In [1]:
```
import numpy as np
import pandas as pd
from pandas_datareader import data as wb
```

In [8]:
```
tickers = ['GOOG', '^GSPC']
data = pd.DataFrame()
for t in tickers:
    data[t] = wb.DataReader(t, data_source='yahoo', start='2016-1
2-31', end='2019-07-30')['Adj Close']
```

In [9]:
```
sec_returns = np.log(data / data.shift(1))
```

In [10]:
```
cov = sec_returns.cov() * 250
cov
```

Out[10]:

	GOOG	^GSPC
GOOG	0.056652	0.021935
^GSPC	0.021935	0.016184

In [11]:
```
cov_with_market = cov.iloc[0,1]
cov_with_market
```

Out[11]:
```
0.021935258426864213
```

In [13]:
```
market_var = sec_returns['^GSPC'].var()*250
market_var
```

Out[13]:
```
0.016183540070460148
```

In [14]:
```
# Calculate Beta
GOOG_beta = cov_with_market / market_var
GOOG_beta
```

Out[14]:
```
1.3554054509311402
```

In [ ]: