BINF 6210 Software Tools

- R-Markdown
- Date: Nov 6, 2025

Learning objectives

- **Part 1 : Background**
  - What is R-Markdown?
  - Why is it useful?
- **Part 2 : Knitr**
  - How to make HTML, PDF, Word files in R-studios

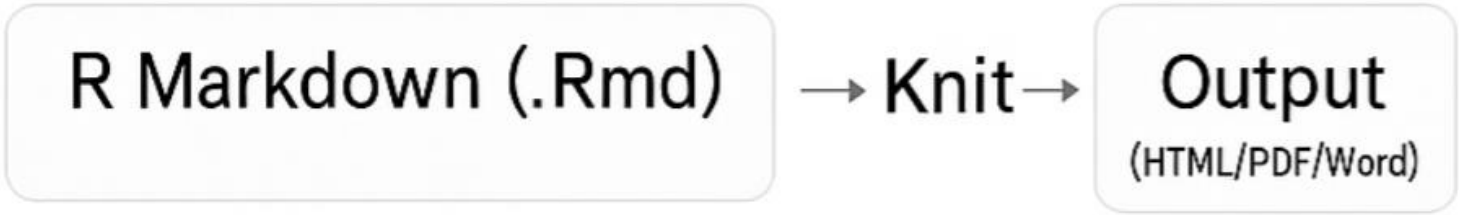
Background

```
title: "Report"
output: html_document

#5 Summary
r summary(cars)
**
```

What is it?

R Markdown is a framework for creating dynamic documents that combine R code, text, output in single file.



- Integrate code, text, visualization

Combine code, plots and text dynamically!

YAML header

Written sections (markdown)

Code chunk (R, Bash, Python etc.)

~/Desktop/intro-to-int-docs

Go to file/function | Deploy

plain.Rmd | Untitled.Rmd

Run Document | Run | Chunks

```
1  ---
2  title: "Untitled"
3  author: "Garrett"
4  date: "July 10, 2014"
5  output: html_document
6  runtime: shiny
7  ---
8
9  This R Markdown document is made interactive using Shiny. Unlike the more
   traditional workflow of creating static reports, you can now create
   documents that allow your readers to change the assumptions underlying
   your analysis and see the results immediately.
10
11 To learn more, see [Interactive Documents](http://rmarkdown.rstudio.com
   /authoring_shiny.html).
12
13 ## Inputs and Outputs
14
15 You can embed Shiny inputs and outputs in your document. Outputs are
   automatically updated whenever inputs change.  This demonstrates how a
   standard R plot can be made interactive by wrapping it in the Shiny
   `renderPlot` function. The `selectInput` and `sliderInput` functions
   create the input widgets used to drive the plot.
16
17 ```{r, echo=FALSE}
18 inputPanel(
19   selectInput("n_breaks", label = "Number of bins:",
20               choices = c(10, 20, 35, 50), selected = 20),
21
22   sliderInput("bw_adjust", label = "Bandwidth adjustment:",
23               min = 0.2, max = 2, value = 1, step = 0.2)
24 )
25
26 renderPlot({
```

11:95 (Top Level) R Markdown

Open in Browser | Deploy

Untitled

Garrett

July 10, 2014

This R Markdown document is made interactive using Shiny. Unlike the more traditional workflow of creating static reports, you can now create documents that allow your readers to change the assumptions underlying your analysis and see the results immediately.

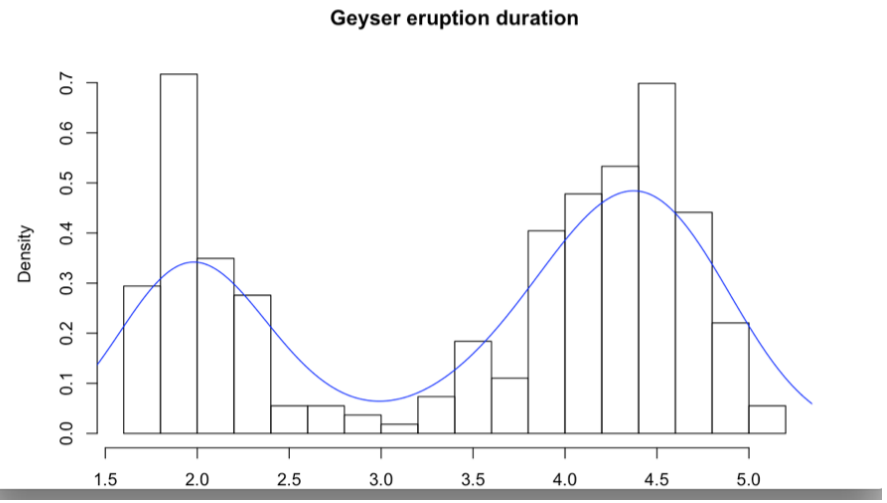
To learn more, see Interactive Documents.

Inputs and Outputs

You can embed Shiny inputs and outputs in your document. Outputs are automatically updated whenever inputs change. This demonstrates how a standard R plot can be made interactive by wrapping it in the Shiny `renderPlot` function. The `selectInput` and `sliderInput` functions create the input widgets used to drive the plot.

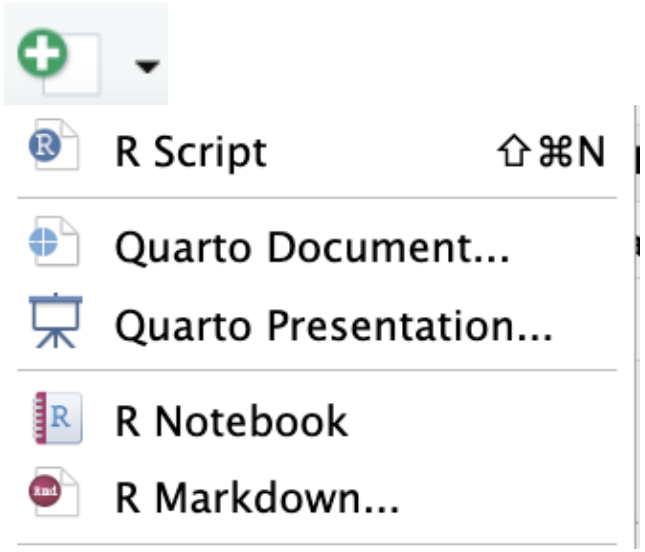
Number of bins: 20

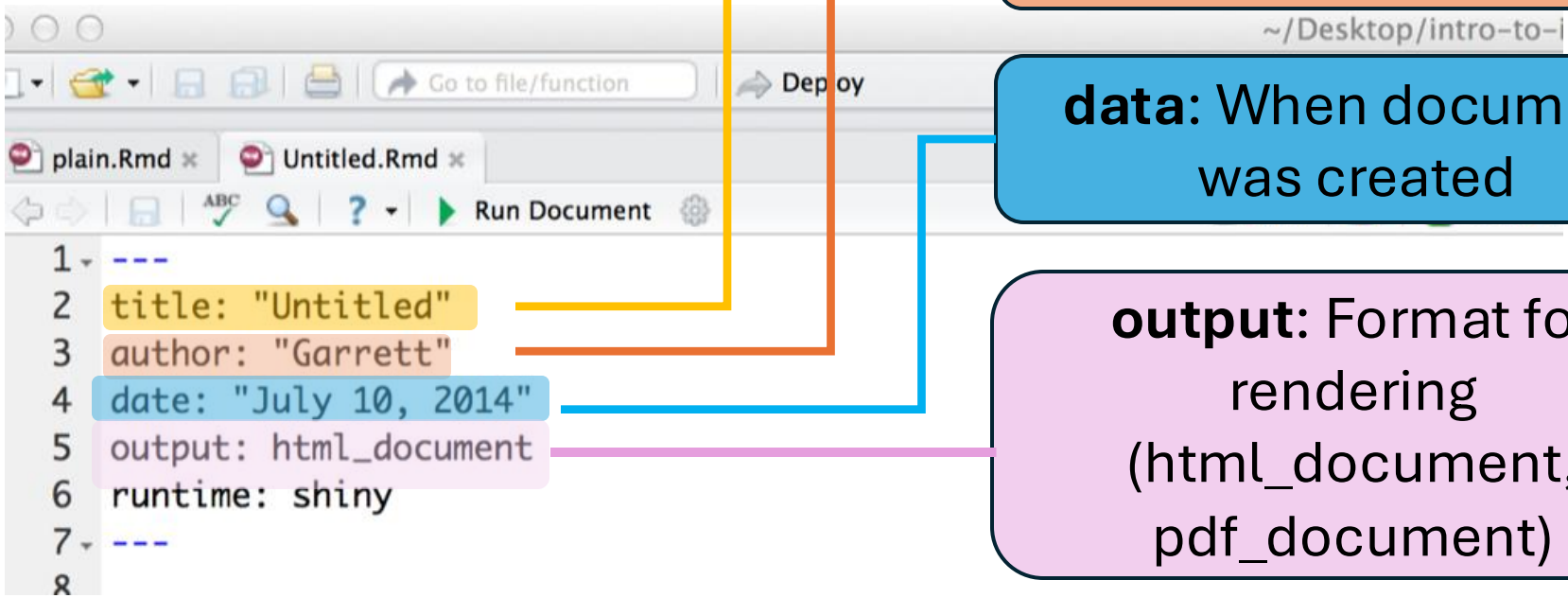
Bandwidth adjustment: 0.2 1 2



YAML header

Defines metadata for R-markdown.
Header starts and ends with “---”.
Controls output format





title: Document title

author: Name of author

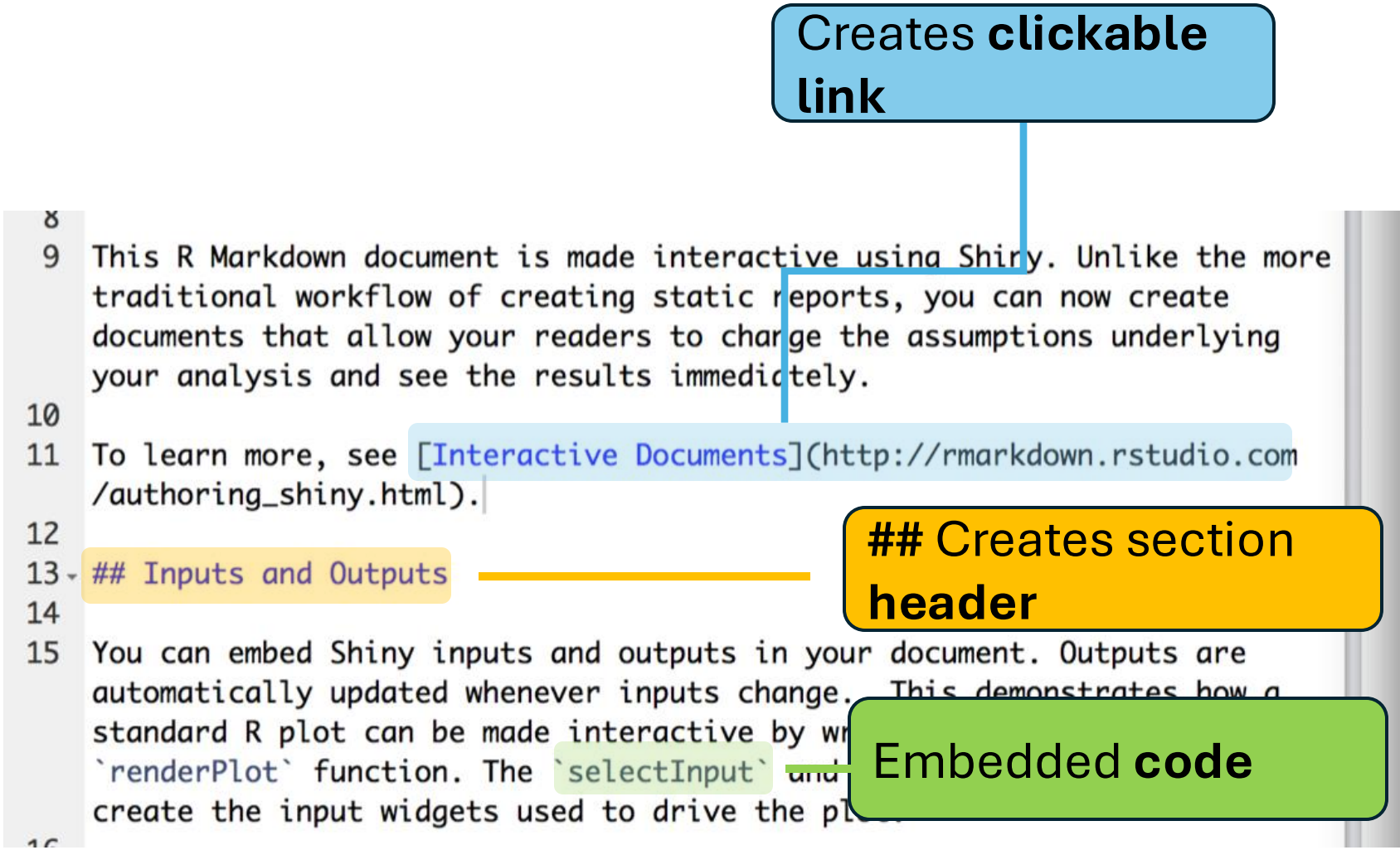
data: When document was created

output: Format for rendering (html_document, pdf_document)

Markdown

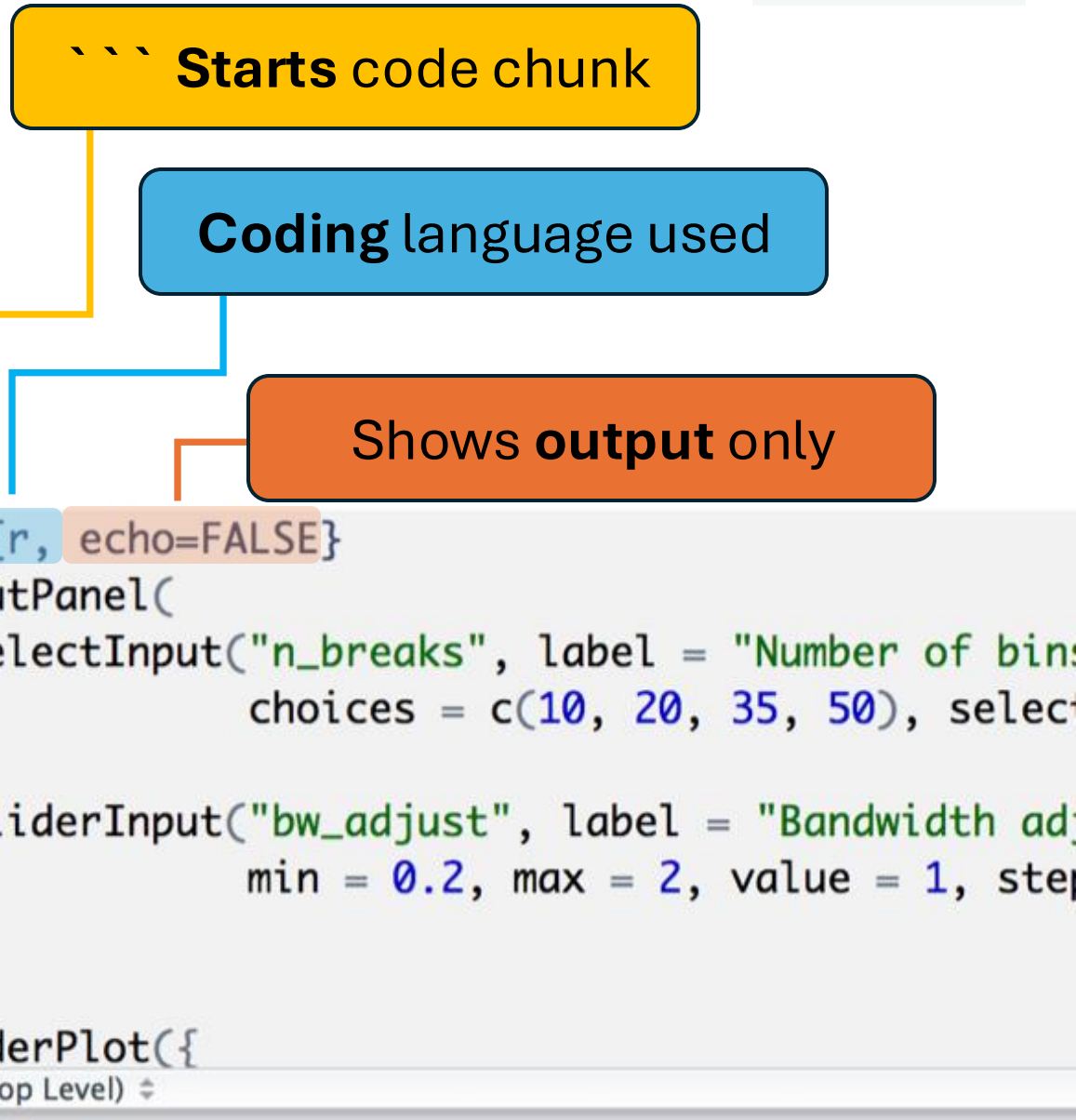
Markdown is a markup language to format texts and documents

Feature	Syntax
Header	## Header
Bold	**Bold**
Italics	*Italics*
Link	[text](url)
Code	`code`



Code chunks

Code chunks allow you to embed code inside your document. Chunk are enclosed by ``` and include options to control output

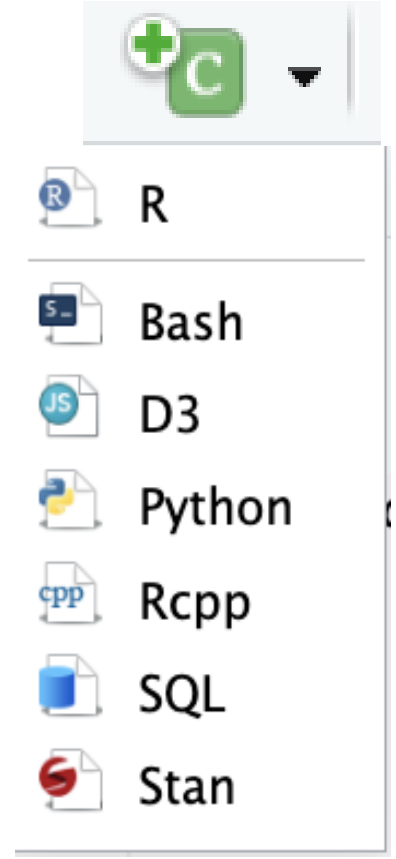


Options	Purpose
echo = FALSE	Show output only
echo = TRUE	Show code and output
include = FALSE	Show nothing (run code)
eval = TRUE, include = FALSE	Show nothing (don't run code)

Code in R, Python, Bash and more!

R markdown supports multiple languages. You can embed code each type in a single file

- R
- Bash
- Python
- JavaScript
- CSS



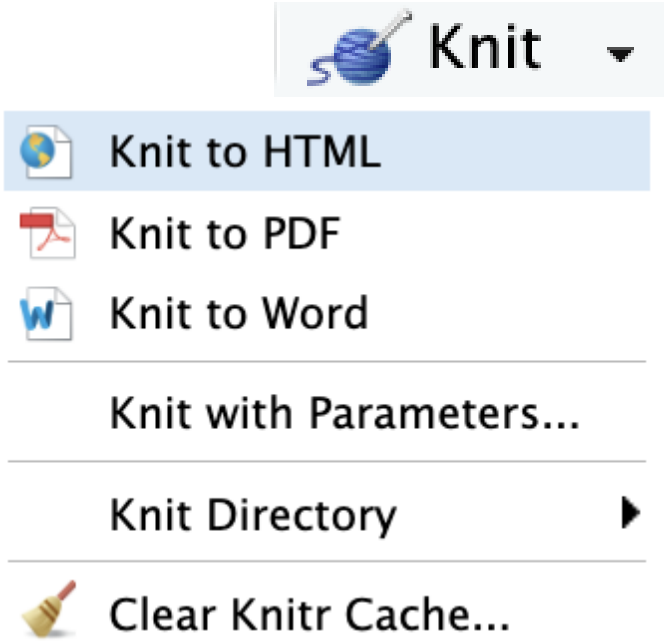

````
227 ##### Bash
228
229 ```{bash}
230 ls *.Rmd
231 ```
232
233 ##### Python
234
235 ```{python}
236 x = 'hello, python world!'
237 print(x.split(' '))
238 ```
239
````

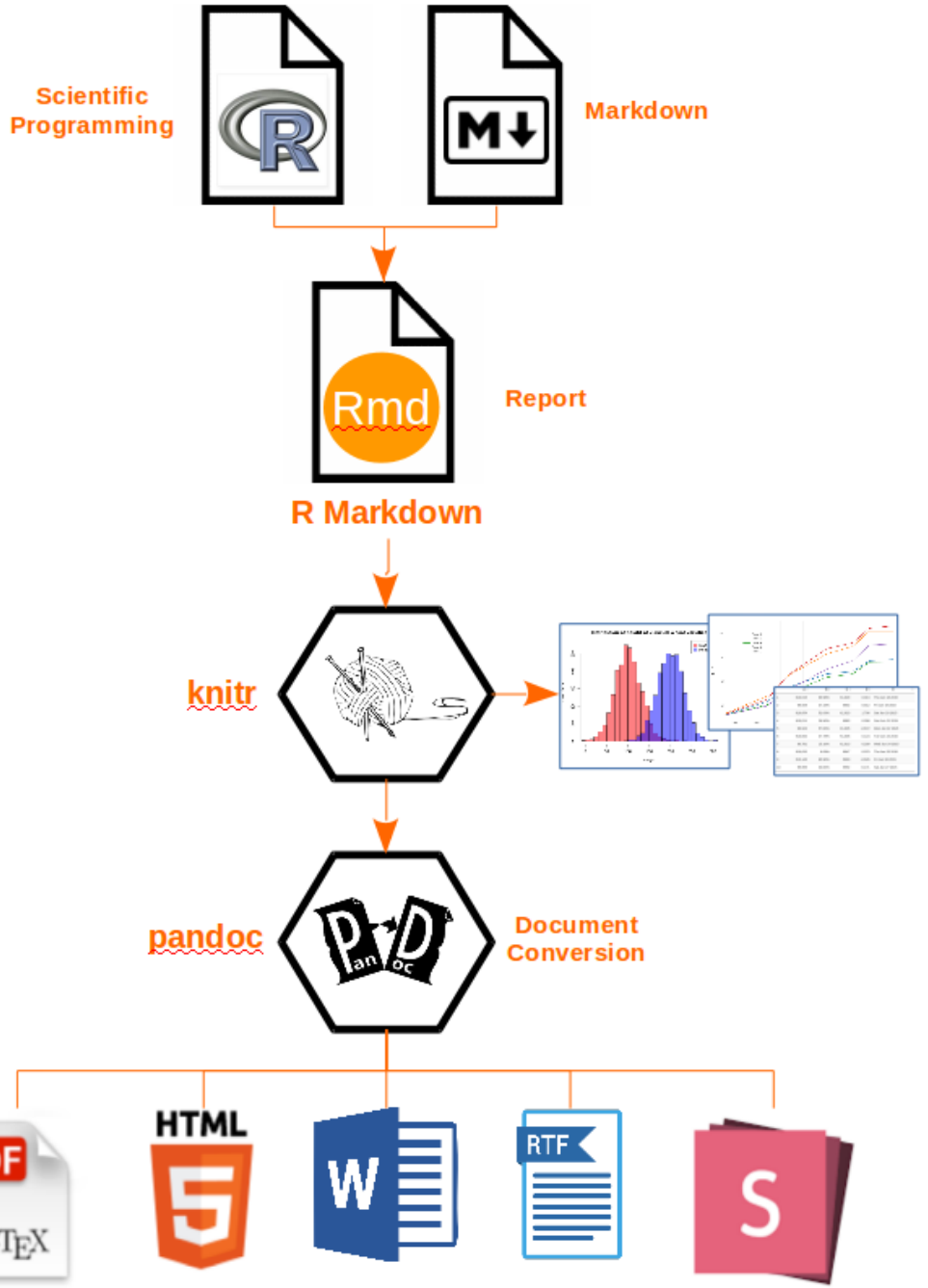
Language	Chunk header
R	{r}
Python	{python}
Bash	{bash}

Knitr: Make beautiful reports!

Works with R markdown to create:

- HTML – Interactive document
- PDF – Formal document
- Word – Editable report





Next step

- Download **RMarkdown_pdf** (The RMD file) – from Courselink
  - **Author**: Brittany MacIntyre
- Explore the R markdown file and generate different file types!