The DIY Guide to Programming in R

Learning to write code in the R programming language is an important part of GEOSC 450, Risk Analysis. To help you carry out the class assignments and remember what you have learned in the future, we would like you to write your own guide to programming in R.

This document provides a place for you to write your notes on how to carry out common programming tasks in the R language. Please fill it out over the course of the semester and hand it in to the dropbox on ANGEL before the last week of classes.

Partial solutions to 13 of the tasks can be found on tryr.codeschool.com (Lab #1; these tasks are marked below), so you can make considerable progress on this document early in the class.

In the final document, you should, in your own words,
-- describe how each task is done in plain English (bullet points or numbered steps are fine)
-- give a few lines of code that demonstrate how each task is done in R (these lines of code should run and produce helpful results if pasted into R or RStudio)
-- provide at least one link to a Web page, a place in the R documentation, or another source that gives more information on how to carry out each task

If there is more than one way to carry out a particular task, describe your favorite way in detail and give a shorter explanation of any alternative methods.

Feel free to add your own tasks!

1. Basic commands

2. Working with variables

2.1. Print the contents of a variable to the screen (tryr, ch. 1)

2.2. Store values in single-element variables (tryr, ch. 1)

2.3. Create a vector of values (tryr, ch. 2)

2.4. Create a matrix of values (tryr, ch. 3)

2.5. Working with one or more elements of a vector or matrix (tryr, chs. 2 and 3)

2.6. Calling a whole row (or column) of a matrix (tryr, ch. 3)

3. Plotting

3.1. Make a contour plot (tryr, ch. 3)

3.2. Make a scatterplot (tryr, chs. 5 and 7)

3.3. Make a histogram

3.4. Make a cumulative density function

3.5. Make a plot with more than one panel

3.6. Draw a horizontal (or vertical) line across a plot (tryr, ch. 4)

3.7. Add titles, x-axis labels, and y-axis labels to graphs

3.8. Save a plot to a .pdf file

3.9. Add lines or points to an existing plot

3.10. Specify the colors of lines or points on plots

4. Control structures

4.1. Use a for loop to populate a vector

4.2. Use an if statement to execute a particular command if a given condition is true

5. Miscellaneous (but important!) tasks

5.1. Generate random numbers from different probability distributions

5.2. Simulate coin flips

5.3. Fit lines or curves to data