Homework 3

FE-542

Due: March 26, 2021 at 5PM

Problem 1 (50pt)
In R create a report in pdf format using RMarkdown (or, if you choose to use Python instead, create a Jupyter notebook) to:

(i) Download daily price data for January 1, 1980 through December 31, 2019 of Boeing stock from Yahoo Finance. You may use the quantmod package in R for this purpose.

(ii) Is there any evidence of serial correlations in the *monthly* log returns. Use autocorrelations and 5% significance level to answer the question. If yes, remove the serial correlations.

(iii) Is there any evidence of ARCH effects in the monthly log returns? Use the residual series if there are serial correlations in part (ii). Use Ljung-Box statistics for the squared returns (or residuals) with 6 and 12 lags of autocorrelations and 5% significance level to answer the question.

(iv) Identify an ARCH model for the data and fit the identified model. Write down the fitted model and justify your choice of parameters.