

Template for contribution to Computo

Example dedicated to R users

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Abstract

Template for preparing a submission to Computo, using the [quarto journal extension](#), the knitr kernel (R user) and [renv](#) to set up the dependencies. For a detailed, step-by-step guide on preparing your article, setting up the continuous integration and submitting it to Computo, please consult the [guidelines for authors](#).

Keywords: key1, key2, key3

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1 Introduction

1.1 About this document

This document, accompanied by the [tuned git repos](#), provides a template for writing contributions to **Computo** (Computo Team 2020).

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Note

This document provides only the key formatting principles. For a detailed, step-by-step guide on preparing your article and submitting it to Computo, please consult the [guidelines for authors](#).

1.2 Quarto

Quarto is a versatile formatting system for authoring documents integrating markdown, LaTeX and code blocks interpreted either via Jupyter or Knitr (thus supporting Python, R and Julia). It relies on the Pandoc document converter.

1.3 Requirements

You need [quarto](#) installed on your system and the [Computo extension](#) to prepare your document. For the latter, once quarto is installed, run the following to install the extension in the current directory (it creates a `_extension` directory which is ignored by git thanks to `.gitignore` by default):

```
quarto add computorg/computo-quarto-extension
```

R and the following R packages must be installed on your computer: [knitr](#), [markdown](#).

2 Formatting

This section covers basic formatting guidelines for quarto documents.

To render a document, run `quarto render`. By default, both PDF and HTML documents are generated:

```
quarto render # will render both to html and PDF
```

Note

To check the syntax of the formatting below, you can use the `</>` source button at the top left of this document.

2.1 Basic markdown formatting

Bold text or *italic*

- This is a list
- With more elements
- It isn't numbered.

But we can also do a numbered list

1. This is my first item
2. This is my second item
3. This is my third item

2.2 Mathematics

2.2.1 Mathematical formulae

LaTeX code is natively supported², which makes it possible to use mathematical formulae:

$$f(x_1, \dots, x_n; \mu, \sigma^2) = \frac{1}{\sigma\sqrt{2\pi}} \exp\left(-\frac{1}{2\sigma^2} \sum_{i=1}^n (x_i - \mu)^2\right)$$

It is also possible to cross-reference an equation, see Equation 1:

$$\begin{aligned} D_{x_N} &= \frac{1}{2} \begin{bmatrix} x_L^\top & x_N^\top \end{bmatrix} \begin{bmatrix} L_L & B \\ B^\top & L_N \end{bmatrix} \begin{bmatrix} x_L \\ x_N \end{bmatrix} \\ &= \frac{1}{2} (x_L^\top L_L x_L + 2x_N^\top B^\top x_L + x_N^\top L_N x_N), \end{aligned} \tag{1}$$

2.2.2 Theorems and other amsthm-like environments

Quarto includes a nice support for theorems, with predefined prefix labels for theorems, lemmas, proposition, etc. see [this page](#). Here is a simple example:

Theorem 2.1 (Strong law of large numbers). *The sample average converges almost surely to the expected value:*

$$\bar{X}_n \xrightarrow{a.s.} \mu \quad \text{when } n \rightarrow \infty.$$

See Theorem 2.1.

2.3 R Code

Quarto uses either Jupyter or knitr to render code chunks. This can be triggered in the yaml header. In this tutorial, we use knitr (R and packages knitr, markdown must be installed on your computer).

```
---
title: "My Document"
author: "Jane Doe"
---
```

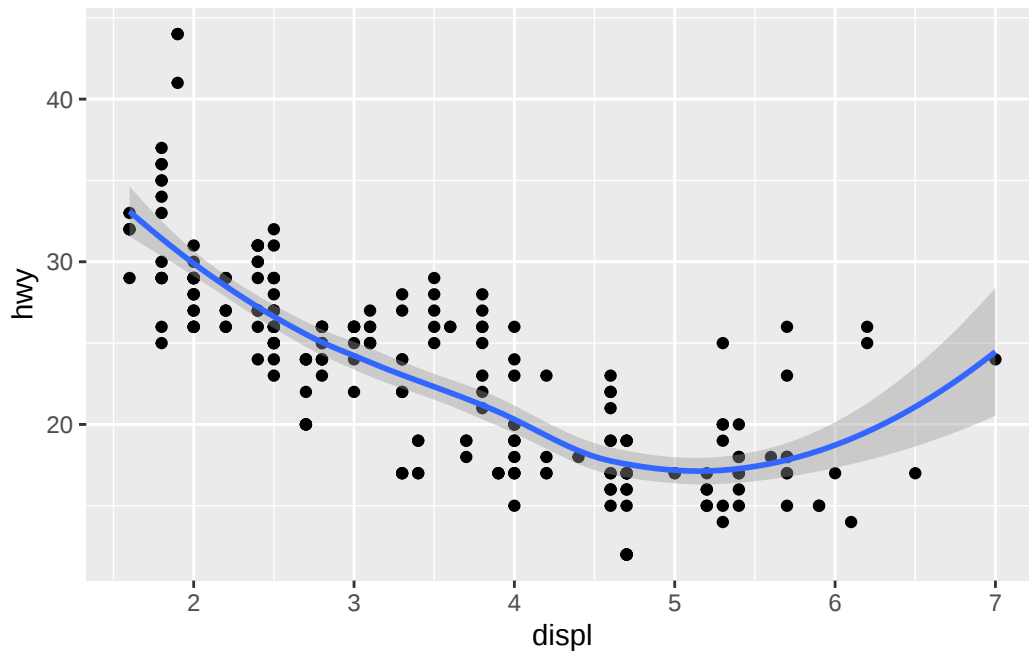
R code (R Core Team 2020) chunks may be embedded as follows:

```
x <- rnorm(10)
```

2.4 Figures

Plots can be generated as follows:

²We use [lualatex](#) for this purpose.



63

64 It is also possible to create figures from static images:

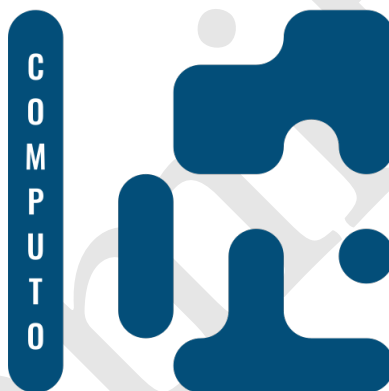


Figure 1: Computo logo (label)

65 **Note:** Until Quarto version 1.3+ is released, including a remote image (from a web URL) in a document
 66 (like the image above) will work in the rendered HTML document but will generate an error when
 67 building the PDF document (c.f. [related bug report](#)).

68 2.5 Tables

69 Tables (with label: @tbl-mylabel renders Table 1) can be generated with markdown as follows

Table 1: my table caption

Tables	Are	Cool
col 1 is	left-aligned	\$1600
col 2 is	centered	\$12
col 3 is	right-aligned	\$1

70 Table can also be generated by some code, for instance with knitr here:

Table 2: Table caption.

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

71 2.6 Handling references

72 2.6.1 Bibliographic references

73 References are displayed as footnotes using [BibTeX](#), e.g. `[@computo]` will be displayed as (Computo
74 Team 2020), where `computo` is the bibtex key for this specific entry. The bibliographic informa-
75 tion is automatically retrieved from the `.bib` file specified in the header of this document (here:
76 `references.bib`).

77 2.6.2 Other cross-references

78 As already (partially) seen, Quarto includes a mechanism similar to the bibliographic references for
79 sections, equations, theorems, figures, lists, etc. Have a look at [this page](#).

80 2.7 Advanced formatting

81 Advanced formatting features are possible and documented (including interactive plots, pseudo-code,
82 (Tikz) diagrams, Lua filters, mixing R + Python in the same document), but are beyond the scope of
83 this simple introduction. We list a few useful resources below.

84 More information

- [The Quarto web site](#) for comprehensive documentation, including:
 - [Tutorial](#)
 - [User guide](#)
 - [Options reference](#)
- [The template distributed with the Computo Quarto extension](#), which uses such advanced features.
- [Our mock version of the t-SNE paper](#), a full and advanced example using Python and the Jupyter kernel.
- [The previously published papers in Computo](#) can be used as references.

85 References

86 Computo Team. 2020. *Computo: Reproducible Computational/Algorithmic Contributions in Statistics*
87 *and Machine Learning*.

88 R Core Team. 2020. *R: A Language and Environment for Statistical Computing*. R Foundation for
89 Statistical Computing. <https://www.R-project.org/>.

90 Session information

```
91 R version 4.6.1 (2026-06-24)
92 Platform: x86_64-pc-linux-gnu
93 Running under: Ubuntu 24.04.4 LTS
94
95 Matrix products: default
96 BLAS: /usr/lib/x86_64-linux-gnu/blas/libblas.so.3.12.0
97 LAPACK: /usr/lib/x86_64-linux-gnu/lapack/liblapack.so.3.12.0 LAPACK version 3.12.0
98
99 locale:
100  [1] LC_CTYPE=C.UTF-8      LC_NUMERIC=C           LC_TIME=C.UTF-8
101  [4] LC_COLLATE=C.UTF-8    LC_MONETARY=C.UTF-8    LC_MESSAGES=C.UTF-8
102  [7] LC_PAPER=C.UTF-8      LC_NAME=C              LC_ADDRESS=C
103  [10] LC_TELEPHONE=C        LC_MEASUREMENT=C.UTF-8 LC_IDENTIFICATION=C
104
105 time zone: Etc/UTC
106 tzcode source: system (glibc)
107
108 attached base packages:
109 [1] stats      graphics  grDevices datasets  utils      methods    base
110
111 other attached packages:
112 [1] ggplot2_4.0.3
113
114 loaded via a namespace (and not attached):
115  [1] vctrs_0.7.3      nlme_3.1-169      cli_3.6.6          knitr_1.51
116  [5] rlang_1.2.0      xfun_0.59         renv_1.2.3         S7_0.2.2
117  [9] jsonlite_2.0.0   labeling_0.4.3    glue_1.8.1         htmltools_0.5.9
118 [13] scales_1.4.0     rmarkdown_2.31    grid_4.6.1         evaluate_1.0.5
119 [17] fastmap_1.2.0    yaml_2.3.12       lifecycle_1.0.5    compiler_4.6.1
120 [21] RColorBrewer_1.1-3 mgcv_1.9-4        farver_2.1.2       lattice_0.22-9
121 [25] digest_0.6.39    R6_2.6.1          splines_4.6.1      Matrix_1.7-5
122 [29] tools_4.6.1      withr_3.0.3       gtable_0.3.6
```