

Q&A Material

Ari Anisfeld & Terence Chau

9/28/2020

What's the Deal with Fall Coding Lab?

Two tracks:

Accelerated: 2 lessons

- ▶ 2 lessons covering loops and functions.
- ▶ No final project (you already did it).

Not accelerated: 5 lessons.

- ▶ 3 lessons review summer camp material.
- ▶ 2 lessons covering loops and functions.
- ▶ Final project:
 - ▶ Find a data set that speaks to you.
 - ▶ Try to uncover something interesting. Graph it and tab it.
 - ▶ We'll give you feedback.

Logistics for Both Tracks

- ▶ Instructors Ari and Terence + wonderful TAs.
- ▶ 80 minutes per week: brief review and Q&A, then work in groups.
- ▶ Not graded.
- ▶ Access to TAs for coding specific problems throughout the quarter.
 - ▶ TA office hours 30 minutes before and after lecture time.
- ▶ Github website with all material.
 - ▶ We'll post solutions (eventually).
- ▶ Use Piazza for questions.
 - ▶ Rules of engagement: coding questions only, no Stats homework!
 - ▶ How to ask a good question?

Poll: How much coding experience do you have?

- ▶ First timer.
- ▶ Beginner.
- ▶ Intermediate.
- ▶ Proficient.

Please include your email.

Class 1: Why R? & Vectors

Key Points: R Basics

- ▶ Rstudio has a console to access R and a text editor to write code for reproducible projects.
 - ▶ Analogy: R is to RStudio as Tony Stark is to Iron Man's suit.
- ▶ R extensible through packages.
 - ▶ use `install.packages("")` once and then `library()` each session.
- ▶ Use `<-` to assign *any* object to a name.
- ▶ Functions take inputs and return outputs.
 - ▶ Input “understood” based on position or name.
 - ▶ Find out more about functions with `?` (e.g. `?filter`).

Questions

- ▶ Any questions on this? Feel free to ask on chat.

Key points: Vectors

- ▶ Vectors are the fundamental way to store data in R.
- ▶ We can operate on vectors element-by-element without loops.
 - ▶ `dplyr` verbs rely on this!
- ▶ We introduced built-in functions to build vectors and do operations on vectors.
- ▶ NAs are sticky!

Key points: Data Types and Coercion

- ▶ (Atomic) Vectors have a single data type.
 - ▶ Most often: `logical`, `integer`, `double`, or `character`.
- ▶ Certain operations expect a certain data type and R will try to coerce the data if it can.
- ▶ Usually, simpler types can be coerced to more complex types.
 - ▶ `logical < integer < double < character`.
 - ▶ Example on slides: `paste0(1L, "ing")`.
- ▶ Caution! Coercion can lead to unexpected behavior such as making NAs.

One More Thing

Logicals are coercible to numeric or character. This is very useful!

Determine the rule for how R treats TRUE and FALSE in math.

```
TRUE + 4
```

```
## [1] 5
```

```
FALSE + 4
```

```
## [1] 4
```

Questions?

- ▶ Any questions on this? Feel free to ask on chat.

Warm up & Lab 1

Warm up

- ▶ Solve the questions at the beginning of the lab in small (random) groups.

Lab 1

- ▶ Two “types” of breakout room:
 - ▶ Work along: larger group with more guidance from a TA.
 - ▶ Small groups: 4 people, TAs will come in and out to answer questions. Use the help button!
- ▶ Get as far as you can, then finish it up after class.
- ▶ Before you leave, fill out the exit poll.

Lab 1: Exit poll

- ▶ What does `hist()` return?
 - ▶ A histogram plot of the data you give it.
 - ▶ A history of the commands you've run.