Goals for this assignment:

- Calculate monthly returns for your 2 stock and for the S&P500
- Calculate the beta of your two stocks \( \beta_i = \rho_{i,M} \frac{\sigma_i}{\sigma_M} \)
- Plot 2 graphs, one for each of your stocks showing (x,y) pairs of the rate of return on your stock (y-axis), and the S&P500 (x-axis). Add a best fit line (trend line), with it equation displayed, as well as measures of statistical significance.

Your tasks:

Calculate monthly returns.

During the first excel homework you chose two companies that you would be analyzing during the semester. For the first assignment you collected monthly stock price data for the company and monthly data for the S&P500. This time we will calculate monthly returns.

Monthly returns report gains or losses in percentage terms. For example, we will look at our sample company Clear Channel Communications, CCU. If I bought a share of CCU stock at the beginning of January 2000, I would have paid $78.52 for the stock. If I wanted to sell the same share one month later, at the beginning of February, I would have been able to sell it for only $60.57. Thus, I would have lost $17.95.

Looking at percentage returns gives us an ability to compare how poorly (or well) this CCU investment did relative to other investments. For example, let’s take a hypothetical company, Roadrunner Enterprises. Assume that Roadrunner’s stock was selling for $200 a share at the beginning of January, 2000. By the beginning of February, the stock was selling for only $180. If you had bought one share of Roadrunner stock over this time period, you would have lost $20.00. In absolute (dollar) terms, you would have lost more on the Roadrunner investment.

However, looking at holding period returns, we get a different (and more accurate) picture.

CCU Returns (hpr):

\[
\frac{(P_t - P_{t-1})}{P_{t-1}} = \frac{(60.57 - 78.52)}{60.57} = -0.29635 \text{ or } -29.64\%
\]

Roadrunner Returns (hpr):

\[
\frac{(P_t - P_{t-1})}{P_{t-1}} = \frac{(180 - 200)}{200} = -0.010 \text{ or } -10.0\%
\]

This allows us to compare different investments relative to the amount of money we have invested in the stock. For example, if we had had $10,000 at the beginning of January and invested it all in CCU, we would have lost ($10,000)*0.29635 or $2,963.50. If, instead, we had invested the money in Roadrunner, we would have lost only ($10,000)*.10 or $1,000.
Using excel, calculate monthly returns for both your stock and the S&P500.

Compute the standard deviation, correlation of your stocks with each other, and with the S&P. Use these figures to compute the beta of your two stocks.

**Plot 2 graphs.**

Plot an XY Scatter of these points. You will want the S&P hpr on the X axis, the returns of your stock on the Y axis. Make sure that your graph is properly labeled and is easy for the reader to understand. After you have your points on the graph, right click your mouse and select “Add Trendline” choose the “Options” tab and check the “Display equation on chart” and “Display R-squared value on chart” and then chose OK. This will display the trend line, and present the equation and R-squared value. See example posted on website.

Look up at least one published source of the beta for your stocks. How does it compare to what you calculated? Why might differences exist?