

ablauf

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1 RMarkdown

- Intro with slides
- Show examples
- EXERCISE: turn Rscript into RMarkdown file

Task: Transform R-Script into more helpful R Markdown file. Download Repository / Get Project Folder
Create new RMarkdown file. Give it a title.

let `library()` commands run but make sure that the output will not be in the document. Data cleaning:
Display the code used but not the output. Visualization: Include plots with summary results but not the
code. Describe what you are doing with text.

Advanced: - Give your plots names and reference them in your text. - Include inline-variables that render
with your code. - Display a table of first 5 lines of the dataframe used - Include hyperlink to tidyuesday-
repository

2 Bookdown

- Show examples
- Intro
- EXERCISE:

3 RMarkdown - Overview

3.1 What is RMarkdown?

- create dynamic documents with R
- combination of markdown language and RCode
- create html-reports, pdf-documents, presentation slides, ...

4 RMarkdown - Structure

4.1 Three components

4.2 YAML header

- format entire document
- e.g. what output, style (custom css files), templates etc.

```
---  
title: "Rmarkdown & Bookdown Intro"  
author: Jasmin Classen  
date: December 1st, 2019  
output: ioslides_presentation  
---
```

4.3 Markdown-Syntax

- Markdown is a simple language that allows you to specify fonts, font style, headings and much more
- you can make text *italic* or **bold** using asterisks (*)
- insert headings with hashtags (# for heading 1, ## for heading 2, ...)
- Make lists
 - with up to
 - * 2 sub-levels
- More infos here

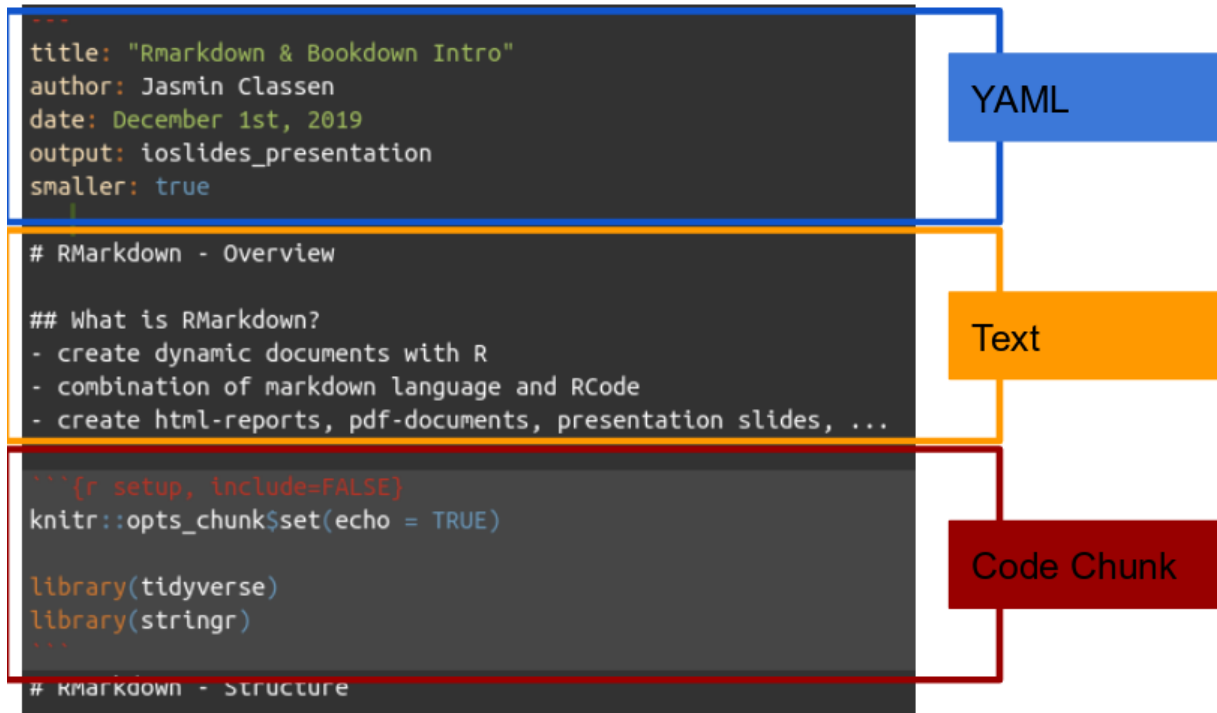


Figure 1: Three components of a R Markdown file.

4.4 Code Chunks

- embed RCode and use it for anything you normally do
- produce tables, plots or text output and embed it into your document

```
# write a comment
print("Hello World!")
```

```
## [1] "Hello World!"
```

4.5 Code Chunk Options

- at beginning of a new code chunk
- fine grain output:
 - {r echo = FALSE} : evaluate code & show output, exclude code itself
 - {r include = FALSE} : evaluate code, exclude output & code itself
 - {r myplot, fig.height = 4}: set height of a plot
- many more chunk options here

5 Project Workflow

5.1 R Projects

- Make project managment simple

- Restores your last RStudio session with all files used still open
- Access to R History from last session
- Own directory for each project
 - no more ...

```
setwd("C:Users\\jasmin\\afolder\\anotherfolder\\wowthisislong\\
morefolders\\hereiwanttobe")
```

- Let's create our own RProject for our exercises now!
- For more info on Project Workflow in R: Jenny Bryan is **the** expert and wrote a bunch of blog articles / talks about it

5.2 Exercise 1: R Markdown Basics

Create a new R Markdown file and use it to transform the R Script `rmarkdown_bobross.R` provided into a better understandable report!

6 Writing Books with Bookdown

6.1 Bookdown Intro

- Rpackage by Yihui Xie that enables writing books & long reports with RMarkdown
- Combines advantages of writing dynamic documents with features specifically important for longer projects:
 - referencing
 - cross-referencing of figures and tables
 - HTML, PDF and e-book output
 - easy and clear structuring of chapters & sections

6.2 Components / Structure I

- `index.Rmd`
 - Contains YAML & other options to tell bookdown how to render your book
- `.Rmd` files (e.g. `introduction.Rmd`, `theory.Rmd`, ...)
 - “Normal” R Markdown-files containing the actual content of your book
 - Can be separated according chapters or whichever organization you find best
 - Will be compiled in *alphanumeric* order therefore take care of right naming
 - Using headers automatically determines structure (no need to mention filenames anywhere else for structure)

6.3 Components / Structure II

- `references.bib`
 - bib file with all your references
 - used they same way like in LaTeX
 - can be exportet from most common reference management tools
- `data` - folder contains all datasets used in your book
- `scripts` - folder contains all RScripts used in your book

6.4 Simple Example

6.5 Complex Example

- Citations, cross-referencing, referencing, incorporating data, figures, tables

6.6 Compiling

- YAML
- preamble.tex
- doc_preface.tex
- render
 - do not knit!
- **Exercise 2:** Let's render our first book!

```
bookdown::render_book("index.Rmd", "bookdown::pdf_book")
```

7 Helpful Sources

7.0.0.1 RMarkdown Basics

- R Markdonw Cheatsheet
- R Markdown: The Definitive Guide
- Markdown Basics

7.0.0.2 Bookdown:

- bookdown: Authoring Books and Technical Documents with R Markdown (Yihui Xie)
- Bookdown Template used in Yihui Xies Book and the corresponding minimal bookdown example
- Writing Your Thesis in Bookdown (Ed D. J. Berry)
- Making Books in R Markdown (Alison Hill, 2019-01-16, rstudio::conf)
- Dissertating with RMarkdonw adn Bookdown

Well known (open-source) books written in bookdown:

- R for Data Science (Hadley Wickham)
- Efficient R programming (Colin Gillespie, Robin Lovelace)

7.0.0.3 Others:

- Project-oriented workflow (Jenny Bryan, December 2017)
- Using R Projects