Rmarkdown

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Setup

This is an R Markdown document. Markdown is a simple formatting syntax for authoring HTML, PDF, and MS Word documents. For more details on using R Markdown see http://rmarkdown.rstudio.com. Cheatsheet can be found http://www.rstudio.com/wp-content/uploads/2016/03/rmarkdown-cheatsheet-2.0.pdf Reference guide can be found https://www.rstudio.com/wp-content/uploads/2015/03/rmarkdown-reference.pdf

Today we will talk about pdf Rmarkdown documents. Your final project is required to be done in Rmarkdown. You will want to use the pdf_document type for your write-up. Your slides for the presentation should be pdf, of type beamer.

For today's lecture you will need to open up an Rmarkdown document. Go to File -> New File -> R Markdown and create an PDF document with your name. Title it "R Markdown Practice."

At the top of the Rmd script you should see a section that looks like the following:

---
title: "Rmarkdown"
author: "Simeon Markind"
date: '23 March, 2017'
output: html_document

This is the YAML section of the document. We will discuss it later in this lecture. Your date argument should look different, we will talk about what my date argument does at the end of the lecture.

Below this YAML section you should have the basic text that Rstudio puts in to all new Rmarkdown documents and an R chunk that calls the knitr::opts_chunk$set() command. We will also talk about this later but for now you can simply ignore all the text that came with the document. Before making any changes make sure that the pdf will compile and click on the Knit buttom at the top of your editor window. You should get a pdf document to pop up onto your screen. Let one of the TAs know if this does not work for you.

Rmarkdown provides a ready made environment in which you can seamlessly embed code, text, and graphics. Although Rmarkdown comes with Rstudio and by default runs R code, you can also run many other languages in a markdown document. To see which engines are available to you type `names(knitr::knit_engines$get())` and you should get a list similar to the following: awk, bash, coffee, gawk, groovy, haskell, lein, mysql, node, octave, perl, psql, python, Rscript, ruby, sas, scala, sed, sh, stata, zsh, highlight, Rcpp, tikz, dot, c, fortran, fortran95, asy, cat, asis, stan, block, block2, js, css, sql

```
library(ggplot2)
library(knitr)
library(data.table)
```

Basics

An Rmarkdown document has two modes, we will refer to them as "text" and "code." Text mode is what you are reading now. Default settings for text mode are black text on a white background. (We will discuss how to change this for html later)

In the text mode of a markdown document you can type text as you would in a word document and the output document simply returns exactly what you put in, tpyos and all. Please refer to the reference guide linked above to see more options for what you can do in this part of Rmarkdown.

Text Mode

- Formatting Summary
  - Two spaces at the end of a line indicate a new line.
  - Pound symbols, #, at the beginning of a line indicate headers.
    - You can use up to six # signs, for each additional # sign used the text becomes smaller.
  - Surrounding your text in * or _ makes italics.
    - i.e. *italics* gives *italics* and _italics_ does as well
  - ** will bold your text as does ___
    - **bold** and ___bold___ gives **bold**
  - The ^ creates superscripts so x^2^ gives x^2
  - The ~~ gives strikethrough
    - ~~I have never used this~~ ~~but maybe you will~~
  - To insert links use the following syntax [text] (webaddress)
    - To learn more go here
  - Inline equations use Latex math mode, the $ sign.
    - $y = \pi*r^{2}$
      - gives $y = \pi * r^2$
    - If you have used LaTeX before you will be able to use many of the latex typesetting commands and functions in markdown.
  - The backslash is the escape character and allows you to show *text* that would otherwise involve *formatting.*
  - You can insert tables by hand as shown on the reference guide but I would recommend against that.
  - Bullets are made with a single * sign followed by a space
    - sub-bullets are made by indenting directly below the preceding text and using a + symbol
  - Ordered lists follow the same format but instead of using * as the symbol use a number.
    - Note that you can sub-number a numbered list

1. Ordered list
    1. first sub-bullet
    1a. sub-sub-bullet

In your Rmarkdown file add the following lines, be sure to format them so they are identical when you knit the document.

This is the largest header size

I have really enjoyed this course on ~~python~~, **sorry, R**
$5^2 + 4 = 29$

- I like the following:
  - lists
    - sub-bullets

1. numbered lists are good too
    2. They make it easy to organize things.