Lab 00

RMarkdown and Paths

2018-01-24

### Overview

Within this lab, we’ll be taking a look at how to write RMarkdown in addition to the appropriate structure for relative and absolute paths. In particular, we’ll focus on how to link to an image file and read in a sample data set.

#### Markdown Formatting

##### Styling

Write an unordered list of your classes this semester.

1. When writing the short course name (e.g. STAT 385) make it bold.
2. Create a link so that when the short course name is clicked it will take you to the course description in the course explorer.
3. Make the long title (Statistics Programming Methods) italic.

If you need help with syntax, 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*.

The course explorer is found here: <https://courses.illinois.edu/schedule/2018/spring/STAT>

* [STAT 385: *Statistical Programming Methods*](https://courses.illinois.edu/schedule/2019/spring/STAT/385)

##### Making *R* Code Work

The following *R* code will error when the document is first knit:

# install.packages("ggplot2")  
ggplot(mtcars, aes(wt, mpg)) +  
 geom\_point()

The error is:

Error in ggplot(mtcars, aes(wt, mpg)) : could not find function "ggplot"

Fix the code chunk by:

1. Installing the ggplot2 if it isn’t already installed
   * Please uncomment, e.g. delete #, to install and then recomment the code, e.g. add # back.
2. Load the package ggplot2 using the library() function.
3. Make the code chunk *dynamic*.

##### Mathematics

**A helpful resource for looking up mathematical symbols can be found at:** [**https://artofproblemsolving.com/wiki/index.php/LaTeX:Symbols**](https://artofproblemsolving.com/wiki/index.php/LaTeX:Symbols)

**Welcome to LaTeX**

Write the equation for the [Pythagorean Theorem](https://en.wikipedia.org/wiki/Pythagorean_theorem) in both display centered and inline. (Hint $ vs. $$)

**Challenging**

Provide the equation for the [Golden Ratio](https://en.wikipedia.org/wiki/Golden_ratio) in display centered.

*Hints:*

* Fractions are written as: \frac{numerator}{denominator}
* Square roots are given by: \sqrt{quantity}
* If you would like, the symbol for phi is given by: \phi

**Advanced**

Write the mathematical equation for the quadratic equation in latex.

*Hints:*

* Plus or Minus symbol is given by: \pm

##### Tables

Recreate the following data table in markdown:

|  |  |  |
| --- | --- | --- |
|  | HIV- | HIV+ |
| Male | 12 | 37 |
| Female | 50 | 9 |

#### Paths

##### Relative Paths

Relative paths are based on where the current working directory is pointing to. They lack any reference to the “root” of the file system.

![File is in the same directory as RMarkdown document](block-i.png)  
![File is in the img directory underneath where the RMarkdown document is](img/block-i-subfolder.png)

Note, if we allow these markdown snippets to run, we’ll get:

 

The working directory is displayed immediately underneath the *R* **Console** tab in the lower-left corner of *RStudio*.

To figure out the working directory of this document type:

getwd()

## [1] "/cloud/project/rmarkdown-examples"

###### Goal:

Write *relative* paths for:

* rstudio-logo.png
* r-logo.png
* cloud-data.csv

##### Absolute or Fixed Paths

Absolute or fixed paths are based on the relation of the file to the “root” of the file system. These paths are traditional very long and cause code used on two different computers to break.

![MacOS Absolute Path](/Users/jjb/rmarkdown-examples/block-i.png)  
![Windows Absolute Path](C:/Users/balamut2/Documents/rmarkdown-examples/block-i.png)  
![Linux Absolute Path](/home/parallel/rmarkdown-examples/block-i.png)  
![RStudio Cloud Absolute Path](/home/rstudio-user/rmarkdown-examples/block-i.png)

Do not use these types of file paths in your *RMarkdown* file! This will cause us to be unable to recreate your output or results document.

###### Goal:

Write *absolute* paths for *Windows*, *MacOS*, and *Linux*:

* rstudio-logo.png
* r-logo.png
* cloud-data.csv

Hint: Open the file location in your file explorer or type getwd() to get the base of the directory.