

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 syntax
- 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 syntaxis  
live on the ***Example*** files

<https://github.com/mchialva/PhDToolbox2026/tree/main/docs/Exercises/Reports>