STU11002 Lab 5 Task

INSTRUCTIONS

In a single file, write code to conduct the following tasks and comment the code clearly using #

TASKS

The pressure dataset is preloaded in R. There are two observation variables in the data set. The first one, called temperature, is the temperature applied to mercury. The second one, called pressure, is the vapour pressure of the mercury at that temperature. We are interested in predicting temperature from pressure.

1) (2.5 marks) Inspect the data by:
    a. Checking the correlation between the variables
    b. Creating a scatter plot of the data that shows both the points and a smoothed line of the points
    c. Creating side-by-side box-plots of each variable, including outliers, and printing the observation number of any outliers in the console
    d. Creating side-by-side graphs of the densities of the variables
2) (2.5 marks) Fit a model and diagnostics by:
    a. Fit a simple linear model that predicts temperature from pressure.
    b. Visualise the resulting regression line on a scatterplot of the data
    c. Plot the residuals density
    d. Use the plot function to generate the 4 graphs of the residuals vs fitted values, etc.
3) (5 marks) Describe your results in comments in your code by:
    a. Write an equation that describes the linear model you have fitted
    b. Explain why the p-values for the variable pressure and the overall F test are so similar for this model.
    c. Comment on what you saw from the previous parts. Is the model appropriate?