Literate Programming

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Before we get started: You need to install `rmarkdown` and `tintyex` to make this work.[1] And beware: the `tinytex` install requires:

Literate programming with R Markdown

This is an R Markdown document. Markdown is a simple markup language for authoring reports, slide decks, websites, and more. Critically, Markdown allows you to integrate code (`R`, `python`, `html`, etc) into the body text of your work. This combination of coding and typesetting is sometimes called "literate programming."

Markdown resources

There are a number of excellent, stand-alone resources on Markdown. Yihui Xie's R Markdown: The Definitive Guide, for example, covers installation, documents, slide presentations, and much more.

Workflow

When you're ready to start communicating findings through a report or slide presentation, try the following:

1. Create a new `.Rmd` file and a new `.R` script in your project folder.
2. Use the `.R` script to test out and write initial code.
3. Outline the `.Rmd` document (all headers and sub headers).
4. Paste the final code chunks into the `.Rmd` doc, and test them.
5. Write the main body text.

Markdown structure

Markdown documents (`.Rmd` files) have three parts:

- *YAML metadata* defining the document parameters
  - Specify author, title, date, etc
  - Set output type: HTML, PDF, MS Word, etc
- *R code chunks* to execute on `Knit`
- *Body text*

When you `Knit` your R markdown document, `knitr` and `pandoc` work together to generate a file that includes written content and the output of any code (e.g., figures and tables).

[1] Also check out the `setup` code chunk. Include it first, and be sure to specify `include=FALSE`.

Table 1: Trash weight (tons) by wheel

wheel	Min	Mean	Max
Captain	0.6	1.2	3.2
Gwynnda	0.8	2.9	4.2
Mr. Trash	0.8	3.2	5.6
Professor	0.6	2.1	3.7

Code chunks

You can embed code chunks like this:

Every code chunk begins and ends with the triple back tick, and you must specify that the code included in the chunk is `r` code. When you `knit`, or render, the document, `knitr` processes the code and displays the output (see Table 1 above).

You can also integrate code directly into the text. For example, the `trash_wheels` data includes records for 946 total bins with a maximum recorded weight of 5.62.

Including Plots

Plots generated from code chunks are placed directly in the document. For example:

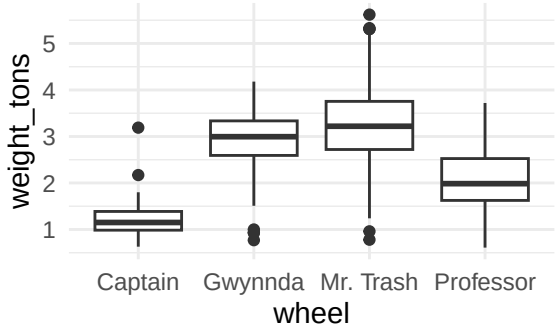

Figure 1: Weights by wheel

Hard things (at first)

Line breaks

Line breaks require two spaces. New paragraphs need two hard returns. When I `knit`, this line gets sucked into the one above. If I add two spaces and return at the end of the line, then
I become a new line all to myself. If I want a whole new paragraph, I need two hard returns.

Now I'm a new paragraph.

Knitting and errors

`Knit` often! Write a bit and `Knit`. Code a bit and `Knit`. Check every code chunk.