Financial Risk Analytics Project(market-risk)

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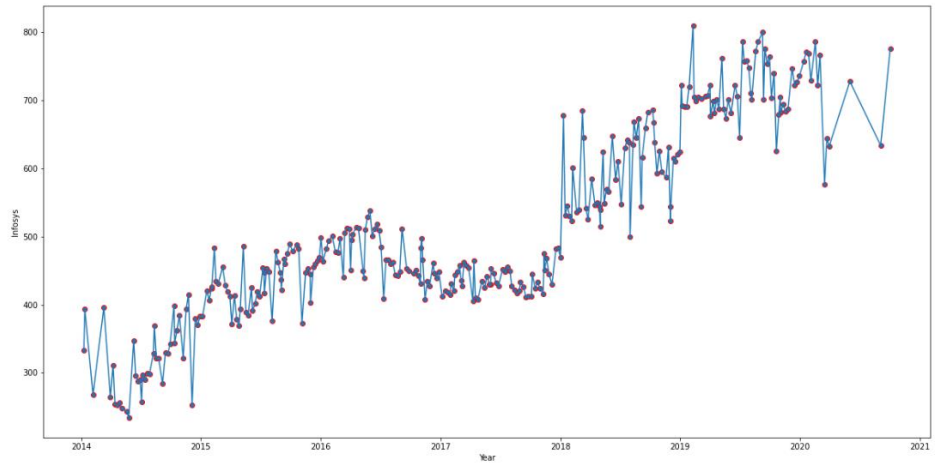
Great Learning

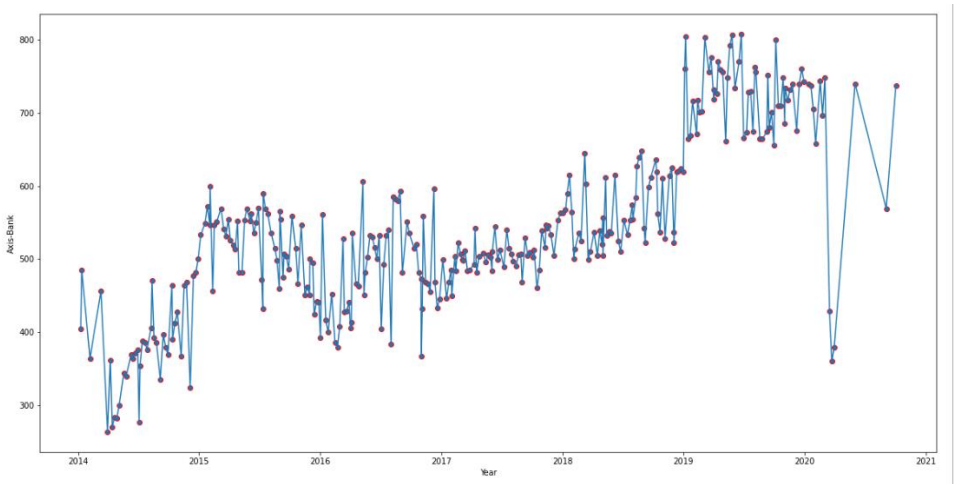
PROBLEM 2.1

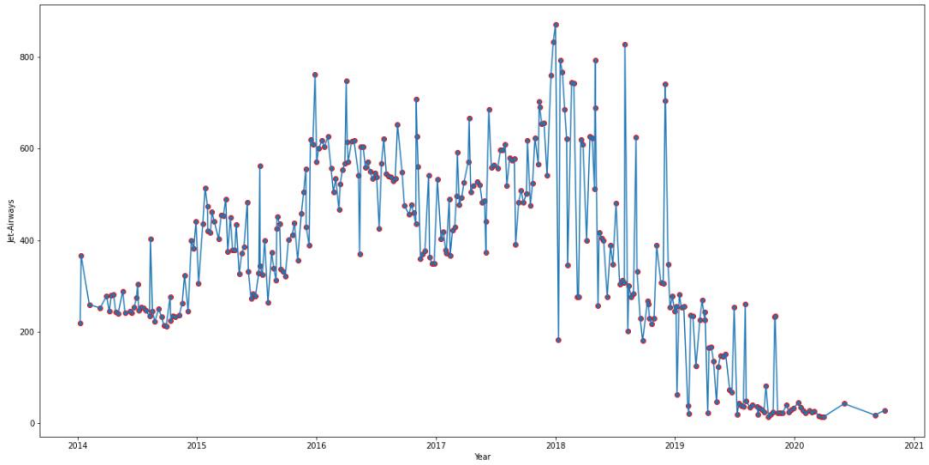
Draw Stock Price Graph (Stock Price vs Time) for any 2 given stocks with inference

Resolution:

The dataset contains 6 years of information (weekly stock information) on the stock prices of 10 different Indian Stocks. Calculate the mean and standard deviation on the stock returns and share insights. Please find attached the files to be referred. Stock price graphs of Infosys, Axis Bank and Jet Airways are plotted below vs Time.







PROBLEM 2.2

Calculate Returns for all stocks with inference

Resolution:

Returns for all the stocks i.e. difference of log of price at t and the log of price at t-1 are shown below.

	Infosys	Indian-Hotel	Mahindra-&-Mahindra	Axis-Bank	SAIL	Shree-Cement	Sun-Pharma	Jindal-Steel	Idea-Vodafone	Jet-Airways
0	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
1	-0.026873	-0.014599	0.006572	0.048247	0.028988	0.032831	0.094491	-0.065882	0.011976	0.086112
2	-0.011742	0.000000	-0.008772	-0.021979	-0.028988	-0.013888	-0.004930	0.000000	-0.011976	-0.078943
3	-0.003945	0.000000	0.072218	0.047025	0.000000	0.007583	-0.004955	-0.018084	0.000000	0.007117
4	0.011788	-0.045120	-0.012371	-0.003540	-0.076373	-0.019515	0.011523	-0.140857	-0.049393	-0.148846
...	...	...	...	...	...	...	...	...	...	...
309	0.009649	-0.110348	0.030305	-0.057580	-0.087011	0.023688	0.072383	-0.053346	-0.287682	-0.127833
310	-0.139625	-0.051293	-0.093819	-0.145324	-0.095310	-0.081183	-0.043319	-0.187816	0.693147	-0.200671
311	-0.094207	-0.236389	-0.285343	-0.284757	-0.105361	-0.119709	-0.050745	-0.141830	-0.693147	-0.117783
312	0.109856	-0.182322	-0.091269	-0.173019	-0.251314	-0.067732	-0.076851	-0.165324	0.000000	-0.133531
313	-0.017228	0.000000	-0.031198	0.051432	0.090972	-0.006816	0.040585	-0.081917	0.000000	0.000000

Week over week returns for all the stocks has been given in the above figure.

PROBLEM 2.3 Calculate Stock Means and Standard Deviation for all stocks with inference.

Resolution:

Stock means and standard deviations have been calculated below. The values have been sorted in descending order.

```
Shree-Cement           0.003681
Infosys                0.002794
Axis-Bank              0.001167
Indian-Hotel           0.000266
Sun-Pharma            -0.001455
Mahindra-&-Mahindra   -0.001506
SAIL                  -0.003463
Jindal-Steel          -0.004123
Jet-Airways           -0.009548
Idea-Vodafone         -0.010608
dtype: float64
```

Idea_Vodafone has the lowest returns, while shree cements have the highest returns.

```
Idea-Vodafone          0.104315
Jet-Airways            0.097972
Jindal-Steel           0.075108
SAIL                   0.062188
Indian-Hotel           0.047131
Axis-Bank              0.045828
Sun-Pharma             0.045033
Mahindra-&-Mahindra    0.040169
Shree-Cement           0.039917
Infosys                0.035070
dtype: float64
```

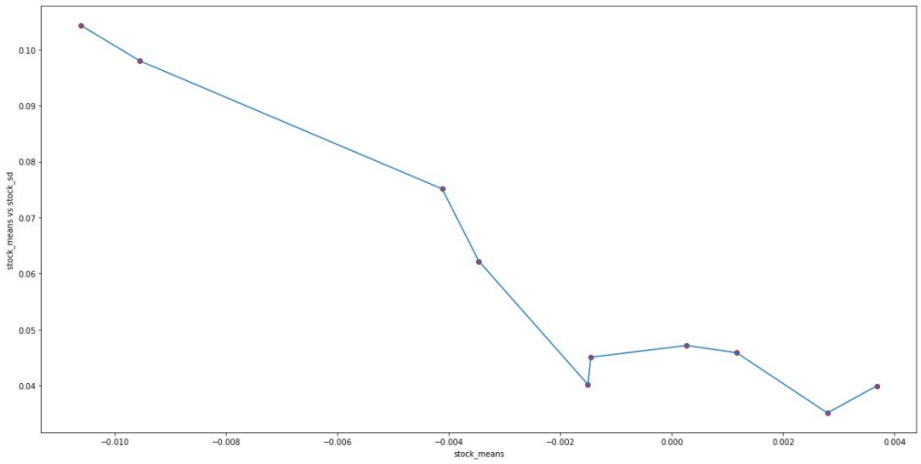
Idea_Vodafone has the highest risk factor while Infosys is the least risky investment option.

PROBLEM 2.4

Draw a plot of Stock Means vs Standard Deviation and state your inference.

Resolution:

Below is the plot of stock means vs standard deviation.



Stocks higher up but on the far left indicate high volatility and low returns, while the stocks on the bottom right indicate low volatility and high returns. This is a useful graph to find a balance between risk and reward when it comes to investing in different companies.

PROBLEM 2.5

Conclusion and Recommendations

Resolution:

We can conclude by saying the below.

Stock with a lower mean & higher standard deviation do not play a role in a portfolio that has competing stock with more returns & less risk.

Thus for the data we have here, we are only left few stocks: - One with highest return and lowest risk & - One with lowest risk and highest return Therefore from pure Returns perspective, Shree_Cement followed by Infosys & Axis_Bank looks good in this dataset.

From pure Risk perspective (as measured by standard deviation), Infosys followed by Shree_Cement & Mahindra_&_Mahindra looks good in this dataset.

We would recommend using the stock means vs standard deviation plot to asses the risk to reward ratio. More volatile stock might give short term gains but might not be a good investment in long term. Whereas a low volatile stock might not be a good investment in short term, but might give a good return in long term.

Hence based on the type of investment that one is looking for, a inference should be made from the above mentioned plot.