

Radvance

RMarkdown and Quarto

PhD Toolbox - R introductory course - stream II

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RMarkdown

- Markdown is a lightweight markup language for creating formatted text using a plain-text editor
- Text formatting is **CODE**-based allowing reproducibility

RMarkdown

Try me here!

<https://markdown-it.github.io/>

- Special characters are used to define text styles

is used for header definition

First level heading

Second-level heading

Third-level heading

** around a word makes it **bold**

_ or * around a word make it *italic*

...and so on...

RMarkdown

The code is finally **rendered** into the final document

- pdf
- html
- MSOffice document

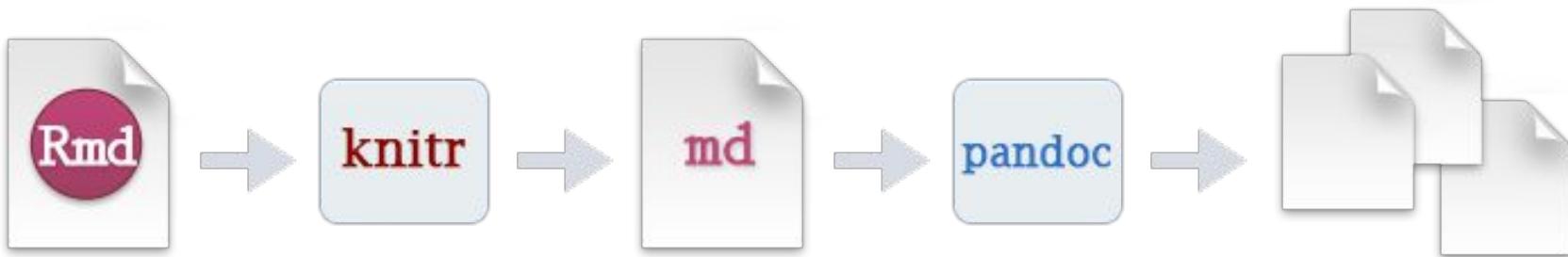
RMarkdown

Markdown language is fully integrated with R and RStudio thanks to **RMarkdown**



- produce high-quality and fully reproducible **reports**
- integrate narrative text with lines of code and plots
- several outputs formats available:
 - static or interactive
 - html, slides, pdf, word documents, websites and many other

RMarkdown



RMarkdown

There are 3 fundamental elements in a Rmarkdown document

1. Metadata header
2. Text
3. R chunks

RMarkdown

1. YAML header

```
---
```

```
title: "This is your first **RMarkdown** document"
author: "Matteo Chialva"
date: "2023-03-09"
output:
  html_document:
    toc: yes
    toc_float: true
bibliography: citations.bib
---
```

- Title/subtitles
- Authors
- Date

- output formats
- Table of contents (TOC)
- Themes
- Code folding
- bibliography
- output format

keep the indents hierarchical!

RMarkdown

2. Text (Markdown format)

```
## Results 1 {.tabset}

### Tab One

Hey! I'm the first tab!

### Tab Two

Hey! I'm the second tab!

## Results 2 {.tabset .tabset-pills}
```

Add your narrative flow in
Markdown format

- Chapterize your document
 - you can create tabset with different layouts
 - tables
 - References section
- ## References

RMarkdown

3. Code chunks

```
```{r pressure, include=T, echo=T}
plot(pressure)
````
```



- delimited by three back-quotes!
- can be named (for indexing purposes)
- parameters:
 - include or not the chunk and its output (include parameter)
 - include or not the code (echo parameter)
 - figures options
 - manage displayed errors and warnings
 - many other!

Within each chunk you are fully working in an R environment

RMarkdown

3. Code chunks

```
```{bash}
execute the following bash code
pwd
...```

```

Not only R!

bash  
python  
...

# RMarkdown

## 3. Code chunks

```
```{bash}
# execute the following bash code
pwd
...```

```

Not only R!

bash
python
...

RMarkdown

Few notes on the **slides** format

Different implementations with different functionalities

- ioslides
- Slidy
- Beamer
- xarigan
- **reveal.js**

Each method has different parameters (YAML)

RMarkdown

revealjs

- based on Java
- highest browser compatibility compared to other methods
- several plugins available
- easy-to-use syntaxis
- nice text formatting

RMarkdown

```
---
```

```
title: "This is your first **RMarkdown** Presentation"
author: "Matteo Chialva & Martino Adamo"
date: "2024-01-24"
output:
  revealjs::revealjs_presentation:
    transition: default
    self_contained: false
    reveal_plugins:
      - search
      - zoom
      - notes
      - chalkboard
      - menu
    reveal_options:
      slideNumber: true
      chalkboard:
        theme: chalkboard
        toggleNotesButton: true
      menu:
        numbers: true
---
```

- Different output format and YAML field compared to html document
- the file has still an *.Rmd format

RMarkdown

revealjs

- as for html reports you can include code chunks
- slides are created according to a Markdown-styled chapterization

Slide 1

Content

Text styles (font, face, size and color) have to be defined in a **CSS (Cascading Style Sheets)** file or called directly in-line:

Slide 2

Content

```
## [R Markdown]{style="font-size: 60px; font-weight: bold; color:red;"}
```



- An open-source scientific and technical publishing system
- next generation version of R Markdown
 - enhanced graphical capability (useful mainly for presentations)
 - backward-compatible with RMarkdown



Differences from RMarkdown

- different YAML syntax (simplified)

```
---
```

```
title: "This is your first **Quarto** document"
author: "Matteo Chialva & Martino Adamo"
date: "2024-01-24"
format:
  html:
    code-fold: true
    toc: true
    toc-title: Contents
    toc-location: left
  bibliography: citations.bib
---
```



- Component layout are surrounded by :::

```
::: panel-tabset  
### Tab One
```

Hey! I'm the first tab!

```
### Tab Two
```

Hey! I'm the second tab!

```
:::
```



- chunk arguments are indicated within the chunk using #|

```
```{r}
#| echo: true
#| include: true
#| fig-cap: "(A) Cars plot"
library(ggplot2)
plot(cars)
...```

```

# RMarkdown/Quarto

Let's review all these elements with their syntax  
live on the *Example* files

[https://github.com/mchialva/PhDToolbox2026/tree  
/main/docs/Exercises/Reports](https://github.com/mchialva/PhDToolbox2026/tree/main/docs/Exercises/Reports)