BIOS 545 "Introduction to R programming" lab: Statistical Analysis using R

We will practice some simple data analyses using R in this lab. There are mainly two tasks:

1. Run the provided script for analyzing `mtcars` data. This only requires copy-pasting, but you need to understand the meaning of each line and look at the output (tables, figures, results) carefully.

2. **This will be part of the homework.** Mimic the provided script, perform descriptive analyses of the `iris` data (type `?iris` to see a short description of the data. Your analysis should answer following questions:

   (a) How many variables are there? What does the distribution look like for each one.

   (b) What are the correlations among the variables?

   (c) Visualize the pairwise relationship among Sepal/petal length/width. **Bonus:** Visualize the pairwise relationship stratifying by species (Hint: use `plot` and `points` function to generate scatter plots with points of different colors).

   (d) Are there significant differences in Sepal/petal length and width among different species?

   (e) **Bonus:** Use the Sepal/petal length/width as predictors, build a joint model to distinguish setosa from other species.

   There are more questions can be answered from this data. You are encouraged to come up with other questions and mine the data in a more in-depth manner.