Lesson 04 - Intro to R Markdown

Last Updated 06-27-2019

Introduction

In this lesson you will learn to write a document using R markdown, integrate live R code into a literate statistical program, compile R markdown documents using `knitr` and related tools, and organize a data analysis sandbox so that it is reproducible and accessible to others.

Learning Objectives

After completing this lesson learners will be able to create a new R markdown document, identify the pieces of the document

Pre-requisites

- Have R and R Studio installed
- Have the following packages installed : `rmarkdown`, `knitr`.

Document structure

R Markdown combines normal text like this, code (shown in a colored box below) and the output from the code directly following with two proceeding pound signs (`#`).

```
2+2
```

```
## [1] 4
```

Code chunks start with three back ticks (to the left of the 1) and an r in braces. Chunks close (end) with another three back ticks. Note the background color has changed to a ligher shade. This helps you identify you have closed your code chunk properly.

You can insert code chunks by using the button in the top right of an RMD file (Insert –> R), or by typing CTRL + ALT + I.

Only code goes in code chunks. That's why they're called **code** chunks. No normal text. All explanatory text goes outside a code chunk.

R Markdown files have a file extension of `.Rmd`.

Image credit: Data Visualization by Kieran Healy. Available at http://socviz.co/

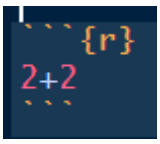

Figure 1: code chunk containing the equation 2+2

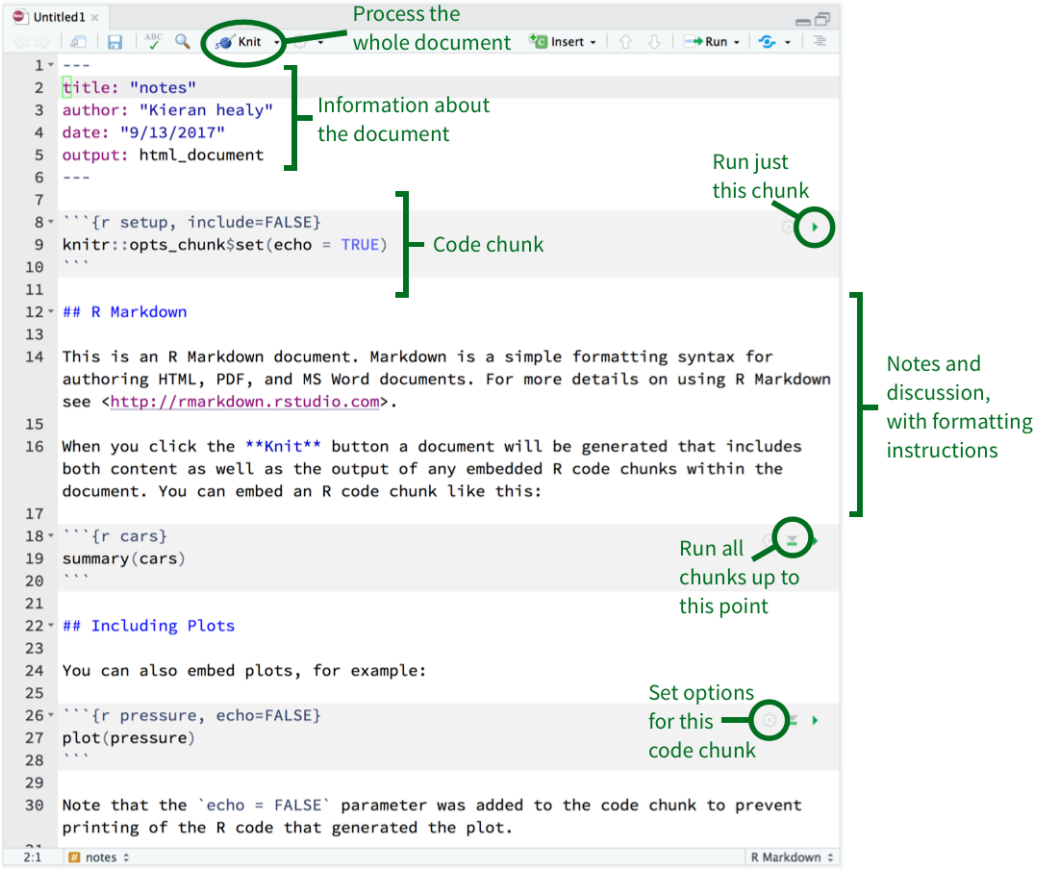

Figure 2: Components of a markdown document

Test your setup

Let's create your first markdown file!

1. In R Studio go to *File –> New File –> R Markdown*
2. Title this document **My First R Markdown Document**, then click OK.
3. Click the small blue disk icon to save this file into your class folder.
4. Save this file using the file name **test_markdown_document**.
    - File names cannot have spaces or special characters.
    - Do not specify the file type. It will be set automatically.
5. Click the **KNIT** button (has the yarn ball next to it) to convert this file into HTML.
6. Look at the HTML file that was created. You should be able to match the code with the resulting output.

This is what we mean by reproducible. If you make a change in the code document, and re-knit (aka compile), your changes will be reflected in the generated document.

> Try this:
> 1. Change the code from `summary(cars)` to `summary(iris)`.
> 2. Write a sentence below this code chunk. It could be "Hello world". 3. Re-knit this document and observe your changes.

You are now ready to start the first homework.

1. **Right click** and select **save as** (or save target as) to download [HW 1.Rmd] code file to your class folder.
2. Navigate to your class folder and double click to open this file in R Studio
    - You might have to tell your computer what program to use.
    - Do NOT open this file from your browser window.
3. Double click on this file (from your class folder) to open it in R studio.
4. This `.Rmd` file is a template for you to use to write your assignment. Write your answers directly into this document.
5. After you answer each question, knit the file to ensure that your work is saved, and that your answers are being correctly displayed in the final document.