R Markdown

05 Apr 2020

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What is R Markdown?

Markdown $=$ Language for text fomrmatting

- ▶ Markdown
- ▶ an easy to write plain text format for creatin 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 with out 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 shoose between HTML, PDF and Docx(Word)
  - **HTML** is recommeneded, since everybody can read it
- You can always change your output format, in the YAML Header

YAML Header

Example

title: "Exampled_rmkardown"
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}

```r
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 wilt not show the command in the output

Embed your code

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

Example

{python}

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

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

Exercices

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

Please download it from:

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

Exercices

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 empahsis and lists according to Reference Guide and reproduce the following:

```
I will show you how to use the following commands on
the speed variabel in the cars dataset
summary()
mean()
sd()
```

Exercices

- Create a table that looks as following:

Command	Result
mean()	15.4
sd()	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 gernerate a scatterplot. Do not print the code!
- ▶ Add some plain text, divided into two lines:
  - ▶ "Figure I:
  - ▶ Correlation of speed and distance"