QMM 1002 Module 10 Assignment   /30

Create and submit an R script which, when run, will print the answers to the following questions. Your R script must include a title with your name and student number and comments for each question number.

1. **(30 marks)** The "ATTMonthlyReturn.csv" file gives the monthly returns for AT&T for 7 years. Suppose you work as an analyst for AT&T and your task is to forecast the next months' return.
   a) Create a time series object for the data. (1 mark)
   b) Create a labelled plot of the monthly return time series data. (2 marks)
   c) Plot the decomposition of the time series and comment on each of the four components. (5 marks)
   d) Compute the index numbers for the returns data using January 1961 as the base period. Which year and month have the largest return compared to January 1961? (3 marks)
   e) Fit an MA-5, MA-8, and MA-10 model to the time series. (3 marks)
   f) Plot the three smoothed models along with the original time series in one labelled plot. Give each series a different color and include a legend. (5 marks)
   g) Which model is smoothest? Which model reacts most quickly to changes? Explain why. (2 marks)
   h) For all of the moving average models compute the MSE, MAD, and MAPE. Which model would you recommend? (4 marks)
   i) What is the forecast for the next month, January 1968, using each of the moving average models? Do you predict that AT&T will exhibit a positive or negative return? (4 marks)
   j) Suppose that the return for January 1968 is actually 0.1127. Which moving average model is actually the most accurate? (1 mark)

Save your R Script as: Last Name, First Name Module 10 Assignment

Upload your R Script to the "Module 10 Assignment" drop box on Moodle before April 5th at 11:59 PM.