

Memoir Template

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Introduction

A clarifier :

- Pas d'espace à "Bonjour" : <https://github.com/jgm/pandoc/issues/8283>
 - babel italian non chargé
 - image sur la dernière page !
 - tester marges étroites
-
- link-citations: true

For a single word, to ensure correct hyphenation in LaTeX, use the following command, ignored un HTML:

ciao

This document allows you to create a book in PDF format (and ePub format) at the same time as an HTML version to be published on the web. The syntax is that of **Markdown** with some extensions.

The book is organized in chapters. Each chapter is an Rmd file, whose name normally begins with its number (e.g. 01-intro.Rmd). All Rmd files in the project folder are actually treated as chapters, sorted by filename. The index.Rmd file is special: it contains the document header and the first chapter.

This first chapter is placed in the foreword of the printed book: it should not be numbered (hence the {-} code next to the title) in the HTML version. It must end with the LaTeX command `\mainmatter` which marks the beginning of the body of the book.

The outline levels start with # for chapters (only one per file), ## for sections, etc.

Compilation in PDF format is done by XeLaTeX, which must be installed.

While writing, it is strongly advised to create only the HTML file, which is much faster than a LaTeX compilation. Each chapter can be viewed very quickly by clicking on the *Knit* button above the source window. The entire book is created by clicking on the *Build Book* button in the RStudio *Build* window. The button's drop-down list allows you to create all documents or limit yourself to one format.

CHAPTER 1

Getting Started

RStudio in version higher than 1 must be used. The **book-down** package must be installed.

For the creation of the PDF file, an installation of LaTeX is necessary. Under Windows, use [MikTeX](#). The automatic download of missing packages (under Windows: MiKTeX settings, *Install missing packages=Yes*) is required.

The main file is *index.Rmd* which contains the description of the book in its header. All other *.Rmd* files in the folder contain a chapter: the order of chapters is that of the file names, sorted alphabetically. The *references.bib* file contains the bibliography.

The basic parameters of the project must be entered in the following files.

1.1 index.Rmd

In the file header, enter the title of the work and the name of the author(s).

```
title: "Title of the Memoir"
author: "Authors' names"
```

The date field may be kept to display the knitting date automatically.

The `url` field contains the link to the GitHub pages of the project. It is used by `build_readme()`.

The `github-repo` field contains the name of the repository of the project on GitHub. It is used to build a

link to the repository from the menu bar of the GitBook version of the document.

`description` is used by `build_readme()` and to build an HTML meta tag intended for search engines. `cover-image` is the name of an image file that will be used by social networks when the GitBook is shared. Twitter uses both to build a link to the project. If a PDF file is used as the PDF book cover (see below), a good idea is to export it to PNG and declare the PNG file in `cover-image`.

The cover will be:

- that of a book if the *maintitlepage* statement is present. The content of *epigraph* and *credits* will be written on page 2, with `images/logo.pdf`.
- the first page of the PDF file declared in the *pdfitlepage* instruction if it is present.

Delete one of the two instructions in the header or both covers will be built, like in the gallery¹.

The languages are specified according to the IETF language tags, such as “en-US”. The main language (`lang`) is that of the structure of the document, translating elements such as “chapter”. The other languages (`otherlangs`) can be used to switch language inside the PDF document to benefit from correct hyphenation.

The name of the `.bib` file containing the references is in bibliography. It must be entered with its `.bib` extension.

The default citation style in HTML outputs is `chicago-author-date.csl`. Any valid csl file can be used: uncomment the line and enter the file name. Note that PDF outputs use their own style: see below.

LaTeX specific options are:

- *documentclass*: the document class is *memoir* for this template. The options of the *memoir* class are listed, not to be changed normally.
- *papersize*: A4.
- *fontsize*: 11pt.
- *mainfont* and *mathfont* may replace the standard Computer Modern font. Tex Gyre fonts² are a good choice. Both **tex-gyre** and **tex-gyre-math** LaTeX packages must be available.

¹<https://ericmarcon.github.io/memoir/gallery/memoir/MyBook.pdf>

²<https://www.ctan.org/pkg/tex-gyre>

- *MemoirChapStyle* and *MemoirPageStyle* define the style of the document. Two styles are favored: *companion* for documents with large outer margins containing notes, references and captions, or *daleif1* and *Ruled* for more classical layouts with small margins.
- Margins: choose whether to use *largemargins* or not, and adjust the other parameters according to that. Margin values should work well in most cases.
- *toc-depth*: number of levels in the table of contents, 2 by default (i.e. ### subsections are shown).
- *secnum-depth*: The lowest numbered level in the document. Default is section (i.e. ##). Alternatives are chapter (i.e. #), subsection (i.e. ###) or subsubsection (i.e. ####).
- *lot* and *lof* to add lists of tables and figures.

Bibliography is managed by BibLaTeX, whose options should not be changed except for the style. It is `verbose-inote` in documents with large margins to show the full citations in them. The citations are called as notes in the text. `authoryear-ibid` is suited for small-margin documents: the citations in the text contain author and year, and no footnote is used. The line `pageref=true` must be deleted or commented out if this style is used or an error may occur during LaTeX compilation.

`longbibliography` formats the bibliography on two columns with a small font when it is set to `true`. If `false`, the regular font is used in a single column with small margins.

The back cover appears in PDF outputs only. It is designed to display abstract and keyword in several languages if necessary. The items of `backcover` are a list:

- `language`: the name of the language, that will be passed to the LaTeX command `\selectlanguage{}`.
- `abstract`: the content of the abstract.
- `keywords`: a list of keywords.
- `abstractlabel` and `keywordlabel`: the localized text to print before abstract and keywords.

`backcoverfontsize` may be changed better fit the page size, according to the length of the abstracts.

Some options should not be modified, including:

- *fig_crop*: yes to allow cropping of excess margins of figures. GhostScript must be installed. If it is not, or in order to save computing time, the option may be set to no.

Some may be added to the header:

- *fontfamily*: `font`, *lmodern* by default.
- *linestretch*: line spacing, 1 by default.

For a student thesis, prepare the cover page with Word, Powerpoint or a DTP program and save it in PDF format, in A4 size. Only the first page of the PDF is used.

1.2 `_bookdown.yml`

Enter the name of the Rmd file that will be the result of the merging of all chapters and choose if it should be destroyed after use. It will also be the name of the PDF and Word files. The default options will suit most uses.

```
book_filename: "MyBook"
delete_merged_file: true
```

If the project is hosted on GitHub, indicate its address. Otherwise, delete the line.

```
repo: "https://github.com/GitHubID/Repository"
```

The knitted files are stored in the output directory. docs is the good choice for GitHub Pages.

1.3 `_output.yml`

Customize the table of contents in HTML format.

```
config:
  toc:
    before: |
      <li><a href=".">Bookdown book</a></li>
    after: |
      <li><a href="https://github.com/GitHubID/Repository">
```

Update the repository in the bs4 book options.

```
bookdown::bs4_book:
  repo: https://github.com/GitHubID/Repository
```


1.4 Multilingual documents

Languages are declared in the document header.

The main language of the document (`lang`) changes the name of some elements, such as the table of contents. To use other languages in the text, they must be declared in `otherlangs`.

Changing the language has no effect in HTML, but changes hyphenation in PDF output.

The language change in basic markdown format,

```
::: {lang=en-US}
```

is not supported by R Markdown. See the correct syntax in section [Section 2.9](#).

CHAPTER 2

Syntax



In a Nutshell

Deliver the take-home message here.
It can contain several paragraphs.

The main features of Markdown are summarized here.
The full documentation is online¹.

¹<https://quarto.org/docs/authoring/markdown-basics.html/>

2.1 R and other code

R code is included in code chunks:

```
head(cars)
```

```
  speed dist
1     4    2
2     4   10
3     7    4
4     7   22
5     8   16
6     9   10
```

Similar chunks support other languages such as Python. This template focuses on R but can be used with any other code language supported by Quarto.

2.2 Figures

```
plot(pressure)
```

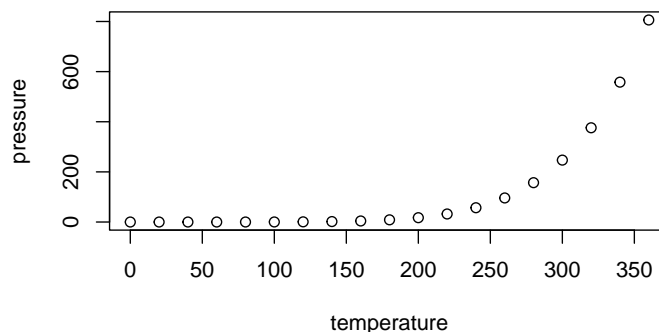


Figure 2.1: Figure *title* with maths : π and cross-reference to Table 2.1

Figures can be created by R code (Figure 2.1). A label is associated with each figure: its name is given in the `#|label:` option of the chunk that produces it. It must start with `fig-`. Cross-references are made with the command `@label`, e.g.: `@fig-pressure`.

Existing figures are integrated into a piece of code by the `include_graphics()` function, see Figure 2.2.

```
knitr::include_graphics("images/logo.png")
```



Figure 2.2: Logo

Systematically place these files in the `images` folder for the automation of GitHub pages.

2.3 Tables

The horizontal – and vertical separators `|` allow you to draw a table according to Markdown syntax, but this is not the best method in R.

Tables can also be produced by R code. The content of the table is in a dataframe. The `tbl()` function

prepares the table for display and passes the result to `kable_styling()` for final formatting.

```
-- Attaching core tidyverse packages ----- tidyverse 2.0.0 --
v dplyr      1.1.4      v readr      2.1.5
v forcats    1.0.0      v stringr    1.5.1
v ggplot2    3.5.2      v tibble     3.2.1
v lubridate  1.9.4      v tidyr      1.3.1
v purrr      1.0.4
-- Conflicts ----- tidyverse_conflicts() --
x dplyr::filter() masks stats::filter()
x dplyr::lag()     masks stats::lag()
i Use the conflicted package (<http://conflicted.r-lib.org/>) to force all conflicts to become errors
```

Table 2.1: Table *created* by R, with π . Dummy legend to demonstrate formatting capacities.

Sepal length	Width	Petal length	Width	Species
5.1	3.5	1.4	0.2	setosa
4.9	3.0	1.4	0.2	setosa
4.7	3.2	1.3	0.2	setosa
4.6	3.1	1.5	0.2	setosa
5.0	3.6	1.4	0.2	setosa
5.4	3.9	1.7	0.4	setosa

The caption is specified by the `#| tbl-cap: chunk` option.

Always use the `booktabs = TRUE` argument so that the separator lines are optimal in LaTeX. The `bootstrap_options = "striped"` option provides more readable tables in HTML.

In LaTeX, `longtable = TRUE` selects the “longtable” package to format tables. Such tables are placed in the text. Due to limits of the “longtable” package which does not support multi-column layouts, the Stylish Article template uses a workaround that does not allow really long tables to be split into several columns or pages. So, `longtable = TRUE` only means that the table will be one-column wide and located in the text if possible. If not, it will float.

To use the full width of the page, like Table 2.2, `longtable` is set to `FALSE` and `table.envir = "table"` is added in the arguments of `kbl()`.

This table contains mathematics: the `escape = FALSE` argument is necessary in `kable()`. This feature is not yet supported by Quarto in the HTML output.

Table 2.2: Large table with maths, on two columns

Treatment	Timber	Thinning	Fuelwood	%AGB lost
Control				0
T1	DBH \geq 50 cm, commer- cial species, ≈ 10 trees/ha			[12% – 33%]
T2	DBH \geq 50 cm, commer- cial species, ≈ 10 trees/ha	DBH \geq 40 cm, non- valuable species, ≈ 30 trees/ha		[33% – 56%]
T3	DBH \geq 50 cm, commer- cial species, ≈ 10 trees/ha	DBH \geq 50 cm, non- valuable species, ≈ 15 trees/ha	40 cm \leq DBH \leq 50 cm, non- valuable species, ≈ 15 trees/ha	[35% – 56%]

Finally, the `full_width = TRUE` argument in `kable_styling()` adjusts the width of the table to the available width. It must be set for correct formatting of two-column tables in LaTeX.

Note that tables can't be shown on the first page of the PDF output of the Stylish Article template: they would conflict with the table of contents.

2.4 Lists

Lists are indicated by *, + and – (three hierarchical levels) or numbers 1., i. and A. (numbered lists). Indentation of lists indicates their level: *, + and – may be replaced by – at all levels, but four spaces are needed to nest a list into another.

- First element of a list

- sub-list
- Second element
- Continuation of the list

Leave an empty line before and after the list, but not between its items.

2.5 Math

Equations in LaTeX format can be inserted inline, like $A = \pi r^2$ or isolated like

$$e^{i\pi} = -1.$$

They can be numbered, see Equation 2.1, after adding them a label:

$$A = \pi r^2. \tag{2.1}$$

2.6 Cross-references

Figures and tables have a label declared in their code chunk option `tbl.cap` or `fig.cap`, starting with `fig-` or `tbl-`.

For equations, the label is added manually by the code `{#eq-xxx}` after the end of the equation.

Sections can be tagged by ending their title with `{#sec-yyy}`.

In all cases, the call to the reference is made by `@`.

2.7 Bibliography

Bibliographic references included in the `.bib` file declared in the document header can be called by `[@CitationKey]`, in parentheses,² or without square brackets, in the text, as Xie.³

The bibliography is processed by Pandoc when producing Word or HTML documents. The bibliographic style can be specified, by adding the line

```
csl: file_name.csl
```

²Y. Xie et al. *R Markdown: The Definitive Guide*. Boca Raton, Florida: Chapman and Hall/CRC, 2018.

³Y. Xie. *bookdown: Authoring Books and Technical Documents with R Markdown*. Boca Raton, Florida: Chapman and Hall/CRC, 2016.

⁴<https://github.com/citation-style-language/styles>

in the document header and copying the *.csl* style file to the project folder. More than a thousand styles are available⁴ and their URL can be used instead of copying the file, e.g.:

```
csl: https://www.zotero.org/styles/xxx
```

For PDF documents, the bibliography is managed by natbib. The style is declared in the header:

```
biblio-style: chicago
```

It can be changed as long as the appropriate *.bst* file (by default: *chicago.bst*) is included in the project.

2.8 Forcing line breaks

Hyphenation is handled automatically in LaTeX. If a word is not hyphenated correctly, add its hyphenation in the preamble of the file with the command `hyphenation` (words are separated by spaces, hyphenation locations are represented by dashes).

If LaTeX can't find a solution for the line break, for example because some code is too long a non-breaking block, add the LaTeX command `\break` to the line break location. Do not leave a space before the command. The HTML document ignores LaTeX commands.

2.9 Languages

Languages are declared in the document header.

The main language of the document (`lang`) changes the name of some elements, such as the table of contents. The change of language in the document (one of `otherlangs`) is managed in LaTeX (but not fully in HTML).

For a single word, to ensure correct hyphenation in LaTeX, use the following command, ignored in HTML:

```
\foreignlanguage{italian}{ciao}
```

For a paragraph, to also ensure correct quotes and punctuation spacing, use


```
::: {\lang=fr}  
"Bonjour" en français!  
:::
```

to obtain:

“Bonjour” en français !

The current language has an effect only in LaTeX output: a space is added before double punctuation in French, the size of spaces is larger at the beginning of sentences in English, etc.

Language codes are used in the header, such as en-US but language names are necessary in LaTeX. Name matches are listed in table 3 of the polyglossia package documentation⁵. Note that this template uses the “babel” package rather than “polyglossia”.

⁵<http://mirrors.ctan.org/macros/unicodetex/latex/polyglossia/polyglossia.pdf>

References

- Xie, Y. *bookdown: Authoring Books and Technical Documents with R Markdown*. Boca Raton, Florida: Chapman and Hall/CRC, 2016 (cit. on p. [13](#)).
- Xie, Y., J. Allaire, and G. Golemund. *R Markdown: The Definitive Guide*. Boca Raton, Florida: Chapman and Hall/CRC, 2018 (cit. on p. [13](#)).

