**Introduction to R – 50 pts**

This assignment is intended to introduce you to R, RStudio, and integration with github, as well as help you practice some R coding. You may work with a partner to aid in your learning. However, your answers must be unique.

1. 10 pts. Explain the following things about R and Rstudio:
   * Where do you type code?
   * Where is the output of the code?
   * Where do plots show up?
   * What is a global environment?
   * How do you get help for a function through R studio?
   * What is an R package?
   * What is a function?
   * How do you find the installed and loaded packages?
   * What is a working directory and how do you find it?
2. 5 pts. Explain how to set up an R project that is connected to a github repository.
3. 5 pts. Explain what the different data classes are and how they are similar and different from each other.
   * Vector
   * Dataframe
   * Matrix
4. 15 pts. Complete all the following tasks in an R script and upload it to github.

* Create a vector named 'z' with 200 z values
* Print the mean and standard deviation of z on the console
* Create a logical vector that is 'TRUE' for z values that are greater than 1 and 'FALSE' otherwise.
* Make a dataframe with z and your new logical vector as columns.
* Change the column names in your new dataframe to equal “z” and “zlog”
* Make a new column in your dataframe equal to z squared (i.e., z2). Call the new column zsquared.
* Subset the dataframe to only include values of zsquared greater than 10 or less than 100.

1. 10 pts. Install the following packages, and show me, using code, that they are installed, and you can use them.
   * ggplot2
   * dplyr
   * purr
   * lme4
   * emmeans
2. 5 pts. Download the Tips.csv file from canvas or from the class github repository: <https://github.com/noelzach/Reproducibility>. Use the read.csv() function to read the data into R so that the missing values are properly coded. \*\*Note the missing values are reported in the data as a period (i.e., “.”). Show me using an R function how you know the data were read in properly.