Class_FinancialLab

```
%pyspark
from pandas import Series, DataFrame
import numpy as np, pandas as pd
df = DataFrame([[1.4,np.nan],[7.1,-4.5],
               [np.nan,np.nan],[0.75,-1.3]],
               index=['a','b','c','d'],
               columns=['one','two'])
df
df.sum()
df.sum(axis=1)
df.mean(axis=1,skipna=False)
df.idxmax()
df.describe()
obj = Series(['a','a','b','c'] * 4)
obj
obj.describe()
```

FINISHED

```
count     16
unique     3
top        a
freq       8
dtype: object
```

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```
%pyspark
from pandas_datareader import data as wb
all_data = {}
for ticker in ['AAPL','IBM','MSFT','GOOG']:
  all_data[ticker] = wb.get_data_yahoo(ticker)
price = DataFrame({tic: data['Adj Close']
    for tic, data in all_data.items()})
volume = DataFrame({tic: data['Volume']
    for tic, data in all_data.items()})
returns = price.pct_change()
returns.tail()
```

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```
                AAPL      GOOG       IBM      MSFT
Date
2017-02-15  0.003629 -0.001792  0.008605 -0.000619
2017-02-16 -0.001181  0.006325 -0.001376 -0.000155
2017-02-17  0.002734  0.004744 -0.004189  0.001550
2017-02-21  0.007221  0.004335 -0.002269 -0.002012
2017-02-22  0.002999 -0.001082  0.004937 -0.002016
```

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```
%pyspark
returns.MSFT.corr(returns.IBM)
```

FINISHED

```
0.49515377802280924
```

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```
%pyspark
returns.MSFT.cov(returns.IBM)
```

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```
8.5977652563835441e-05
```

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```
%pyspark
returns.corr()
```

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```
          AAPL      GOOG       IBM      MSFT
AAPL  0.000270  0.000105  0.000075  0.000093
GOOG  0.000105  0.000244  0.000075  0.000107
IBM   0.000075  0.000075  0.000144  0.000086
MSFT  0.000093  0.000107  0.000086  0.000210
```

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```
%pyspark
returns.cov()
```

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```
          AAPL      GOOG       IBM      MSFT
AAPL  0.000270  0.000105  0.000075  0.000093
GOOG  0.000105  0.000244  0.000075  0.000107
IBM   0.000075  0.000075  0.000144  0.000086
MSFT  0.000093  0.000107  0.000086  0.000210
```

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```
%pyspark
returns.corrwith(returns.IBM)
```

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```
AAPL    0.381549
GOOG    0.402872
IBM     1.000000
MSFT    0.495154
dtype: float64
```

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```
%pyspark
returns.corrwith(volume)
```

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```
AAPL   -0.074323
GOOG   -0.009670
IBM    -0.194432
MSFT   -0.091017
dtype: float64
```

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```
%pyspark
```

READY