

# 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

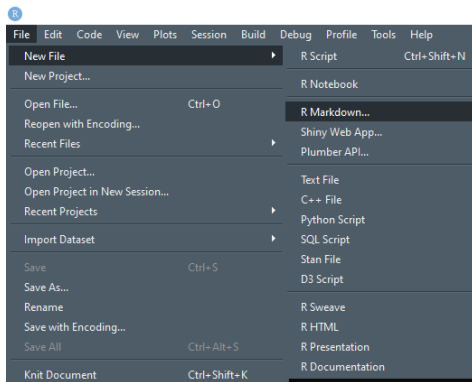
1. Open RStudio -> File -> New File -> R Markdown
2. Enter a title for the document (optionally enter an author)
3. Choose an output format
4. YAML Headline: Final choice of your output format
5. Write the markdown
6. Embed Code
7. Rendering Output
  - ▶ RStudio: “Knit” (Ctrl+Shift+K)
  - ▶ Command line: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

# Installation

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


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


# Open new Markdown file





# Give your file a title

New R Markdown

 Document

 Presentation

 Shiny

 From Template

**Title:**

**Author:**

**Default Output Format:**

☒ HTML  
Recommended format for authoring (you can switch to PDF or Word output anytime).

☐ PDF  
PDF output requires TeX (MiKTeX on Windows, MacTeX 2013+ on OS X, TeX Live 2013+ on Linux).

☐ Word  
Previewing Word documents requires an installation of MS Word (or Libre/Open Office on Linux).

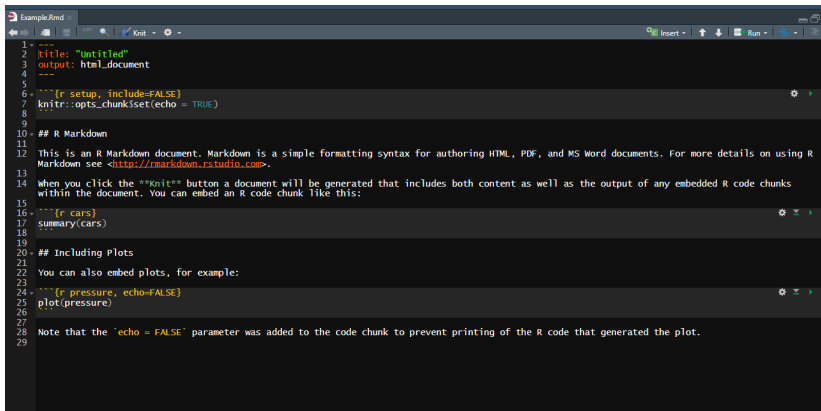
OK Cancel

## 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



# Starting Point



The screenshot shows the RStudio interface with a file named 'Example.Rmd' open. The editor displays R Markdown code with line numbers 1 through 29. The code includes a YAML header, an R chunk with `knitr::opts_chunk$set(echo = TRUE)`, a text section about R Markdown, another R chunk with `summary(cars)`, a text section about including plots, a third R chunk with `plot(pressure)` and `echo=FALSE`, and a concluding note about the `echo` parameter.

```
1 <---
2 title: "Untitled"
3 output: html_document
4 <---
5
6 ```{r setup, include=FALSE}
7 knitr::opts_chunk$set(echo = TRUE)
8 ```
9
10 ## R Markdown
11
12 This is an R Markdown document. Markdown is a simple formatting syntax for authoring HTML, PDF, and MS Word documents. For more details on using R
13 Markdown see <http://rmarkdown.rstudio.com>.
14
15 When you click the "Knit" button a document will be generated that includes both content as well as the output of any embedded R code chunks
16 within the document. You can embed an R code chunk like this:
17
18 ```{r cars}
19 summary(cars)
20 ```
21
22 ## Including Plots
23
24 You can also embed plots, for example:
25
26 ```{r pressure, echo=FALSE}
27 plot(pressure)
28 ```
29
30 Note that the 'echo = FALSE' parameter was added to the code chunk to prevent printing of the R code that generated the plot.
```

# 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

# Syntax Examples

---

## Text formatting

---

Text

Text

*\*italic\* or \_italic\_*

*italic*

**\*\*bold\*\* or \_\_bold\_\_**

**bold**

[link] (www.sbg.ac.at)

[link](http://www.sbg.ac.at)

---

# 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

# How to get this " ' " symbol

Press Shift + ' (twice or followed by Space)



## 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!"*