R Lecture #1 Monday, January 27, 2020 

4 present

Office Hours M,W 11-12 PM EIT 303

Find Bug In Lecture 0 R Notebook from libraries

Vectors

* Immutable in R
* No insert or append operation for vectors
* No declaration required but,
* Arrays/Vectors Must be Declared for Allocation
* R is a scripting language like Python

When operating on vectors of unequal length with termwise operators, the shorter vector is replicated, or recycled as needed.

Scalars are one-element vectors.

Vectors add, subtract, multiply and divide termwise

Can you pass functions as arguments?

Filtering is Conditional Indexing

First exam will cover basics of R

2

Some version divergence in old and new versions of R   
[RStudio 1.2](https://rstudio.com/products/rstudio/download/#download) won't run < MacOS 12 but [RStudio 1.1](https://support.rstudio.com/hc/en-us/articles/206569407-Older-Versions-of-RStudio) will.  
Installed old on the laptop and new on the desktop.

R in Jupyter Notebooks is OK.  
So I will build an R project in Jupyter  
and try looking at its environment in RStudio,  
kinda like vi versus Netbeans.

Installed R Jupyter and RStudio on  
both machines. Works great so far.  
That’s four installations - a bit of maintenance.

Three styles of code execution:

* Line
* Selected Region
* Entire Document

Exporting Images From Jupyter  
Exporting Images From RStudio

Facilitating Group Collaboration

Read Data From File:

* .csv Comma Separated Values
* .txt File
* .xls .xlsx, .xla Excel Files

Write/Save Data To File:

* See Example Runs
* Load Source to See Previous Sessions
* .RData is suffix to save session file

R Types: Integer, Numeric, Logical, Character

R Structure: Vector, Matrix, Array, List, Data frame

* Vector, Matrix, Array are Homogeneous
* List, Data frame can be Heterogeneous

Cleaning Data with na.rm and na.omit

Including libraries like ggplot with each session

Questions:

* How to check version?
* How to install from CRAN, in Jupyter and RStudio?
* Does environment in RStudio show proper package versions?

Unix-Like Commands:

* ls() and rm(obj) work within the scope of R itself
* setwd(), getwd(), dir() and dir.create() affect OS state
* !cd, !pwd, !mkdir are Jupyter notebook equivalents

Multiple libraries accessible from Bioconductor

* Including OMIM, PUBMED:

Extra Programming Hints on R Data Camp

Codify today's work as a web page for quick access.

Nick Trick: Cross Compare Two Datasets