hw01: Struck from a Great Height

STAT 385, Fall 2018

FirstName LastName (NetID)

Due: Friday, September 7th, 2018 at 6:00 PM

Overview

Please see the homework policy for detailed instructions and some grading notes. Failure to follow instructions will result in point reductions. In particular, make sure to commit each exercise as you complete them.

> Hofstadter's Law: "It always takes longer than you expect, even when you take into account Hofstadter's Law."
>
> — **Douglas Hofstadter**, Gödel, Escher, Bach: An Eternal Golden Braid

Objectives

The objectives behind this homework assignment are as follows:

- Create an *RMarkdown* document and write using *Markdown* syntax;
- Apply the principles of literate programming;
- Clone a `git` Repository;
- Commit and Push changes to a `git` repository;
- Become familiar with the homework procedures of the course.

Grading

The rubric CAs will use to grade this assignment is:

Task	pts
Assignment Formatting and GitHub	2
At least one commit per exercise (more is better!)	5
Commit messages that describe what changed	5
Agree to the homework policy	2
Verifying computing environment is setup	2
Listing where to get help in person	2
Writing in *RMarkdown*	13
Total	31

Note on Markdown

If you need help with markdown syntax, please go to the "Help" menu and select the *Markdown Quick Reference* guide. This will open in the **Help** tab on the *lower-right* corner of *RStudio*. For more examples, please see the literate programming slides and the in class examples of writing in *RMarkdown*.

In addition, the following *three* RStudio Cheatsheets will be helpful:

- RStudio IDE Cheat Sheet

- R Markdown Cheat Sheet
- R Markdown Reference Guide

All of these cheatsheets will be given to you during your time in the CBTF.

Note on Tutorial Videos

You may find it helpful to reference the tutorial videos related to working with GitHub and RStudio Cloud.

See the playlist at: https://www.youtube.com/playlist?list=PL1X-5VqzqHDjy_UfnL7WJqfU2-Fkcy_oY

You may wish to pay attention to the class forums to see when new videos are added.

Package usage

For this homework assignment, you may only use the following *R* packages:

```
pkg_list = c("rmarkdown")
```

Assignment

Collaborators

If you worked with any other student in preparing these answers, please make sure to list their full names and NetIDs (e.g. `FirstName LastName (NetID)`).

(12 points) Exercise 0: Get aboard the GitHub Bus!

- [**2 Points**] **(a)** Place a link to your `hw01` GitHub repository here.
- [**5 Points**] **(b)** Commit every exercise as you finish them. There are *five* exercises (including this one).
- [**5 Points**] **(c)** Make each commit message *meaningful*.
  - The bare minimum for a "meaningful" commit is a length of 15 characters.
  - Inside the commit message, please make sure to appropriately describe what is happening. - Simply stating, "Exercise 3" or "Ex3" is not sufficient.
  - Provide detail on what *changed*.

(2 points) Exercise 1: Homework Policy

Please uncomment the following statement when you have read and agreed to the homework policy. To *uncomment* a statement in *RMarkdown* delete the `<!-- -->` surrounding the content.

(2 points) Exercise 2: Help! I need somebody

Please answer:

1. *Who* is part of the STAT 385 instructional staff?
2. *Where* are **all** STAT 385's Office Hours?
3. *When* do the office hours take place during the week?

Answers to these questions can be found on the syllabus page of the course website:

http://stat385.stat.illinois.edu/syllabus

(2 Points) Exercise 3: Know Thine Environment

Please take screenshots of the following and include them in your *RMarkdown* document:

1. the RStudio Cloud STAT 385 Workspace.
2. the STAT 385 Discussion Forum

To take a screenshot press:

- Windows: `Windows Key` + `PrtScn` or use the Snipping tool
- macOS: `Command` + `Shift` + `3` or use `Command` + `Shift` + `4` for part of your screen.

To include the screenshot, you must first *upload it* into RStudio Cloud via the "Upload" button on the lower right hand side. For details, please see **Page 20** of **Reading 0**.

Note: Make sure to use *relative* paths. For details, please see Slide 34 of the Literate Programming Lecture

(13 Points) Exercise 4: Who I Am

If you need help with markdown syntax, please go to the "Help" menu and select the *Markdown Quick Reference* guide. This will open in the **Help** tab on the *lower-right* corner of *RStudio*. For more examples, please see the literate programming slides and the in class examples of writing in *RMarkdown*.

- **[2 Points] (a)** Create a self-portrait of yourself by either taking a picture or sketching it. Include this self-portrait within the *RMarkdown* document.
  - Make sure to *upload the picture* into RStudio Cloud and commit your photo!
- **[2 Points] (b)** Make a 7 by 2 table in markdown.
  - The header row should have the labels of "Overview" and "Who I Am".
  - Under the "Overview" column, please write entries using bold text for: Full Name, NetID, Birthday, Year in School, Major, and Expected Graduation Date
  - Under the "Who I Am" column, please fill in your personal information.
- **[3 Points] (c)** Compile *separate* **ordered** lists for each of your favorite:
  - foods;
  - TV shows;
  - movies;
  - music (add links to music videos on either YouTube or Vimeo).
- **[2 Points] (d)** Devise *two* **unordered** lists that contain your most recent memorable events and where you typically spend your free time.
- **[2 Points] (e)** Write the following formula as an **inline** equation.
  - For help writing in LaTeX, see the following guides:
    - Symbol Guide: https://artofproblemsolving.com/wiki/index.php/LaTeX:Symbols
    - Page 32 of the Literate Programming Slides.
- **[2 Points] (f)** What is the name of your favorite mathematical formula? Include the formula itself using **display mode** and a link to its wikipedia entry.
  - For inspiration, check out Wikipedia's Mathematical Formula list!
  - **Note:** You *cannot* select the pythagorean theorem, golden ratio, or quadratic formula.

Commit and push your work onto GitHub.

$$F_X\left(x\right) = 1 - \left(\frac{x_m}{x}\right)^{\alpha}$$

Figure 1: LaTeX Formual