15]: <matplotlib.legend.Legend at 0x25535cb71d0>
```

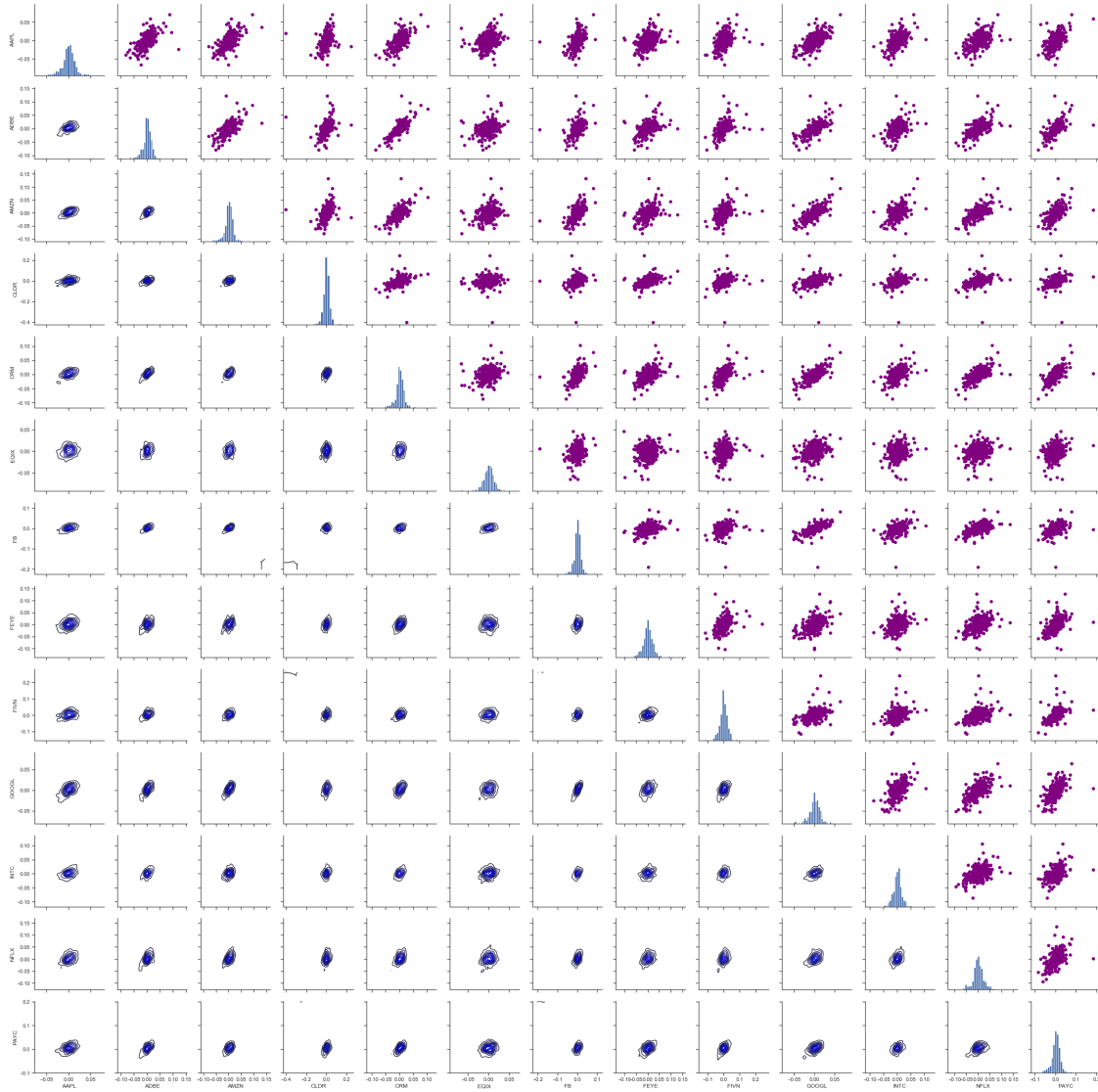


```
[16]: sns.set(style='ticks')
      ax = sns.pairplot(stock_rets, diag_kind='hist')

      nplot = len(stock_rets.columns)
      for i in range(nplot) :
          for j in range(nplot) :
              ax.axes[i, j].locator_params(axis='x', nbins=6, tight=True)
```



```
[17]: ax = sns.PairGrid(stock_rets)
ax.map_upper(plt.scatter, color='purple')
ax.map_lower(sns.kdeplot, color='blue')
ax.map_diag(plt.hist, bins=30)
for i in range(nplot) :
    for j in range(nplot) :
        ax.axes[i, j].locator_params(axis='x', nbins=6, tight=True)
```

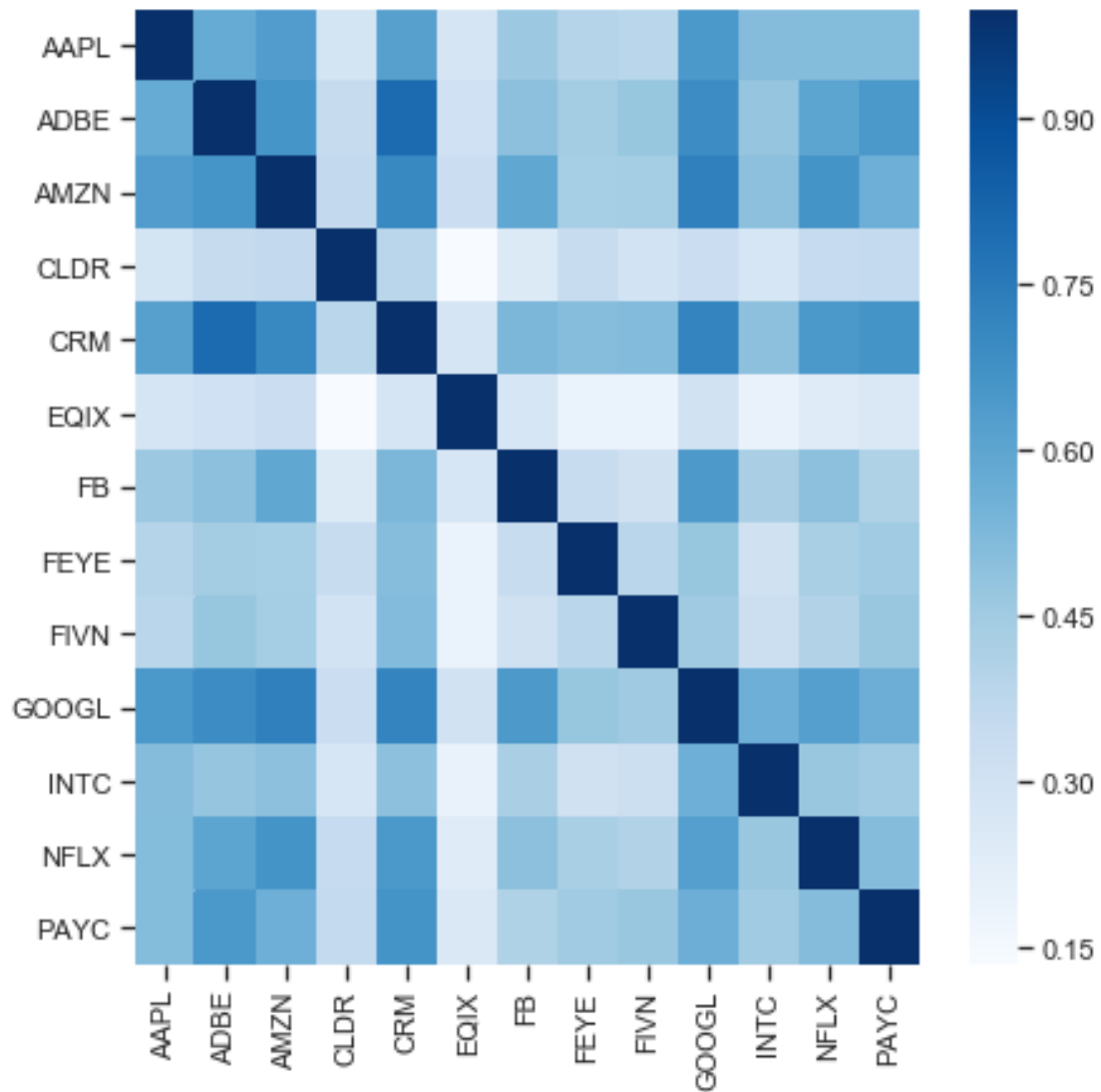


```
[18]: plt.figure(figsize=(7,7))
      corr = stock_rets.corr()

      # plot the heatmap
      sns.heatmap(corr,
                  xticklabels=corr.columns,
                  yticklabels=corr.columns,
                  cmap="Blues")
```

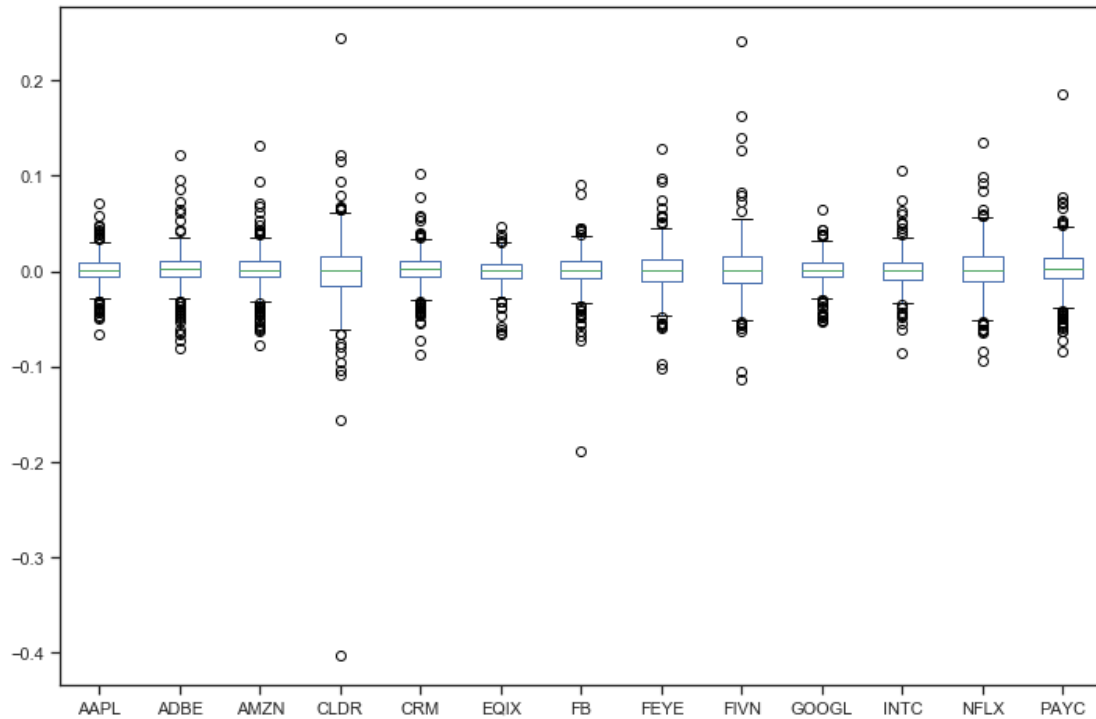
```
[18]: <matplotlib.axes._subplots.AxesSubplot at 0x25520cfa780>
```





```
[19]: # Box plot
stock_rets.plot(kind='box',figsize=(12,8))
```

```
[19]: <matplotlib.axes._subplots.AxesSubplot at 0x2553ac695f8>
```

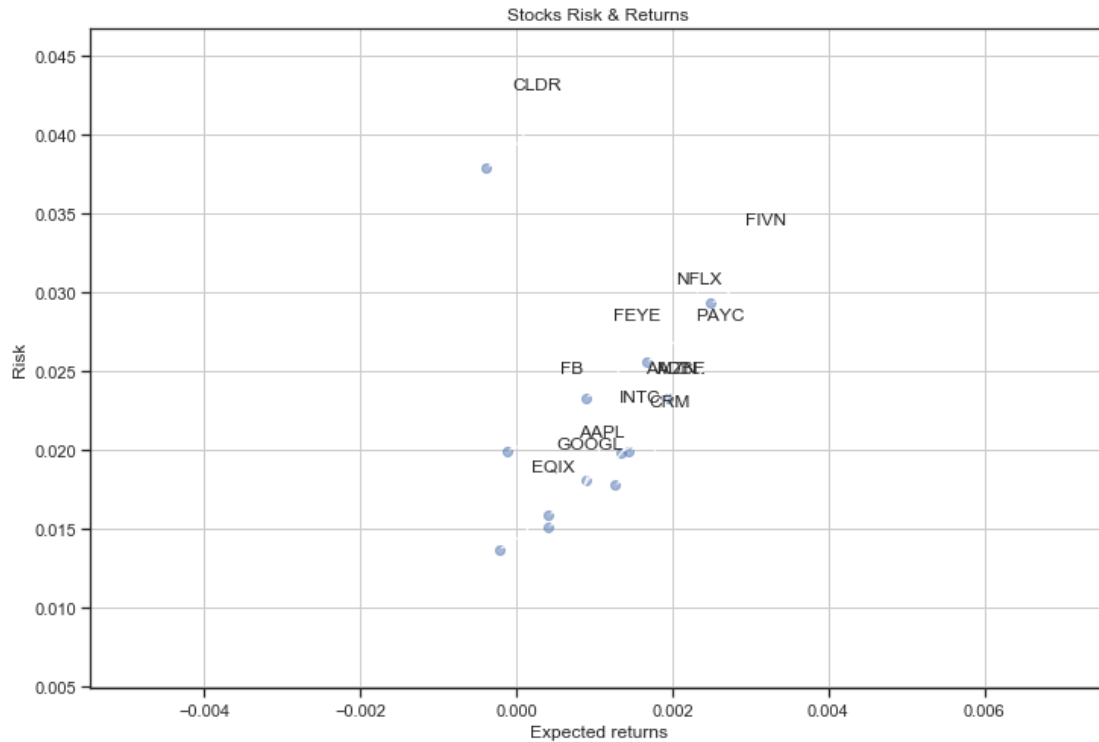


```
[20]: rets = stock_rets.dropna()

plt.figure(figsize=(12,8))
plt.scatter(rets.mean(), rets.std(),alpha = 0.5)

plt.title('Stocks Risk & Returns')
plt.xlabel('Expected returns')
plt.ylabel('Risk')
plt.grid(which='major')

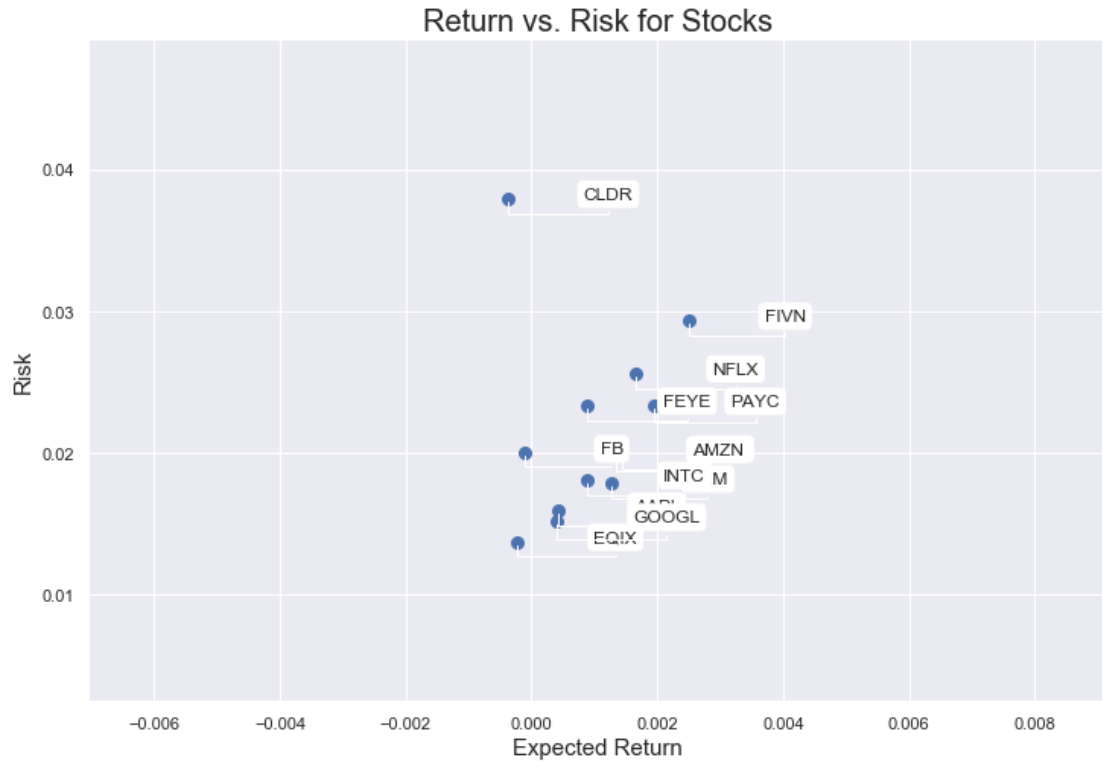
for label, x, y in zip(rets.columns, rets.mean(), rets.std()):
    plt.annotate(
        label,
        xy = (x, y), xytext = (50, 50),
        textcoords = 'offset points', ha = 'right', va = 'bottom',
        arrowprops = dict(arrowstyle = '-', connectionstyle = 'arc3,rad=-0.3'))
```



```
[21]: rets = stock_rets.dropna()
area = np.pi*20.0

sns.set(style='darkgrid')
plt.figure(figsize=(12,8))
plt.scatter(rets.mean(), rets.std(), s=area)
plt.xlabel("Expected Return", fontsize=15)
plt.ylabel("Risk", fontsize=15)
plt.title("Return vs. Risk for Stocks", fontsize=20)

for label, x, y in zip(rets.columns, rets.mean(), rets.std()) :
    plt.annotate(label, xy=(x,y), xytext=(50, 0), textcoords='offset points',
        arrowprops=dict(arrowstyle='-',
        ↪connectionstyle='bar,angle=180,fraction=-0.2'),
        bbox=dict(boxstyle="round", fc="w"))
```



```
[22]: rest_rets = rets.corr()
pair_value = rest_rets.abs().unstack()
pair_value.sort_values(ascending = False)
```

```
[22]: PAYC    PAYC    1.000000
NFLX    NFLX    1.000000
ADBE    ADBE    1.000000
AMZN    AMZN    1.000000
CLDR    CLDR    1.000000
CRM     CRM     1.000000
EQIX    EQIX    1.000000
FEYE    FEYE    1.000000
FIVN    FIVN    1.000000
GOOGL   GOOGL   1.000000
INTC    INTC    1.000000
FB      FB      1.000000
AAPL    AAPL    1.000000
CRM     ADBE    0.802700
ADBE    CRM     0.802700
AMZN    GOOGL   0.733855
GOOGL   AMZN    0.733855
CRM     GOOGL   0.720041
GOOGL   CRM     0.720041
```

AMZN	CRM	0.706310
CRM	AMZN	0.706310
GOOGL	ADBE	0.692089
ADBE	GOOGL	0.692089
AMZN	NFLX	0.668401
NFLX	AMZN	0.668401
PAYC	CRM	0.666215
CRM	PAYC	0.666215
ADBE	AMZN	0.663639
AMZN	ADBE	0.663639
NFLX	CRM	0.648659
...		
FIVN	FB	0.307634
FB	FIVN	0.307634
EQIX	GOOGL	0.301542
GOOGL	EQIX	0.301542
FIVN	CLDR	0.298341
CLDR	FIVN	0.298341
	AAPL	0.291731
AAPL	CLDR	0.291731
CRM	EQIX	0.284850
EQIX	CRM	0.284850
	AAPL	0.282320
AAPL	EQIX	0.282320
CLDR	INTC	0.276460
INTC	CLDR	0.276460
EQIX	FB	0.274201
FB	EQIX	0.274201
EQIX	PAYC	0.262389
PAYC	EQIX	0.262389
FB	CLDR	0.252010
CLDR	FB	0.252010
EQIX	NFLX	0.241039
NFLX	EQIX	0.241039
EQIX	INTC	0.195254
INTC	EQIX	0.195254
EQIX	FIVN	0.192525
FIVN	EQIX	0.192525
EQIX	FEYE	0.188764
FEYE	EQIX	0.188764
EQIX	CLDR	0.134144
CLDR	EQIX	0.134144

Length: 169, dtype: float64

```
[23]: # Normalized Returns Data
Normalized_Value = ((rets[:] - rets[:].min()) / (rets[:].max() - rets[:].min()))
Normalized_Value.head()
```

[23]:

	AAPL	ADBE	AMZN	CLDR	CRM	EQIX	\
2017-05-01	0.634196	0.446844	0.491163	0.629965	0.491804	0.638835	
2017-05-02	0.531439	0.392315	0.365261	0.639278	0.484909	0.642778	
2017-05-03	0.462735	0.390851	0.342059	0.767742	0.426091	0.592466	
2017-05-04	0.458688	0.387553	0.354047	0.580775	0.456936	0.608960	
2017-05-05	0.606311	0.404755	0.354589	0.653076	0.486170	0.627250	

	FB	FEYE	FIVN	GOOGL	INTC	NFLX	\
2017-05-01	0.729129	0.434244	0.400108	0.528185	0.471847	0.499991	
2017-05-02	0.684129	0.351154	0.355244	0.490566	0.543688	0.440657	
2017-05-03	0.653748	1.000000	0.174310	0.555073	0.489012	0.385846	
2017-05-04	0.654306	0.601328	0.778175	0.507949	0.430359	0.456294	
2017-05-05	0.662208	0.607940	0.272465	0.411671	0.444470	0.391788	

	PAYC
2017-05-01	0.344431
2017-05-02	0.298411
2017-05-03	0.483329
2017-05-04	0.329450
2017-05-05	0.379518

[24]: Normalized\_Value.corr()

[24]:

	AAPL	ADBE	AMZN	CLDR	CRM	EQIX	FB	\
AAPL	1.000000	0.577556	0.637037	0.291731	0.619898	0.282320	0.463529	
ADBE	0.577556	1.000000	0.663639	0.349971	0.802700	0.313211	0.498986	
AMZN	0.637037	0.663639	1.000000	0.358453	0.706310	0.327905	0.595047	
CLDR	0.291731	0.349971	0.358453	1.000000	0.383532	0.134144	0.252010	
CRM	0.619898	0.802700	0.706310	0.383532	1.000000	0.284850	0.531105	
EQIX	0.282320	0.313211	0.327905	0.134144	0.284850	1.000000	0.274201	
FB	0.463529	0.498986	0.595047	0.252010	0.531105	0.274201	1.000000	
FEYE	0.396292	0.442358	0.435358	0.340687	0.508069	0.188764	0.342525	
FIVN	0.387536	0.474684	0.441007	0.298341	0.518641	0.192525	0.307634	
GOOGL	0.648306	0.692089	0.733855	0.329382	0.720041	0.301542	0.645672	
INTC	0.511681	0.476872	0.496999	0.276460	0.497242	0.195254	0.425594	
NFLX	0.515645	0.600985	0.668401	0.351394	0.648659	0.241039	0.496826	
PAYC	0.515780	0.648563	0.563362	0.356989	0.666215	0.262389	0.408672	

	FEYE	FIVN	GOOGL	INTC	NFLX	PAYC
AAPL	0.396292	0.387536	0.648306	0.511681	0.515645	0.515780
ADBE	0.442358	0.474684	0.692089	0.476872	0.600985	0.648563
AMZN	0.435358	0.441007	0.733855	0.496999	0.668401	0.563362
CLDR	0.340687	0.298341	0.329382	0.276460	0.351394	0.356989
CRM	0.508069	0.518641	0.720041	0.497242	0.648659	0.666215
EQIX	0.188764	0.192525	0.301542	0.195254	0.241039	0.262389
FB	0.342525	0.307634	0.645672	0.425594	0.496826	0.408672
FEYE	1.000000	0.387619	0.475048	0.308747	0.429293	0.455137

FIVN	0.387619	1.000000	0.458299	0.325703	0.406229	0.472254
GOOGL	0.475048	0.458299	1.000000	0.560624	0.626107	0.565608
INTC	0.308747	0.325703	0.560624	1.000000	0.470787	0.451129
NFLX	0.429293	0.406229	0.626107	0.470787	1.000000	0.509711
PAYC	0.455137	0.472254	0.565608	0.451129	0.509711	1.000000

```
[25]: normalized_rets = Normalized_Value.corr()
normalized_pair_value = normalized_rets.abs().unstack()
normalized_pair_value.sort_values(ascending = False)
```

```
[25]: PAYC    PAYC    1.000000
NFLX    NFLX    1.000000
ADBE    ADBE    1.000000
AMZN    AMZN    1.000000
CLDR    CLDR    1.000000
CRM     CRM     1.000000
EQIX    EQIX    1.000000
FEYE    FEYE    1.000000
FIVN    FIVN    1.000000
GOOGL   GOOGL   1.000000
INTC    INTC    1.000000
FB      FB      1.000000
AAPL    AAPL    1.000000
CRM     ADBE    0.802700
ADBE    CRM     0.802700
AMZN    GOOGL   0.733855
GOOGL   AMZN    0.733855
CRM     GOOGL   0.720041
GOOGL   CRM     0.720041
AMZN    CRM     0.706310
CRM     AMZN    0.706310
GOOGL   ADBE    0.692089
ADBE    GOOGL   0.692089
AMZN    NFLX    0.668401
NFLX    AMZN    0.668401
PAYC    CRM     0.666215
CRM     PAYC    0.666215
ADBE    AMZN    0.663639
AMZN    ADBE    0.663639
NFLX    CRM     0.648659
...
FIVN    FB      0.307634
FB      FIVN    0.307634
EQIX    GOOGL   0.301542
GOOGL   EQIX    0.301542
FIVN    CLDR    0.298341
CLDR    FIVN    0.298341
```

	AAPL	0.291731
AAPL	CLDR	0.291731
CRM	EQIX	0.284850
EQIX	CRM	0.284850
	AAPL	0.282320
AAPL	EQIX	0.282320
CLDR	INTC	0.276460
INTC	CLDR	0.276460
EQIX	FB	0.274201
FB	EQIX	0.274201
EQIX	PAYC	0.262389
PAYC	EQIX	0.262389
FB	CLDR	0.252010
CLDR	FB	0.252010
EQIX	NFLX	0.241039
NFLX	EQIX	0.241039
EQIX	INTC	0.195254
INTC	EQIX	0.195254
EQIX	FIVN	0.192525
FIVN	EQIX	0.192525
EQIX	FEYE	0.188764
FEYE	EQIX	0.188764
EQIX	CLDR	0.134144
CLDR	EQIX	0.134144

Length: 169, dtype: float64

```
[26]: print("Stock returns: ")
      print(rets.mean())
      print('-' * 50)
      print("Stock risks:")
      print(rets.std())
```

Stock returns:

AAPL	0.000412
ADBE	0.001447
AMZN	0.001348
CLDR	-0.000384
CRM	0.001261
EQIX	-0.000222
FB	-0.000119
FEYE	0.000886
FIVN	0.002493
GOOGL	0.000406
INTC	0.000891
NFLX	0.001667
PAYC	0.001954

dtype: float64



-----  
Stock risks:

```
AAPL    0.015902
ADBE    0.019941
AMZN    0.019881
CLDR    0.037911
CRM     0.017821
EQIX    0.013721
FB      0.019955
FEYE    0.023326
FIVN    0.029311
GOOGL   0.015130
INTC    0.018097
NFLX    0.025599
PAYC    0.023299
dtype: float64
```

```
[27]: table = pd.DataFrame()
      table['Returns'] = rets.mean()
      table['Risk'] = rets.std()
      table.sort_values(by='Returns')
```

```
[27]:
```

	Returns	Risk
CLDR	-0.000384	0.037911
EQIX	-0.000222	0.013721
FB	-0.000119	0.019955
GOOGL	0.000406	0.015130
AAPL	0.000412	0.015902
FEYE	0.000886	0.023326
INTC	0.000891	0.018097
CRM	0.001261	0.017821
AMZN	0.001348	0.019881
ADBE	0.001447	0.019941
NFLX	0.001667	0.025599
PAYC	0.001954	0.023299
FIVN	0.002493	0.029311

```
[28]: table.sort_values(by='Risk')
```

```
[28]:
```

	Returns	Risk
EQIX	-0.000222	0.013721
GOOGL	0.000406	0.015130
AAPL	0.000412	0.015902
CRM	0.001261	0.017821
INTC	0.000891	0.018097
AMZN	0.001348	0.019881
ADBE	0.001447	0.019941

FB	-0.000119	0.019955
PAYC	0.001954	0.023299
FEYE	0.000886	0.023326
NFLX	0.001667	0.025599
FIVN	0.002493	0.029311
CLDR	-0.000384	0.037911

```
[29]: rf = 0.01
      table['Sharpe Ratio'] = (table['Returns'] - rf) / table['Risk']
      table
```

```
[29]:
```

	Returns	Risk	Sharpe Ratio
AAPL	0.000412	0.015902	-0.602983
ADBE	0.001447	0.019941	-0.428924
AMZN	0.001348	0.019881	-0.435184
CLDR	-0.000384	0.037911	-0.273896
CRM	0.001261	0.017821	-0.490369
EQIX	-0.000222	0.013721	-0.744972
FB	-0.000119	0.019955	-0.507075
FEYE	0.000886	0.023326	-0.390724
FIVN	0.002493	0.029311	-0.256107
GOOGL	0.000406	0.015130	-0.634115
INTC	0.000891	0.018097	-0.503322
NFLX	0.001667	0.025599	-0.325514
PAYC	0.001954	0.023299	-0.345354

```
[30]: table['Max Returns'] = rets.max()
```

```
[31]: table['Min Returns'] = rets.min()
```

```
[32]: table['Median Returns'] = rets.median()
```

```
[33]: total_return = stock_rets[-1:].transpose()
      table['Total Return'] = 100 * total_return
      table
```

```
[33]:
```

	Returns	Risk	Sharpe Ratio	Max Returns	Min Returns	\
AAPL	0.000412	0.015902	-0.602983	0.070422	-0.066331	
ADBE	0.001447	0.019941	-0.428924	0.122418	-0.080372	
AMZN	0.001348	0.019881	-0.435184	0.132164	-0.078197	
CLDR	-0.000384	0.037911	-0.273896	0.244275	-0.402428	
CRM	0.001261	0.017821	-0.490369	0.102713	-0.087061	
EQIX	-0.000222	0.013721	-0.744972	0.046290	-0.065439	
FB	-0.000119	0.019955	-0.507075	0.090613	-0.189609	
FEYE	0.000886	0.023326	-0.390724	0.128583	-0.102932	
FIVN	0.002493	0.029311	-0.256107	0.241724	-0.114168	
GOOGL	0.000406	0.015130	-0.634115	0.064164	-0.052802	

INTC	0.000891	0.018097	-0.503322	0.105519	-0.085890
NFLX	0.001667	0.025599	-0.325514	0.135436	-0.094039
PAYC	0.001954	0.023299	-0.345354	0.185318	-0.084452

	Median Returns	Total Return
AAPL	0.000512	0.966529
ADBE	0.002083	1.393806
AMZN	0.001529	1.620408
CLDR	0.000579	1.654412
CRM	0.001986	1.700333
EQIX	0.000757	-0.082179
FB	0.000696	-1.584085
FEYE	0.000677	0.745799
FIVN	0.000782	1.180287
GOOGL	0.001121	-0.164338
INTC	0.000570	0.385032
NFLX	0.000606	4.522031
PAYC	0.003171	0.998020

```
[34]: table['Average Return Yearly'] = (1 + total_return)**(1 / number_of_years) - 1
table
```

```
[34]:
```

	Returns	Risk	Sharpe Ratio	Max Returns	Min Returns	\
AAPL	0.000412	0.015902	-0.602983	0.070422	-0.066331	
ADBE	0.001447	0.019941	-0.428924	0.122418	-0.080372	
AMZN	0.001348	0.019881	-0.435184	0.132164	-0.078197	
CLDR	-0.000384	0.037911	-0.273896	0.244275	-0.402428	
CRM	0.001261	0.017821	-0.490369	0.102713	-0.087061	
EQIX	-0.000222	0.013721	-0.744972	0.046290	-0.065439	
FB	-0.000119	0.019955	-0.507075	0.090613	-0.189609	
FEYE	0.000886	0.023326	-0.390724	0.128583	-0.102932	
FIVN	0.002493	0.029311	-0.256107	0.241724	-0.114168	
GOOGL	0.000406	0.015130	-0.634115	0.064164	-0.052802	
INTC	0.000891	0.018097	-0.503322	0.105519	-0.085890	
NFLX	0.001667	0.025599	-0.325514	0.135436	-0.094039	
PAYC	0.001954	0.023299	-0.345354	0.185318	-0.084452	

	Median Returns	Total Return	Average Return Yearly
AAPL	0.000512	0.966529	0.003211
ADBE	0.002083	1.393806	0.004625
AMZN	0.001529	1.620408	0.005372
CLDR	0.000579	1.654412	0.005485
CRM	0.001986	1.700333	0.005636
EQIX	0.000757	-0.082179	-0.000274
FB	0.000696	-1.584085	-0.005308
FEYE	0.000677	0.745799	0.002480
FIVN	0.000782	1.180287	0.003919

GOOGL	0.001121	-0.164338	-0.000548
INTC	0.000570	0.385032	0.001282
NFLX	0.000606	4.522031	0.014852
PAYC	0.003171	0.998020	0.003316

```
[35]: initial_value = df.iloc[0]
      ending_value = df.iloc[-1]
      table['CAGR'] = ((ending_value / initial_value) ** (252.0 / days)) - 1
      table
```

```
[35]:
```

	Returns	Risk	Sharpe Ratio	Max Returns	Min Returns	\
AAPL	0.000412	0.015902	-0.602983	0.070422	-0.066331	
ADBE	0.001447	0.019941	-0.428924	0.122418	-0.080372	
AMZN	0.001348	0.019881	-0.435184	0.132164	-0.078197	
CLDR	-0.000384	0.037911	-0.273896	0.244275	-0.402428	
CRM	0.001261	0.017821	-0.490369	0.102713	-0.087061	
EQIX	-0.000222	0.013721	-0.744972	0.046290	-0.065439	
FB	-0.000119	0.019955	-0.507075	0.090613	-0.189609	
FEYE	0.000886	0.023326	-0.390724	0.128583	-0.102932	
FIVN	0.002493	0.029311	-0.256107	0.241724	-0.114168	
GOOGL	0.000406	0.015130	-0.634115	0.064164	-0.052802	
INTC	0.000891	0.018097	-0.503322	0.105519	-0.085890	
NFLX	0.001667	0.025599	-0.325514	0.135436	-0.094039	
PAYC	0.001954	0.023299	-0.345354	0.185318	-0.084452	

	Median Returns	Total Return	Average Return Yearly	CAGR
AAPL	0.000512	0.966529	0.003211	0.111100
ADBE	0.002083	1.393806	0.004625	0.230872
AMZN	0.001529	1.620408	0.005372	0.218900
CLDR	0.000579	1.654412	0.005485	NaN
CRM	0.001986	1.700333	0.005636	0.143146
EQIX	0.000757	-0.082179	-0.000274	0.056220
FB	0.000696	-1.584085	-0.005308	0.059085
FEYE	0.000677	0.745799	0.002480	-0.066778
FIVN	0.000782	1.180287	0.003919	0.469363
GOOGL	0.001121	-0.164338	-0.000548	0.076431
INTC	0.000570	0.385032	0.001282	0.098682
NFLX	0.000606	4.522031	0.014852	0.227884
PAYC	0.003171	0.998020	0.003316	0.326702

```
[36]: table.sort_values(by='Average Return Yearly')
```

```
[36]:
```

	Returns	Risk	Sharpe Ratio	Max Returns	Min Returns	\
FB	-0.000119	0.019955	-0.507075	0.090613	-0.189609	
GOOGL	0.000406	0.015130	-0.634115	0.064164	-0.052802	
EQIX	-0.000222	0.013721	-0.744972	0.046290	-0.065439	
INTC	0.000891	0.018097	-0.503322	0.105519	-0.085890	

FEYE	0.000886	0.023326	-0.390724	0.128583	-0.102932
AAPL	0.000412	0.015902	-0.602983	0.070422	-0.066331
PAYC	0.001954	0.023299	-0.345354	0.185318	-0.084452
FIVN	0.002493	0.029311	-0.256107	0.241724	-0.114168
ADBE	0.001447	0.019941	-0.428924	0.122418	-0.080372
AMZN	0.001348	0.019881	-0.435184	0.132164	-0.078197
CLDR	-0.000384	0.037911	-0.273896	0.244275	-0.402428
CRM	0.001261	0.017821	-0.490369	0.102713	-0.087061
NFLX	0.001667	0.025599	-0.325514	0.135436	-0.094039

	Median Returns	Total Return	Average Return Yearly	CAGR
FB	0.000696	-1.584085	-0.005308	0.059085
GOOGL	0.001121	-0.164338	-0.000548	0.076431
EQIX	0.000757	-0.082179	-0.000274	0.056220
INTC	0.000570	0.385032	0.001282	0.098682
FEYE	0.000677	0.745799	0.002480	-0.066778
AAPL	0.000512	0.966529	0.003211	0.111100
PAYC	0.003171	0.998020	0.003316	0.326702
FIVN	0.000782	1.180287	0.003919	0.469363
ADBE	0.002083	1.393806	0.004625	0.230872
AMZN	0.001529	1.620408	0.005372	0.218900
CLDR	0.000579	1.654412	0.005485	NaN
CRM	0.001986	1.700333	0.005636	0.143146
NFLX	0.000606	4.522031	0.014852	0.227884