

R Markdown

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What is R Markdown?

Markdown = Language for text formatting

- ▶ Markdown
- ▶ an easy to write plain text format for creating dynamic documents and reports
- ▶ contains “normal” text and code chunks (e.g. R, but Python, SQL, and more also possible)
- ▶ RMD -> MD -> html, Docx or PDF
- ▶ Formatting documents outside the analysis

Creating a document that can contain both text and code:

- ▶ When creating (“knitting”), the code is executed and displayed together with the description.
- ▶ Only a document without warnings/errors can be knitted.
- ▶ Possible to export a Word, HTML or PDF file.

Approach

1. Open RStudio -> File -> New File -> R Markdown
2. Enter a title for the document (optionally enter an author)
3. Choose an output format
4. YAML Headline: Final choice of your output format
5. Write the markdown
6. Embed Code
7. Rendering Output
 - ▶ RStudio: “Knit” (Ctrl+Shift+K)
 - ▶ Command line: `rmarkdown:: render(“input.Rmd”)`

Installation

Before you start, make sure you have installed the rmarkdown package

```
install.package("rmarkdown")
```

Choose the output format

- ▶ You can choose between HTML, PDF and Docx(Word)
 - ▶ **HTML** is recommended, since everybody can read it
- ▶ You can always change your output format, in the YAML Header

YAML Header

Example

```
title: "Exempld_rmardown"  
author: "rmarkdown_group"  
date "3 4 2020"  
output: html_document
```

Output types

Type	Format	Option in YAML Header
Website	HTML	output: html_document
Document	PDF	output: pdf_document
Document (Word)	RTF	output: word_document
Presentation (beamer)	PDF	output: beamer_presentation
Presentation (ioslides)	HTML	output: ioslides_presentation

Embed your code

inline code

The mean speed of cars is (``r mean(cars$speed)``) 15.4.

code chunk

```
{r cars, echo=TRUE}
```

```
summary(cars)
```

##	speed	dist
##	Min. : 4.0	Min. : 2.00
##	1st Qu.:12.0	1st Qu.: 26.00
##	Median :15.0	Median : 36.00
##	Mean :15.4	Mean : 42.98
##	3rd Qu.:19.0	3rd Qu.: 56.00
##	Max. :25.0	Max. :120.00

Embed your code

- ▶ There are a couple of arguments to customize your output
 - ▶ e.g. adding `echo = FALSE` will not show the command in the output

Embed your code

- ▶ You can also use other languages like Python, SQL and more to embed your code

Example

{python}

```
x = 'hello, python world!'
print(x.split(' '))

## ['hello,', 'python', 'world!']
```

Exercices

To do the following exercises, the R Markdown Reference Guide document will help you.

Please download it from:

<https://myfiles.sbg.ac.at/index.php/s/7DrLxa2zZiqz5fH>

Exercises

You are going to present your work on the “cars” dataset.

- ▶ Title: “Analysis of the cars dataset”
- ▶ Subtitle: Your name
- ▶ Set a header: “Part I: Summary statistics”
- ▶ Write a plain text introduction using emphasis and lists according to Reference Guide and reproduce the following:

I will show you how to use the following commands on the speed variable in the cars dataset

```
summary()
```

```
mean()
```

```
sd()
```

Exercices

- Create a table that looks as following:

Command	Result
<code>mean()</code>	15.4
<code>sd()</code>	5.29

Exercices

- ▶ Use the `summary()` function to display an overview of the main statistic measures
- ▶ Automatically write the Minimum in the output of the sentence
 - ▶ The smallest value of speed is `[inline code]`.
- ▶ Add a horizontal line
- ▶ Set a header: "Part II: Visualization"
- ▶ Use the command `plot()` to generate a scatterplot. Do not print the code!
- ▶ Add some plain text, divided into two lines:
 - ▶ "Figure I:
 - ▶ Correlation of speed and distance"

Exercices

- ▶ Reproduce this output, with here beeing the the following link:
 - ▶ <https://rmarkdown.rstudio.com/>

You can learn more about R Markdown here.

- ▶ At the then of your file, add a blockquote:
"Stay Healthy!"