

rbtl - Research Beyond the Lab

Literate Programming with R Markdown

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2022-03-15

Today

1. Homework Assignment 3
2. R Markdown
3. Homework Assignment 4

Homework Assignment 3

R Markdown

R markdown

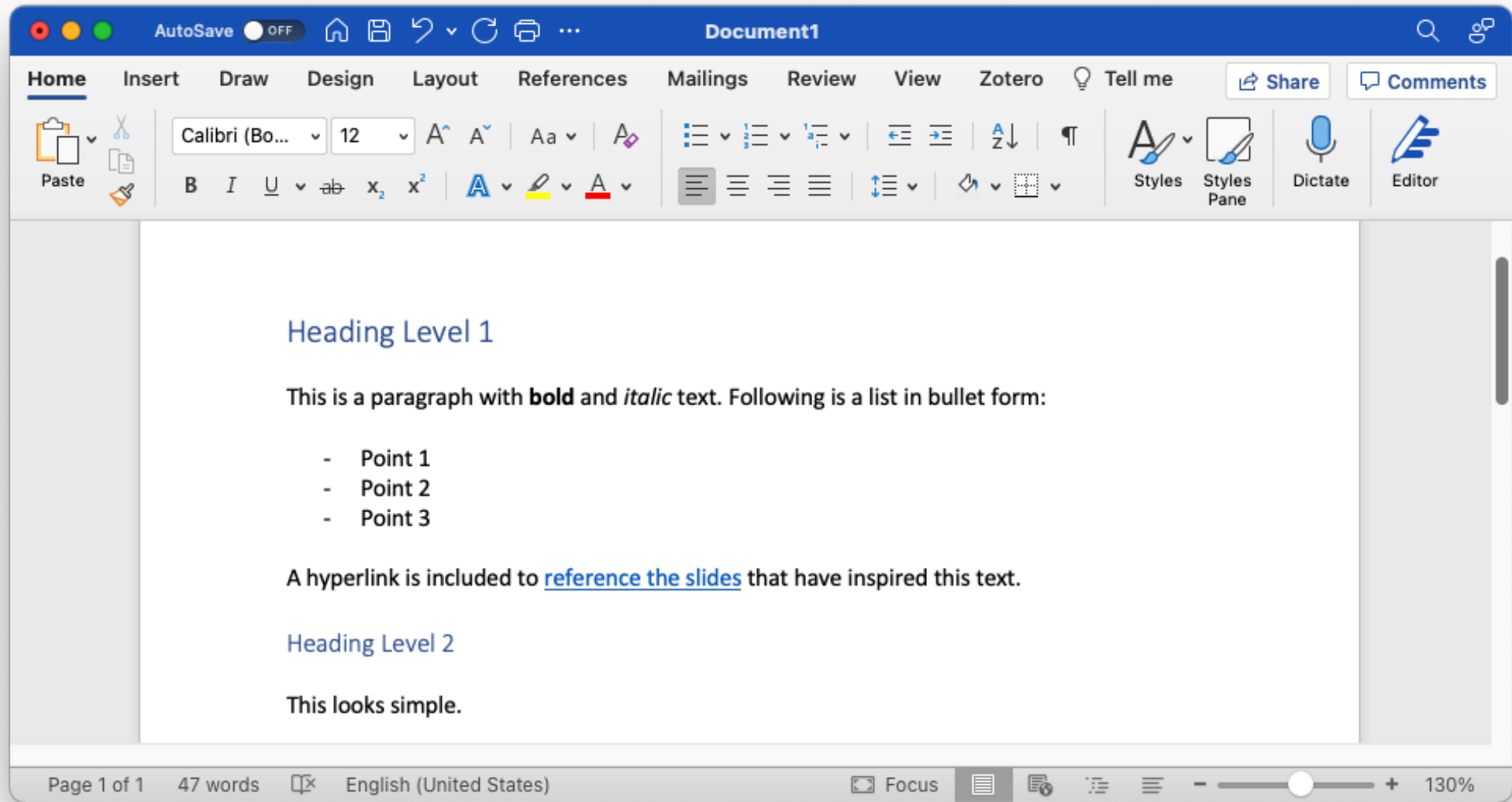
On the input side...

- Write text in markdown
- Insert code using R
- Write "metadata" with YAML
- Insert equation with LaTeX

On the output side...

- Output to HTML
- Output to PDF
- Output to Word
- Many other variations too

Lots of little things to learn!
We'll start with markdown...



```

<?xml version="1.0" encoding="utf-8" standalone="yes"?><w:document xmlns:o="
urn:schemas-microsoft-com:office:office" xmlns:r="http://schemas.openxmlformats.org/
officeDocument/2006/relationships" xmlns:v="urn:schemas-microsoft-com:vml" xmlns:w="
http://schemas.openxmlformats.org/wordprocessingml/2006/main" xmlns:w10="
urn:schemas-microsoft-com:office:word" xmlns:wp="http://schemas.openxmlformats.org/
drawingml/2006/wordprocessingDrawing" xmlns:wps="http://schemas.microsoft.com/office/
word/2010/wordprocessingShape" xmlns:wpg="http://schemas.microsoft.com/office/word/2010/
wordprocessingGroup" xmlns:mc="http://schemas.openxmlformats.org/
markup-compatibility/2006" xmlns:wp14="http://schemas.microsoft.com/office/word/2010/
wordprocessingDrawing" xmlns:w14="http://schemas.microsoft.com/office/word/2010/wordml"
mc:Ignorable="w14 wp14"><w:body><w:p w:rsidP="3DB3F1AF" w14:paraId="53FDABE3" xmlns:wp14
="http://schemas.microsoft.com/office/word/2010/wordml" wp14:textId="6B19D258"><w:pPr><w
:pStyle w:val="Normal" /><w:bidirectional w:val="0" /><w:jc w:val="left" /><w:rPr><w:rFonts w:
ascii="Times New Roman" w:hAnsi="Times New Roman" w:eastAsia="Times New Roman" w:cs="
Times New Roman" /></w:rPr></w:pPr><w:r w:rsidRPr="3DB3F1AF" w:rsidR="3DB3F1AF"><w:rPr><
w:rFonts w:ascii="Times New Roman" w:hAnsi="Times New Roman" w:eastAsia="Times New Roman
" w:cs="Times New Roman" /></w:rPr><w:t xml:space="preserve">This is my Word document.
</w:t></w:r><w:r w:rsidRPr="3DB3F1AF" w:rsidR="3DB3F1AF"><w:rPr><w:rFonts w:ascii="
Times New Roman" w:hAnsi="Times New Roman" w:eastAsia="Times New Roman" w:cs="Times New
Roman" /></w:rPr><w:t xml:space="preserve">It has </w:t></w:r><w:r w:rsidRPr="3DB3F1AF"
w:rsidR="3DB3F1AF"><w:rPr><w:rFonts w:ascii="Times New Roman" w:hAnsi="Times New Roman"
w:eastAsia="Times New Roman" w:cs="Times New Roman" /><w:b w:val="1" /><w:bCs w:val="1"
/><w:i w:val="0" /><w:iCs w:val="0" /></w:rPr><w:t xml:space="preserve">bold </w:t></w:r
><w:r w:rsidRPr="3DB3F1AF" w:rsidR="3DB3F1AF"><w:rPr><w:rFonts w:ascii="Times New Roman"
w:hAnsi="Times New Roman" w:eastAsia="Times New Roman" w:cs="Times New Roman" /></w:rPr
><w:t xml:space="preserve">text, </w:t></w:r><w:r w:rsidRPr="3DB3F1AF" w:rsidR="3DB3F1AF

```


Word documents are complicated

- A .docx file is a compressed folder with lots of files
- A .docx file is proprietary file format
- Your text is buried in with a lot of formatting information

HTML documents are complicated

- Looks simple because I removed most formatting
- Still unpleasant to look at

What do we want?

- Something that... you can write in **plain text**
- Something that... is **human readable**
- Something that... allows **formatting**
- Something that... can **build** to something pretty

markdown to the rescue!

markdown file format

A markup language with a simple syntax intended as a replacement for HTML - Definition

- Is a **markup language** - Definition
- Is an **open format** - Definition
- Is **non proprietary** - Definition

Here's an example of a markdown document...

Introduction

Welcome to my **awesome** class. You will learn all kinds of useful things about R markdown.

Why should you care?

- Markdown is simple and reproducible
- You can make it pretty if you want to
- The R Markdown variant lets you add R code

Where can you find these slides?

<https://rbtl-fs22.github.io/website/posts/week4/>

Here's what the output looks like...

Introduction

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Let's dive into the details...

Emphasising text

What you type...

```
this is *italics*
```

```
this is **bold**
```

```
this is ***bold italics***
```

What you get...

this is *italics*

this is **bold**

this is ***bold italics***

Creating lists

What you type...

```
- unnumbered lists  
- look like this  
  
1. numbered lists  
2. look like this
```

What you get...

- unnumbered lists
 - look like this
-
1. numbered lists
 2. look like this

Creating headings

What you type...

```
# Level 1 heading  
## Level 2 heading  
### Level 3 heading
```

What you get...

Level 1 heading

Level 2 heading

Level 3 heading

And R markdown?

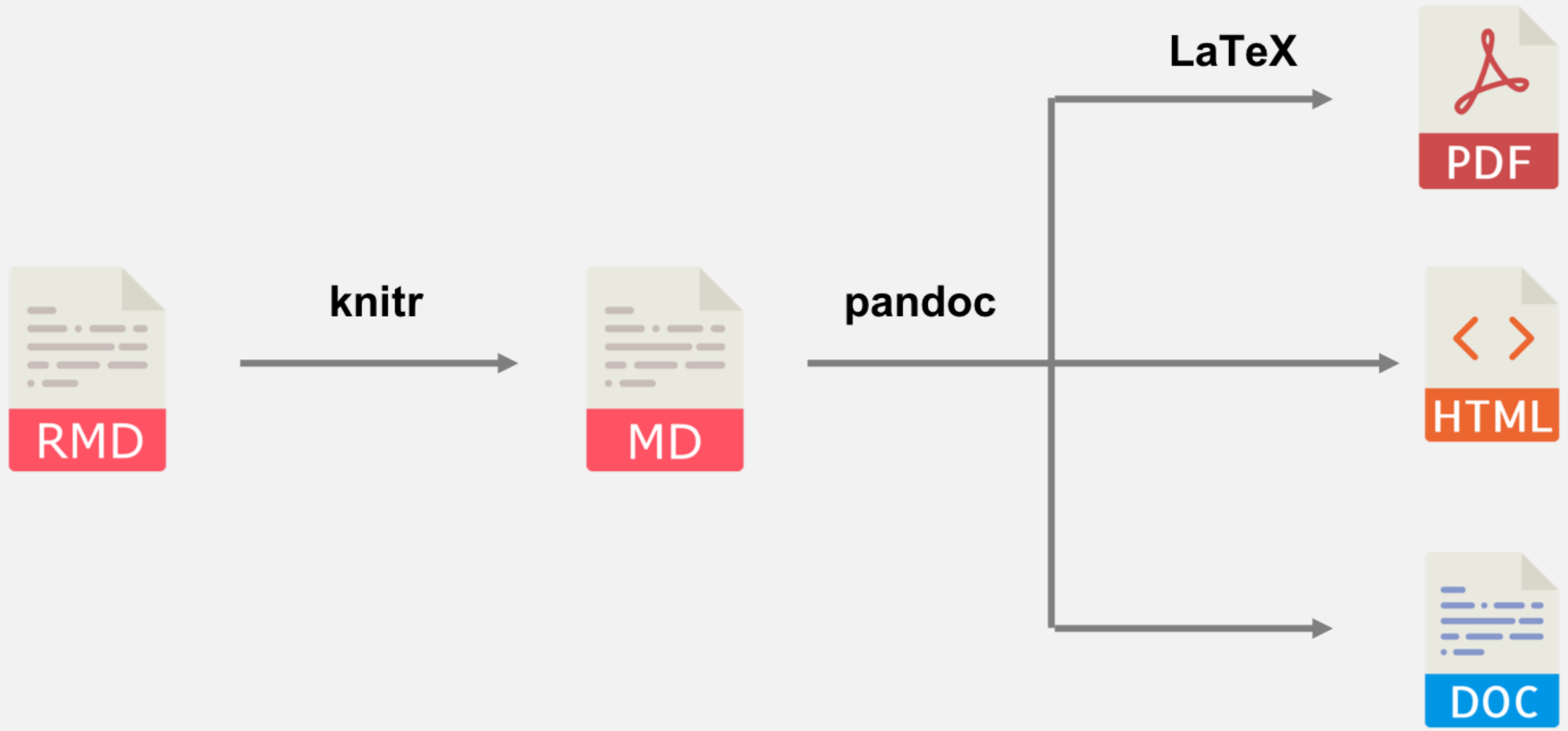
R markdown

- Something that... lets you write text in **markdown**
- Something that... lets you include **R code** (e.g. for data vis)
- Something that... can **build** to HTML, PDF, Word, etc

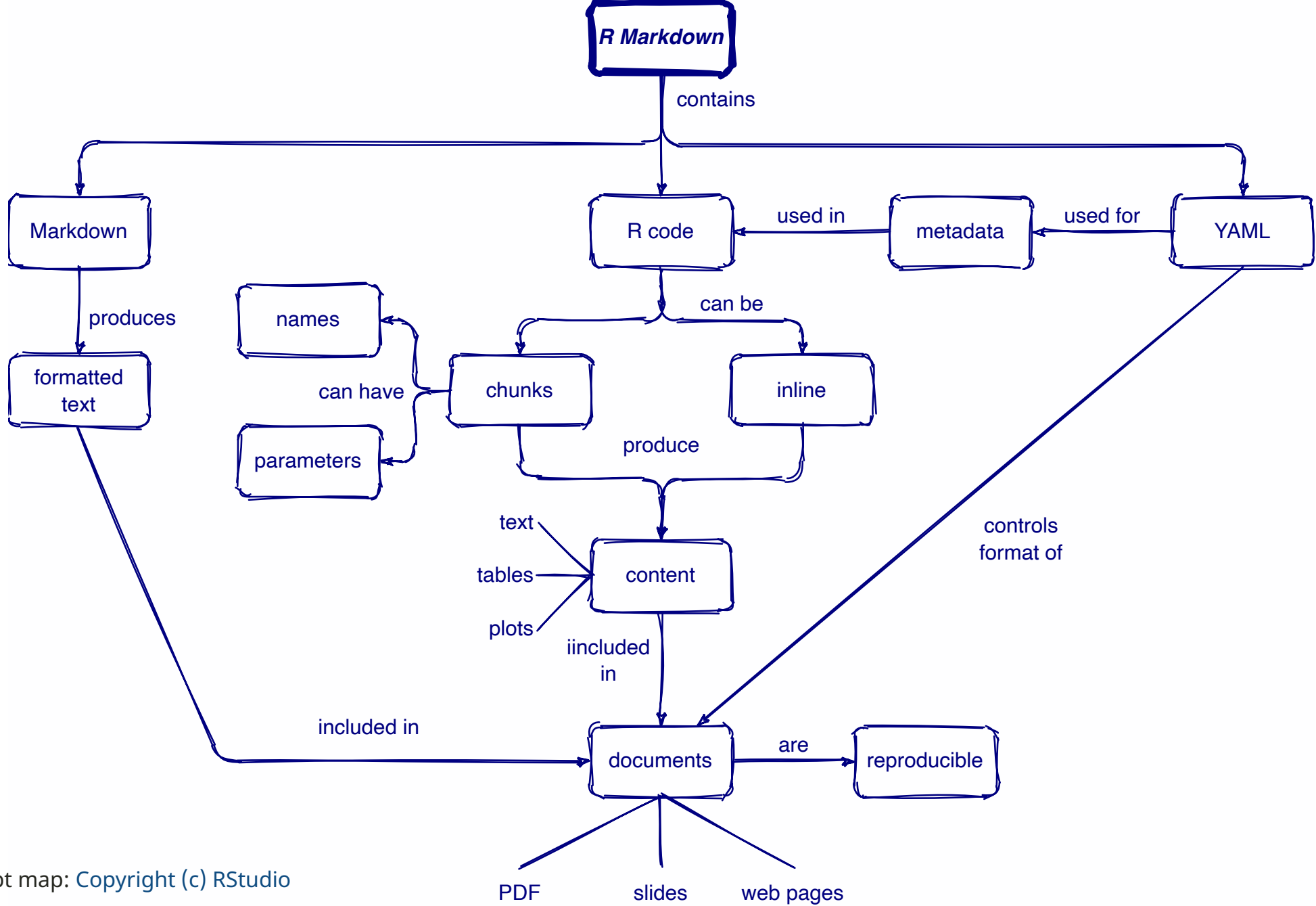
Rmarkdown

TEXT. CODE. OUTPUT.
(GET IT TOGETHER, PEOPLE.)





File formats - Use in course



Homework Assignment 4 - Learning Objectives

These learning objectives are related to the assignment for this week.

- Learners can explain the difference between the markdown (.md) and R Markdown (.Rmd) file format
- Learners can paraphrase how a file written in a markup language like markdown (.md) differs from a file written in a proprietary file format like DOCX
- Learners can identify four components of an R markdown file (YAML, code chunk, R code, markdown)

Homework Assignment 4 - Group submission

- Assignment 4 - due on **22nd March**

Each group will

1. Identify the variables that are needed
2. Develop the necessary questions and response values
3. Submit the compiled questions as a markdown file (1 submission per group) on GitHub before 2022-03-22 23:59

Thanks!

Slides created via the R packages:

xaringan

[gadenbuie/xaringanthemer](#)

The chakra comes from [remark.js](#), **knitr**, and R Markdown.

Access slides as [PDF on GitHub](#)

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