Exercises – Week #37

Introduction to Financial Engineering

Note: You may choose to work in R or Matlab. Sometimes solutions will be available in one language, sometimes in both.

1. (data, returns) Using the data from Week 36, Exercise 2:
   (a) Find the average return of XOM in annual terms using the returns
   (b) Find the average return of XOM in annual terms using the log-returns
   (c) How big is the difference using the two different methods

2. (data, returns) Using the data from Week 36, Exercise 3:
   (a) Find the average return of the three ETFs in annual terms using the returns
   (b) Find the standard deviation of the three ETFs in annual terms
   (c) Find the variance-covariance matrix in annual terms
   (d) Do we need to do anything with the correlation matrix to get it in annual terms? Why/why not?
   (e) For each calendar year, calculate the average return and the standard deviation of returns in annualised terms. Comment on your findings. For simplicity, you may assume 252 trading days in a year
   (f) Use your daily data to extract the final price of all months. Use these data to find the average return per month and annualise these. Do the same for standard deviations. How does the numbers match with the results from a). (Hint: In, R see extractData.R and ?to.weekly, ?to.monthly and ?to.period functions from 'quantmod' package)