Lecture 1.4 – Intro to R and RStudio

Specific Learning Objectives:

1.1.1 – Understand how to use the command line.

1.1.2 – Understand how to use the help function of R.

1.1.3 – Understand the basic syntax of the R language.

1.1.4 – Execute inbuilt mathematical functions to perform calculations in R.

1.1.5 – Learn how to assign variables.

1.1.6 – Understand the basic syntax of functions in R.

1.1.7 – Open, edit, and save a script in RStudio's editor.

2.2.1 – Create reproducible scripts in R.

Introducing the “Best Error” Competition!

Every week, we will give a prize to the best error message received by a student working in R!

Prizes will be awarded for each section each week.

Each winner will be entered into a raffle for the grand prize of **2 course points** drawn at the end of the semester. Every win is a ticket!

A bonus prize will be awarded for every error that stumps both instructors!

Enter by submitting a screen shot of the error to Slacks #besterror channel! (Be sure to include your section number.)

Check Your Understanding

Have R calculate the square root of 164956 using the `sqrt()` function. What is the correct output?

Correct answer

a) `[1] 406.1478`

b) `[1] 12.8841`

c) `Error: unexpected input in "√"`

d) `Error in sqrt(164956, 2) : 2 arguments passed to 'sqrt' which requires 1`

Error in c: I used the sign √164956, even though I understand what this means, R doesn't understand so returns an error.

Error in d: I put too many numbers (or arguments) in the `sqrt()` function so it's telling you you need one argument only!

Check Your Understanding

Syntax is important here! Using a space between the < and - will change the meaning of the command.

Try these: do they all have the same result? Why or why not?

a) `x<-2` b) `x <- 2` c) `x< - 2`

Does it matter which way the arrow points?

Try these: which work and which produce errors?

d) `7 -> j` b) `7 <- j` c) `j -> 7`

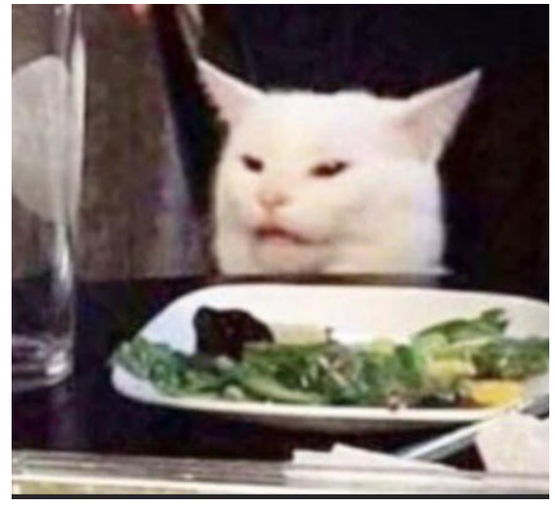
Functions in R

Check your understanding!

What happens if you enter the numbers into mean without the **c( )**? Or like this:

```
> mean(1, 9, 8, 2)
```

Why does it do this?



Why would the mean not calculate correctly based on the help documentation for **mean( )**?

About R assignments

- **You will be turning in assignments in R as R Markdown files**
    - Scripts must have the extension ".RMD"
    - Please include the assignment number in the script name
    - Include your name, course number, section number, date, and assignment number in the header of the file.
    - Please fill in answers and code in the template provided.

- **How your answers will be scored:**
    - Grader will download your file and hit "Preview" or "Knit" on top, then evaluate output based on the assignment question.
    - If there is an error on preview/knit, it will be scored 0 (unless that's part of the assignment!) Please CHECK FIRST that it will run by starting a new R session and then previewing your file!

For the rest of the class…

- **In-class exercises:**

1. Write a short explanation about how to install a package using:
   a) RStudio's GUI package manager
   b) command line in R

2. Assignment 1.5

Action Items

1. **Complete Assignment 1.5**

2. **Read Davies Chapter 4 for next time.**