CSC 401, Weekly Coding Assignment #6, Fall 2024   Name_____

Instructions: For these weekly coding assignments, you will be asked to extend the examples from class to create custom code to answer the questions below. You will create an R code file that uses built-in datasets as the data sources. You will write the code, and an example showing that the code works. Be sure to include any packages in the code that are required for the functions to run (you may want to clear the environment in RStudio before your final check to make sure nothing is missing). The instructor will run the file to ensure that it works with no errors. Clearly label your code so it's clear which question/task is being responded to.

Submission:
A word document with any explanations (if needed), and a clearly labeled R code file.

Tasks/Questions:
1. Consider the best subset selection model. Adjust the stopping criterion to use another regression metric. Compare BIC, MAE and MAPE as alternative metrics. (Consider whether you are minimizing or maximizing these metrics in order to adjust other aspects of the code.) How do the resulting "best models" compare to each other?

2. Modify the backward selection code in the lecture notes to remove any metrics that are already output in the lm() summary and add in one additional metric that is not already included. Also, modify the code to include excluding the intercept as an option (this may require handling this component separately, or tweaking the input so that it can be treated similarly to other variables).

3. Modify the code example for comparing non-linear models to include a plot that a) shows all the models on the same graph, b) shows the graph with the best regression model on its own.