**[L02 Refresher Dataset manipulation in R](https://bbhosted.cuny.edu/webapps/blackboard/content/listContent.jsp?course_id=_1915134_1&content_id=_49455031_1)**

### Objectives

In the next two weeks our goal is:

* + Working with proficiency in R
  + Introduce essential concepts from Statistical/Probability/Linear Algebra

### Recommended Reading

-----------------------------Reading Material for Learning Module 2 ------------------------R2

-- Christopher M. Bishop (technical) 1st Chapter 1 hour to 2 hours and relevant for 1st and 2nd Lecture

https://github.com/kerasking/book-1/blob/master/ML%20Pattern%20Recognition%20and%20Machine%20Learning.pdf

-- http://www.cs.cmu.edu/~tom/mlbook/Joint\_MLE\_MAP.pdf

Chapter on MLE/MAP techniques seek familiarity not mastery

-- http://www.endmemo.com/program/R/

-- http://www.r-tutor.com/

-- http://www.r-bloggers.com/

-- https://stackoverflow.com/questions

-- and any other source of technical help

--------------------END OF READING MATERIAL----------for L02------------------------------------

### Lecture Notes:L02-Proficiency in R / R tools

[L02.pdf](https://github.com/samriti0202/DATA622/blob/main/L02%20Refresher%20Dataset%20manipulation%20in%20R/L02.pdf)

[r-code-for-l02.txt](https://bbhosted.cuny.edu/bbcswebdav/pid-49455034-dt-content-rid-393271775_1/xid-393271775_1" \t "_blank)

### [Readings and Resources](https://bbhosted.cuny.edu/webapps/blackboard/content/listContent.jsp?course_id=_1915134_1&content_id=_49455035_1)

URLS, sites and sources where one could learn R and become proficient in R.

# **Readings and Resources**

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### [R-Bloggers.com](https://www.r-bloggers.com/)

R news and tutorials contributed by hundreds of R bloggers

### [R Tutorials](http://endmemo.com/program/R/)

Endmemo Program with R

### [StackFlow](https://stackoverflow.com/questions)

### [R tutor](http://www.r-tutor.com/)

Deep Learning in R

### Practice Problems and Review Questions

1. Consider the following R statements

oX<-data.frame(x=rnorm(20),y=rnorm(20))

Write a function to add a third column z to oX and set it to x\*\*2 + y where x and y are existing columns and return the a list of standard deviation for all the 3 columns.

2) run str function to find attributes and slots in an R object.

3) Understand the difference between library/require and installed.packages() and install.packages() functions in R

a good starting point is https://www.r-bloggers.com/installing-r-packages/

4) Crate a matrix 4 rows and 3 columns, and a vector of length 5. initialize them to any value you choose.

Now add rows or columns as you see fit to the matrix so that you can multiply the matrix and the vector as speciied above.

(you can only add rows to columns) and set the columns to constants, for example 0 or 1.)

5) crate a vector of 200 random numbers 1 through 200, divide it by 100. Think of them as daily price of an asset over 200 day period.

compute the daily rate of change of this price. Set the daily rate to 0 for the first day.

Find the cumulative growth in absolute and % terms for the entire 200 day period.

Do NOT use for loops -- use R vector processing. think of cumprod, tail, head to do this.

THESE ARE NOT FOR GRADE -- THESE ARE FOR YOU TO ASSESS YOUR CAPABILITIES.

You DO NOT EVEN  HAVE TO DO THEM.