# Stat 610 Midterm Study Guide

The exam will be in class on Tuesday October 21. You will not be allowed to look at your books, notes, or computer. There will be approximately 10 short-answer questions, with topics taken from the following list:

- Data structures: Know the difference is between vectors, lists, arrays, and data frames and how to access elements of those objects. If I give you output showing what type of object something is, you should be able to tell me how to access pieces of it.
- Vectorization: No need to memorize which functions are vectorized, but if I give you a function and tell you what argument vectorizes, you should be able to tell me what the output will look like.
- Regular expressions
  - If I provide you with a regular expression and a set of strings, you should be able to tell me which strings match the regular expression.
  - If I describe a set of strings I would like to match with a regular expression, you should be able to provide a suitable regular expression. I will only have you use operations up to slide 11 in the lecture 3 notes.
  - You dont have to memorize names of character classes, if you need to use them you can describe them if you don't have the name.
  - I wont ask you to write anything using the grep family of functions.
- Functions and their environments: If I give you a function and a call to that function, you should be able to draw the set of environments created in the course of the function call and the variables in each environment.
- Split/apply/combine: If I describe a data frame/array and desired output from a split/apply/combine strategy, you should be able to tell me
  - How the data frame should be split
  - What function should be applied to each split
  - What function in R you would use to perform the operation
- If I show you code with an apply-family function, you should be able to tell me what the output looks like.
- You should be able to describe what the commands `git add`, `git commit`, `git status` do. You should also be able to describe the concepts of a *commit*, a *branch*, and *HEAD*, and the status of a file according to git (untracked, unmodified, modified, and staged).