rmarkdown :: CHEAT SHEET

What is rmarkdown?

.Rmd files · Develop your code and ideas side-by-side in a single document. Run code as individual chunks or as an entire document.

Dynamic Documents · Knit together plots, tables, and results with narrative text. Render to a variety of formats like HTML, PDF, MS Word, or MS Powerpoint.

Reproducible Research · Upload, link to, or attach your report to share. Anyone can read or run your code to reproduce your work.

Workflow

1 Open a **new .Rmd file** in the RStudio IDE by going to *File > New File > R Markdown*.

2 **Embed code** in chunks. Run code by line, by chunk, or all at once.

3 **Write text** and add tables, figures, images, and citations. Format with Markdown syntax or the RStudio Visual Markdown Editor.

4 **Set output format(s) and options** in the YAML header. Customize themes or add parameters to execute or add interactivity with Shiny.

5 **Save and render** the whole document. Knit periodically to preview your work as you write.

6 **Share your work!**

R Studio

SOURCE EDITOR

1. New File
5. Save and Render
3. Write Text
4. Set Output Format(s) and Options
2. Embed Code
6. Share

```
report.Rmd
1
2  title: "Document Title"
3  author: "Author Name"
4  output:
5    html_document:
6      toc: TRUE
7  ---
8
9  ```{r, setup, include...
10 knitr::opts_chunk$set(echo = TRUE)
11 ```
12
13 ## R Markdown
14
15 This is an R Markdown document.
16 Markdown is a simple formatting
17 syntax for authoring HTML, PDF,
18 and MS Word documents.
19
20 ```{r cars}
21 summary(cars)
22 ```
18:23
```

```
Console   Terminal   R Markdown
~/Desktop/report/report.Rmd
Output created: report.html
```

insert
code
chunk

go to
code
chunk

run code
chunk(s)

Knit

set
preview
location

run all
previous
chunks

run
current
chunk

modify
chunk
options

show
outline

VISUAL EDITOR

Normal

R Markdown

This is an R Markdown document. Markdown is a simple formatting syntax for authoring HTML, PDF, and MS Word documents.

insert citations   style options

add/edit
attributes

Format   Run   Insert   Table

RENDERED OUTPUT

report.html

find in document

file path to output document

~/Desktop/report/report.html   Find

Document Title

Author Name

- R Markdown
- Including Plots

publish to rpubs.com, shinyapps.io, RStudio Connect

reload document

R Markdown

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 Markdown see http://rmarkdown.rstudio.com.

```
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
```

report.html   802.9 KB   Jul 9, 2021, 4:35 PM

Embed Code with knitr

CODE CHUNKS

Surround code chunks with ```` ```{r} ```` and ```` ``` ````, or use the Insert Code Chunk button. Add a chunk label and/or chunk options inside the curly braces after **r**.

```
```{r chunk-label, include=FALSE}
summary(mtcars)
```
```

SET GLOBAL OPTIONS

Set options for the entire document in the first chunk.

```
```{r include=FALSE}
knitr::opts_chunk$set(message = FALSE)
```
```

INLINE CODE

Insert `` `r <code>` `` into text sections. Code is evaluated at render and results appear as text.

```
"Built with `r getRversion()`" --> "Built with 4.1.0"
```

OPTION	DEFAULT	EFFECTS
echo	TRUE	display code in output document
error	FALSE	display code in output document
eval	TRUE	run code in chunk
include	TRUE	include chunk in doc after running
message	TRUE	display code messages in document
warning	TRUE	display code warnings in document
results	"markup"	"markup", "asis", "hold", "hide" (passthrough results), (don't display results)
fig.align	"default"	"left", "right", or "center"
fig.alt	NULL	alt text for a figure
fig.cap	NULL	figure caption as a character string
fig.path	"figure/"	prefix for generating figure file paths
fig.width & fig.height	7	plot dimensions in inches
out.width		rescales output width, e.g. "75%", "300px"
collapse	FALSE	collapse all sources & output into a single block
comment	"##"	prefix for each line of results
child	NULL	files(s) to knit and then include
purl	TRUE	include or exclude a code chunk when extracting source code with knitr::purl()

See more options and defaults by running **str(knitr::opts_chunk$get())**

Insert Tables

Output data frames as tables using **kable(data, caption)**.

```
```{r}
data <- faithful[1:4, ]
knitr::kable(data,
    caption = "Table with kable")
```
```

Table with kable	
eruptions	waiting
3.600	79
1.800	54
3.333	74
2.283	62

Other table packages include **flextable**, **gt**, and **kableExtra**.

Insert Citations

Create citations from a bibliography file, a Zotero library, or from DOI references.

BUILD YOUR BIBLIOGRAPHY

- Add BibTeX or CSL bibliographies to the YAML header.

```
title: "My Document"
bibliography: references.bib
link-citations: TRUE
```

INSERT CITATIONS

- Access the **Insert Citations** dialog in the Visual Editor by clicking the @ symbol in the toolbar or by clicking **Insert > Citation**.

- Add citations with markdown syntax by typing **[@cite]** or **@cite.**

- If Zotero is installed locally, your main library will automatically be available.

- Add citations by DOI by searching "from DOI" in the **Insert Citation** dialog.

Write with Markdown

The syntax on the left renders as the output on the right.

Plain text.	Plain text.
End a line with two spaces to start a new paragraph.	End a line with two spaces to start a new paragraph.
Also end with a backslash\ to make a new line.	Also end with a backslash to make a new line.
italics and **bold**	*italics* and **bold**
superscript^2^/subscript~2~	superscript^2/subscript$_2$
~~strikethrough~~	~~strikethrough~~
escaped: * _ \\	escaped: * _ \
endash: --, emdash: ---	endash: –, emdash: —

```
# Header 1
## Header 2
...
###### Header 6
```

Header 1
Header 2
...
Header 6

```
- unordered list
- item 2
  - item 2a (indent 1 tab)
  - item 2b
```

- unordered list
- item 2
  - item 2a (indent 1 tab)
  - item 2b

```
1. ordered list
2. item 2
  - item 2a (indent 1 tab)
  - item 2b
```

1. ordered list
2. item 2
  - item 2a (indent 1 tab)
  - item 2b

```
<link url>
[This is a link.](link url)
[This is another link][id].
[id]: link url
```

http://www.rstudio.com/
This is a link.
This is another link.

```
![Caption](image.png)
or ![Caption][id2]

[id2]: image.png
```

Caption.

```
`verbatim code`
```

`verbatim code`

```
multiple lines
of verbatim code
```

```
multiple lines
of verbatim code
```

```
> block quotes
```

> block quotes

```
equation: $e^{i\pi} + 1 = 0$
equation block:
$$E = mc^{2}$$
```

equation: $e^{i\pi} + 1 = 0$
equation block:
$$E = mc^2$$

```
horizontal rule:
---
```

horizontal rule:

```
Right | Left | Default | Center
------|------|---------|-------
12    | 12   | 12      | 12
123   | 123  | 123     | 123
1     | 1    | 1       | 1
```

Right	Left	Default	Center
12	12	12	12
123	123	123	123
1	1	1	1

```
# HTML Tabsets
## Results {.tabset}
### Plots
text
### Tables
more text
```

Results

Plots   Tables

text

Set Output Formats and their Options in YAML

Use the document's YAML header to set an **output format** and customize it with **output options**.

```
---
title: "My Document"
author: "Author Name"
output:
  html_document:
    toc: TRUE
---
```

> Indent format 2 characters, indent options 4 characters

OUTPUT FORMAT — CREATES

OUTPUT FORMAT	CREATES
html_document	.html
pdf_document*	.pdf
word_document	Microsoft Word (.docx)
powerpoint_presentation	Microsoft Powerpoint (.pptx)
odt_document	OpenDocument Text
rtf_document	Rich Text Format
md_document	Markdown
github_document	Markdown for Github
ioslides_presentation	ioslides HTML slides
slidy_presentation	Slidy HTML slides
beamer_presentation*	Beamer slides

* Requires LaTeX, use tinytex::install_tinytex()
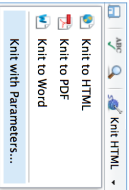
Also see **flexdashboard, bookdown, distill, and blogdown.**

Render

When you render a document, rmarkdown:

1. Runs the code and embeds results and text into an .md file with knitr.

2. Converts the .md file into the output format with Pandoc.

Save, then **Knit** to preview the document output. The resulting HTML/PDF/MS Word/etc. document will be created and saved in the same directory as the .Rmd file.

Use **rmarkdown::render()** to render/knit in the R console. See **?render** for available options.

Share

Publish on RStudio Connect to share R Markdown documents securely, schedule automatic updates, and interact with parameters in real time. **rstudio.com/products/connect/**

INTERACTIVITY

Turn your report into an interactive Shiny document in 4 steps:

1. Add **runtime: shiny** to the YAML header.

```
---
output: html_document
runtime: shiny
---
```

2. Call Shiny input functions to embed input objects.
3. Call Shiny render functions to embed reactive output.

```
```{r, echo = FALSE}
numericInput("n",
  "How many cars?", 5)

renderTable({
  head(cars, input$n)
})
```
```

4. Render with **rmarkdown::run()** or click **Run Document** in RStudio IDE.

Also see Shiny Prerendered for better performance. More at **bookdown.org/yihui/rmarkdown/shiny-prerendered**

Embed a complete app into your document with **shiny::shinyAppDir()**. More at **rmarkdown.rstudio.com/authoring_shiny_prerendered.**

How many cars?		
5		

	speed	dist
1	4.00	2.00
2	4.00	10.00
3	7.00	4.00
4	7.00	22.00
5	8.00	16.00

More Header Options

IMPORTANT OPTIONS — DESCRIPTION

	DESCRIPTION	HTML	PDF	MS Word	MS PPT
anchor_sections	Show section anchors on mouse hover (TRUE or FALSE)	×			
citation_package	The LaTeX package to process citations ("default", "natbib", "biblatex")		×		
code_download	Give readers an option to download the .Rmd source code (TRUE or FALSE)	×			
code_folding	Let readers to toggle the display of R code ("none", "hide", or "show")	×			
css	CSS or SCSS file to use to style document (e.g. "style.css")	×			
dev	Graphics device to use for figure output (e.g. "png", "pdf")	×			
df_print	Method for printing data frames ("default", "kable", "tibble", "paged")	×	×	×	×
fig_caption	Should figures be rendered with captions (TRUE or FALSE)	×	×	×	×
highlight	Syntax highlighting ("tango", "pygments", "kate", "zenburn", "textmate")	×	×	×	
includes	File of content to place in doc ("in_header", "before_body", "after_body")	×	×		
keep_md	Keep the Markdown .md file generated by knitting (TRUE or FALSE)	×	×	×	×
keep_tex	Keep the intermediate TEX file used to convert to PDF (TRUE or FALSE)		×		
latex_engine	LaTeX engine for producing PDF output ("pdflatex", "xelatex", or "lualatex")		×		
reference_docx/_doc	docx/pptx file containing styles to copy in the output (e.g. "file.docx", "file.pptx")			×	×
theme	Theme options (see Bootswatch and Custom Themes below)	×			
toc	Add a table of contents at start of document (TRUE or FALSE)	×	×	×	×
toc_depth	The lowest level of headings to add to table of contents (e.g. 2, 3)	×	×	×	×
toc_float	Float the table of contents to the left of the main document content (TRUE or FALSE)	×			

Use **?<output format>** to see all of a format's options, e.g. **?html_document**

BOOTSWATCH THEMES

Customize HTML documents with Bootswatch themes from the **bslib** package using the theme output option.

Use **bslib::bootswatch_themes()** to list available themes.

Document Title

Author Name
· Including Plots
· Results

```
---
title: "Document Title"
author: "Author Name"
output:
  html_document:
    theme:
      bootswatch: solar
---
```

CUSTOM THEMES

Customize individual HTML elements using bslib variables. Use **?bs_theme** to see more variables.

```
---
output:
  html_document:
    theme:
      bg: "#121212"
      fg: "#E4E4E4"
      base_font:
      google: "Prompt"
---
```

More on **bslib** at **pkgs.rstudio.com/bslib/.**

STYLING WITH CSS AND SCSS

Add CSS and SCSS to your document by adding a path to a file with the **css** option in the YAML header.

```
---
title: "My Document"
author: "Author Name"
output:
  html_document:
    css: "style.css"
---
```

• Apply CSS styling by writing HTML tags directly or;
• Use markdown to apply style attributes inline.

Bracketed Span
A [green]{.my-color} word.

A green word.

Fenced Div
::: {.my-color}
All of these words are green.
:::

All of these words are green.

• Use the Visual Editor. Go to **Format > Div/Span** and add CSS styling directly with Edit Attributes.

.my-css-tag ...

This is a div with some text in it.

PARAMETERS

Parameterize your documents to reuse with new inputs (e.g., data, values, etc.).

1. **Add parameters** in the header as sub-values of params.

```
---
params:
  state: "hawai'i"
---
```

2. **Call parameters** in code using params$<name>.

```
```{r}
data <- df[, params$state]
summary(data)
```
```

3. **Set parameters** with Knit with Parameters or the params argument of **render()**.

REUSABLE TEMPLATES

1. **Create a new package** with a inst/rmarkdown/templates directory.
2. **Add a folder** containing **template.yaml** (below) and **skeleton.Rmd** (template contents).

```
---
name: "My Template"
---
```

3. **Install** the package to access template by going to **File > New R Markdown > From Template.**

---

rmarkdown