R Markdown

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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

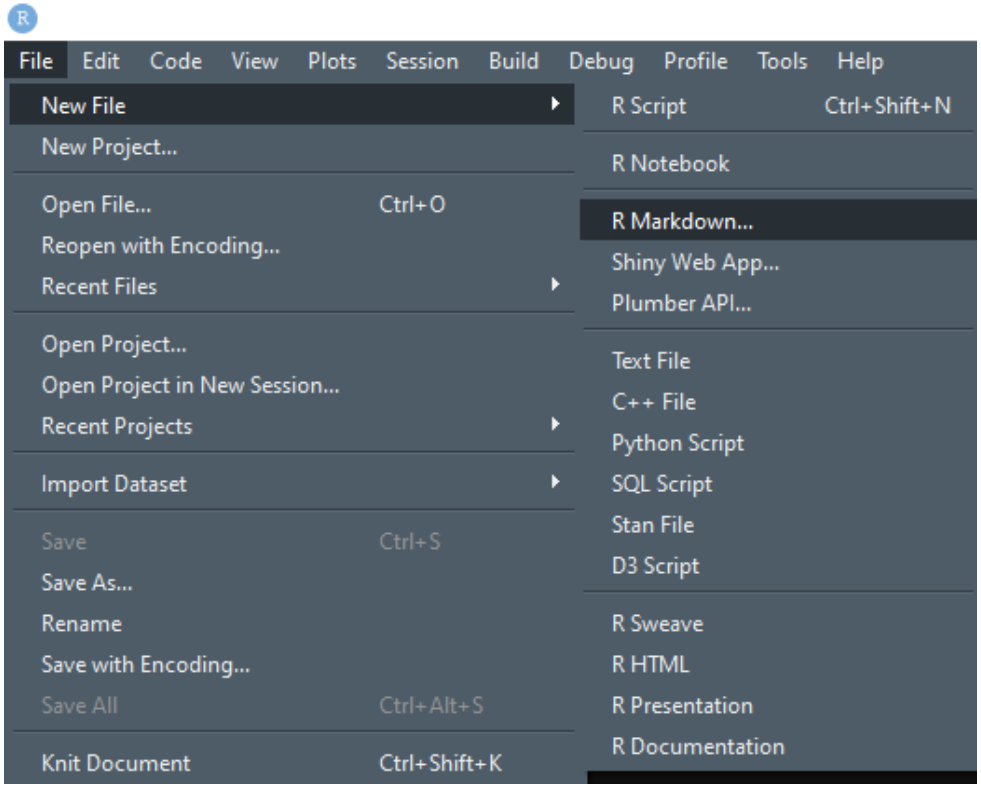
1. Open RStudio -> File -> New File -> R Markdown
2. Enter a title for the document (optionally enter an author)
3. Choose an output format
4. YAML Headline: Final choice of your output format
5. Write the markdown
6. Embed Code
7. Rendering Output
   - RStudio: “Knit” (Ctrl+Shift+K)
   - Command line: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

Installation

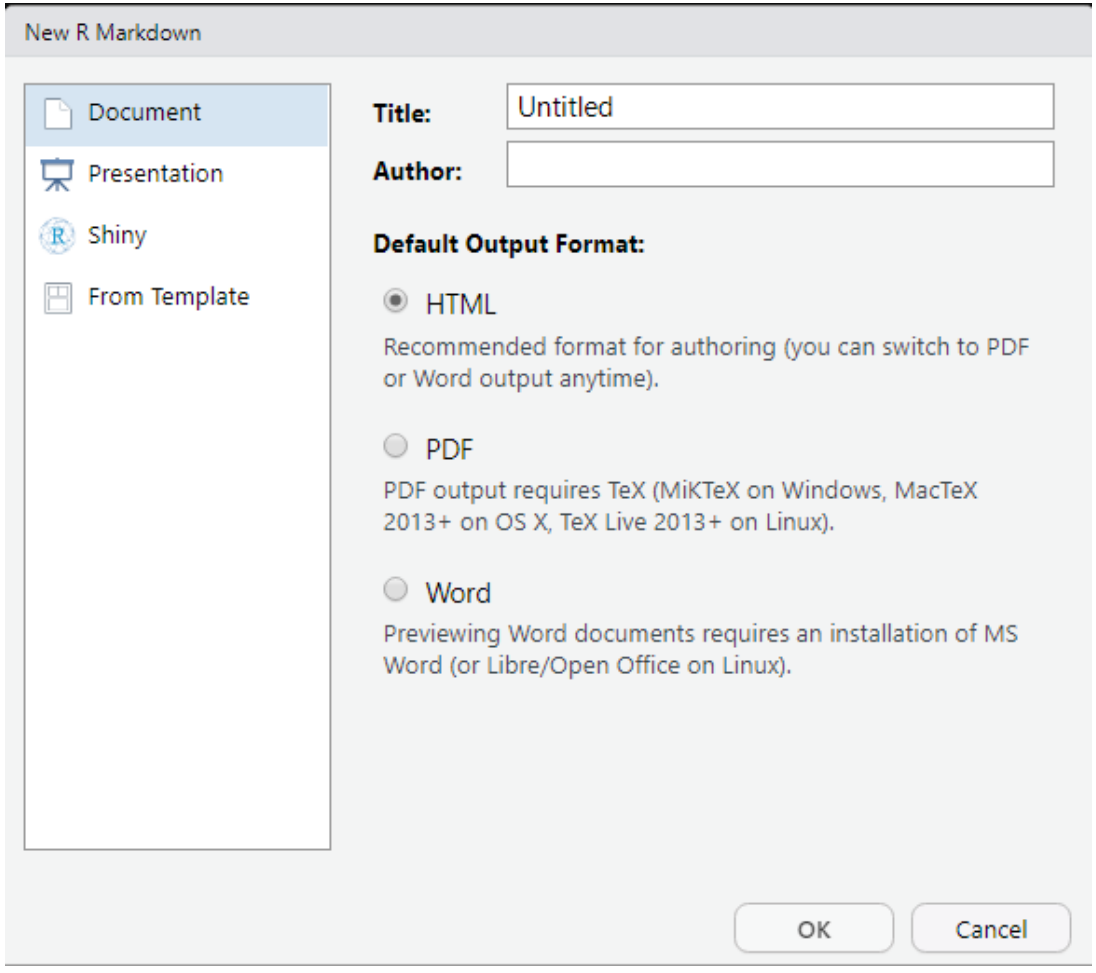
Before you start, make sure you have installed the rmarkdown package

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

Open new Markdown file



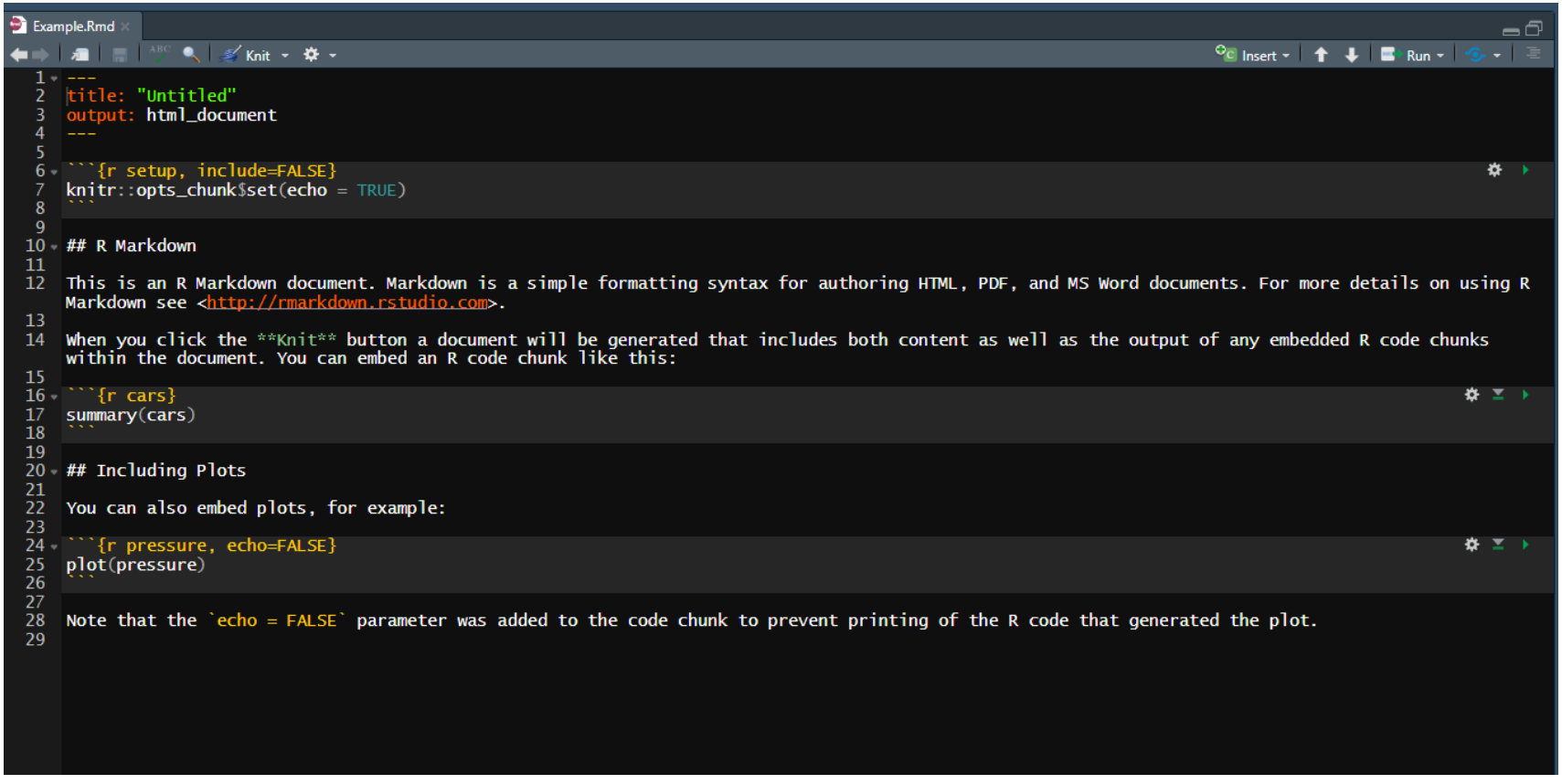
Give your file a title



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

Starting Point



YAML Header

Example

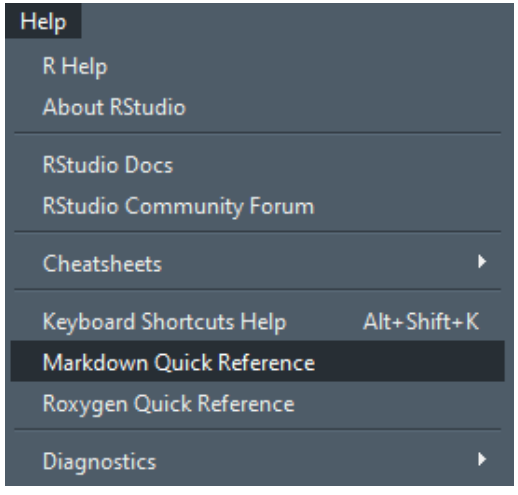
```yaml
---
title: "R Markdown"
date: "`r format(Sys.Date(), '%d %b %Y')`"
output: beamer_presentation
urlcolor: blue
---
```

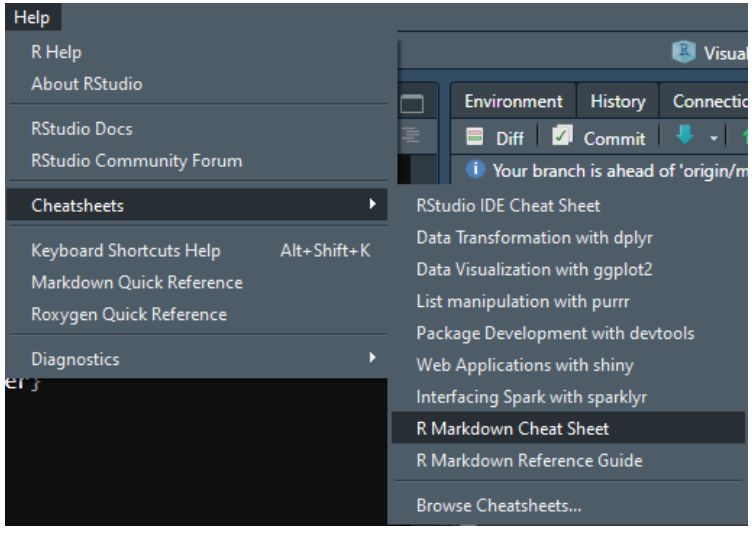
Output types

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

Write markdown

You can use the Quick Reference or the Cheatsheet
Both can be found by opening the **Help** dropdown menu which is positioned in the top bar





Syntax Examples

Text formatting	
Text	Text
`*italic*` or `_italic_`	*italic*
`**bold**` or `__bold__`	**bold**
`[link](www.sbg.ac.at)`	link

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 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

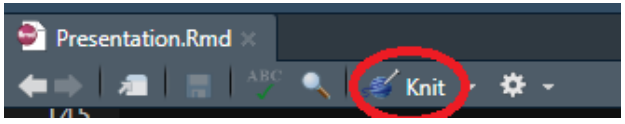
Example

{python}

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

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

Rendering output



- Press **“Knit”** in Rstudio
- Press **Ctrl+Shift+K** (Windows)
- Procedure

References

- https://rmarkdown.rstudio.com/lesson-1.html
- https://www.is.uni-freiburg.de/resources/computational-economics/R_Markdown.pdf
- https://www.youtube.com/watch?v=u4ZdvYXjsIo
- https://bookdown.org/yihui/rmarkdown/

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"

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!"