Pre-lab 1

Stats 413: Applied Regression Analysis

due Sep 10, 2020 before lab 1

Pre-labs are due on Canvas on the due date. For problems that require programming, please properly comment your code and submit it together with any output. You are encouraged to collaborate on pre-labs with classmates, but the final write-up (including any code) **must be your own**.

1. **Install R (and RStudio)** You first task is to install R on your personal computer. The computers in the labs have R installed, but, unless you wish to do all your computing at the computer lab, you'll need it on your personal computer. R is freely available at

   cloud.r-project.org/

   We also recommend you install RStudio. It is an IDE that includes a console, a editor that supports syntax-highlighting, as well as tools for plotting and debugging. RStudio is freely available at

   www.rstudio.com/products/rstudio/

2. **Arithmetic** At its core, R is a virtual programmable calculator. Evaluate 2^{10} and 28 mod 5 in R by filling in and executing the following script.

   ```
   # print 2^10
   ##################
   # Your code here #
   ##################

   # print 28 mod 5
   ##################
   # Your code here #
   ##################
   ```

   Hint: There are many ways to learn the basics of R online. We recommend the first chapter of DataCamp's course

   www.datacamp.com/courses/free-introduction-to-r

3. **Variable assignment**

   Create a script that performs the following tasks.

(a) Create a variable named `x`, and assign it the value 2. Create another variable `y`, and assign it the value 4. Evaluate the sum of `x` and `y`.

(b) Reassign `x` so that it has the same value as `y`. Evaluate the sum of `x` and `y`.

(c) Reassign `y` so that is has value 8. In the previous part, we reassigned `x` so that it has the same value as `y`. Does changing the value of `y` in this part affect the value of `x`?

To recieve full credit, you must properly comment your code (like in the script above) so that the purpose of each block of code is clear. This applies to all programming assignments in this course.

4. **Data types in R**

(a) Create three variables `myAge`, `myName`, and `myState`. Assign them your age, your name, and whether you are from Michigan (`TRUE` if you are from Michigan, `FALSE` otherwise). Hint: R is case sensitive!

(b) Check the type of the three variables with the `class()` function

(c) Execute the following block of code.

```
myApples <- 4
myOranges <- "two"
myFruits <- myApples + myOranges
```

Why does it cause an error? Edit the code so that R knows you have 2 oranges and thus 6 fruits in total.