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## R Tutorial 6

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### Instructions:

- Answer all questions.
- Ensure that your findings and results are clearly stated and thoroughly discussed. Please support your arguments using suitable R code with the relevant outputs, interpretations, plots and graphs whenever possible. You should support your argument using appropriate theory that is appropriately referenced.
- The R commands that you use in obtaining your results for all questions must be documented in a R script file. These scripts must be clearly commented. Ensure that any output is clearly stated and interpreted separately from the code as additional comments.
- Include the task name, your name and surname, and your student number in your R script file.
- You **MUST** label each answer by question number and, where a question has multiple parts, label each part of the question **CLEARLY**.
- On completion of your assignment, please submit onto RUconnected. If there are any issues uploading onto RUconnected, you may email your submission to: a.langston@ru.ac.za. Please submit your R script file and any other saved data files and plots mentioned in the questions below. Your student number should be included in the name of each file that you submit.
- Each student must complete an individual assignment. You will be assessed based on the quality and/or correctness of the R code, its outputs, and your explanations and interpretations. Acknowledge any help you may have received. Feel free to note any help you may have given to other students in the course.
- This assignment must be submitted by Tuesday, 27 August 2024 by 17:00. Late submissions will be penalized.
- Please note the Rhodes University and the Rhodes University Department of Statistics plagiarism policies.

### Questions:

Consider the data frame `mtcars` in the `datasets` package, which contains data extracted from the 1974 Motor Trend US magazine. Provide R code to answer the following questions.

1. Import the data set into R.
2. Construct a frequency histogram for the variable `mpg`. Use 5 classes, where the lower class limit of the first class is 10 miles per gallon. All classes should have a width of 5 miles per gallon. Ensure that the x-axis values correspond to the correct class boundary values and that an appropriate title and the relevant axis labels are included on the plot. Ensure that you submit this plot as part of your assignment.
3. Construct a density plot for the variable `disp`. Ensure that you submit this plot as part of your assignment.
4. Consider the `qsec` variable.
  - (a) Find the mean, variance, and standard deviation for this variable.
  - (b) Find the range, inter-quartile range, and median for this variable.
  - (c) Find the 60th percentile for this variable.
  - (d) Construct a boxplot for this variable. The box should be the colour blue. Ensure that you submit this plot as part of your assignment.