# [UNIVERSITY] [SCHOOL/DEPARTMENT] [GRADUATE PROGRAM]

**Daniel Vartanian** 

{abnt}: Quarto format for ABNT theses and dissertations

## **Daniel Vartanian**

# {abnt}: Quarto format for ABNT theses and dissertations

# [Original/Revised version]

[Dissertation/Thesis] presented to the [School/Department] at [University], as part of the requirements for the degree of [Master of Science/Doctor of Science] by the [Graduate program].

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[Original/Revised version]

1. [Subject A]. 2. [Subject B]. 3. [Subject C]. I. [Supervisor's surname], [Supervisor's forename(s)], super. II. [Co-supervisor's surname], [Co-supervisor's forename(s)] co-super. III. Title.

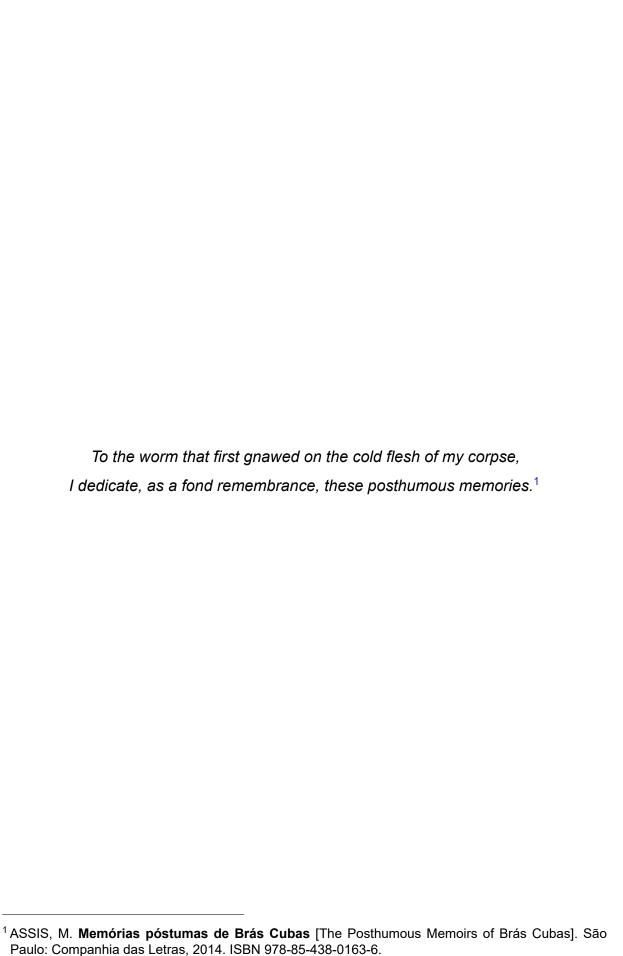
# **ERRATA**

[Author's surname], [Author's forename(s) initial(s)]. **{abnt}: Quarto format for ABNT theses and dissertations**. 2023. 37p. [Dissertation/Thesis] ([Master of Science/Doctor of Science]) – [School/Department], [University], [City], 2023.

This is the development version of the thesis (version <1.0.0). Any necessary corrections will be listed here after its approval.

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# **ACKNOWLEDGEMENTS**

I would like to acknowledge this awesome Quarto format! :)



## **ABSTRACT**

[Author's surname], [Author's forename(s) initial(s)]. **{abnt}: Quarto format for ABNT theses and dissertations**. 2023. 37p. [Dissertation/Thesis] ([Master of Science/Doctor of Science]) – [School/Department], [University], [City], 2023.

{abnt} is a Quarto format designed for theses and dissertations that adhere to the standards of the Brazilian Association of Technical Standards (ABNT). It is based on the abntex2 LaTeX class and on USP guidelines for creating thesis and dissertation documents.

Keywords: [Keyword 1]. [Keyword 2]. [Keyword 3].

## **RESUMO**

[Sobrenome do autor], [Inicial(is) do(s) prenome(s) do autor]. **[Título]**. 2023. 37p. [Dissertation/Thesis] ([Master of Science/Doctor of Science]) – [School/Department], [University], [City], 2023.

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Palavras-chaves: [Palavra-chave 1]. [Palavra-chave 2]. [Palavra-chave 3].

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## LIST OF ABBREVIATIONS AND ACRONYMS

F

Subscript indicating a relation with work-free days

W

Subscript indicating a relation with workdays

## **MCTQ**

Munich ChronoType Questionnaire

# **MCTQ**<sup>PT</sup>

Portuguese version of the MCTQ

## **MEQ**

Morningness-Eveningness Questionnaire

## **MSF**

Local time of mid-sleep on work-free days

# MSF<sub>sc</sub>

Chronotype proxy. The midpoint between sleep onset and sleep end on work-free days. A sleep correction ( $_{SC}$ ) is made when a possible sleep compensation related to a lack of sleep on workdays is identified.

## **MSW**

Local time of mid-sleep on workdays

# **LIST OF SYMBOLS**

For an extensive list of chronobiology related symbols, please refer to Aschoff, Klotter, and Wever (1965) and Marques and Oda (2012).

 $\tau$  Period of a rhythm in free flow; only revealed under constant environmental conditions. T Zeitgeber period.  $\phi$  Phase  $\Delta\phi$  Phase shift  $+\Delta\phi$  Phase advance  $-\Delta\phi$  Phase delay  $\Psi$  Phase relation

#### LIST OF TERMS AND DEFINITIONS

For an extensive list of chronobiology related terms and definitions, please refer to Aschoff, Klotter, and Wever (1965) and Marques and Oda (2012).

# Chronotype

Any kind of temporal phenotype (EHRET, 1974; PITTENDRIGH, 1993). Usually, it refers to circadian phenotypes in a spectrum that goes from morningness to eveningness (ROENNEBERG; WIRZ-JUSTICE; MERROW, 2003). It can also be seen as an organism's phase of entrainment (ROENNEBERG; ALLEBRANDT, et al., 2012).

## Circadian rhythm

A rhythm with a period close to a day/24h, an approximation to the period of the earth's rotation (PITTENDRIGH, 1960). From the Latin *circā*, around, and *dĭes*, day (LATINITIUM, 2023). Example: the sleep-wake cycle.

# **Complex system**

There are several definitions. Here are some that I found to be of use:

- "Systems that don't yield to compact forms of representation or description" (David Krakauer apud Mitchell (2013))
- "A system of many interacting parts where the system is more than just the sum of its parts" (Mark Newman apud Mitchell (2013))
- Systems with many connected agents that interact and exhibit self-organization and emergence behavior, all without the need for a central controller (adapted from Camilo Rodrigues Neto's definition, supervisor of this thesis).
- Dialectics at its finest (my working definition).

#### **Entrainment**

A shift and alignment of biological rhythms induced by a zeitgeber input (KUHLMAN; CRAIG; DUFFY, 2018). For example: a shift/alignment of an organism's circadian rhythm when exposed to light.

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# 1 [SHOWCASE] INTRODUCTION

## i Note

The text below is for demonstrative purposes only.

See https://github.com/danielvartan/abnt to learn more about this template.

## See Figure 1.

"The activity can be represented by a *general schema of problem-solving by the method of imaginative conjectures and criticism*, or, as I have often called it, by *the method of conjecture and refutation*. The schema (in its simplest form) is this

$$\mathsf{P}_1 \to \mathsf{TT} \to \mathsf{EE} \to \mathsf{P}_2$$

Here  $P_1$  is the *problem* from which we start, TT (the 'tentative theory') is the imaginative conjectural solution which we first reach, for example our first *tentative interpretation*. EE ('*error- elimination*') consists of a severe critical examination of our conjecture, our tentative interpretation: it consists, for example, of the critical use of documentary evidence and, if we have at this early stage more than one conjecture at our disposal, it will also consist of a critical discussion and comparative evaluation of the competing conjectures.  $P_2$  is the problem situation as it emerges from our first critical attempt to solve our problems.

It leads up to our second attempt (and so on). A satisfactory understanding will be reached if the interpretation, the conjectural theory, finds support in the fact that it can throw new light on new problems — on more problems than we expected; or if it finds support in the fact that it explains many sub-problems, some of which were not seen to start with. Thus we may say that we can gauge the progress we have made by comparing  $P_1$  with some of our later problems ( $P_n$ , say)."

(POPPER, 1979, p. 164)

Figure 1 – Karl Popper (July 25, 1902 – September 17, 1994).

One of the 20th century's most influential philosophers of science.



Source: Steve Pyke.}

# 1.1 SECONDARY SECTION

# See Table 1.

```
1 # library(datasets)
2 # library(dplyr)
3
4 datasets::iris ▷
5 dplyr::as_tibble() ▷
6 dplyr::slice_sample(n = 5) ▷
7 gt::gt()
```

Table 1 – A sample of the famous (Fisher's or Anderson's) iris data set

Sepal.Length	Sepal.Width	Petal.Length	Petal.Width	Species
6.5	3.0	5.5	1.8	virginica
6.5	3.0	5.8	2.2	virginica
5.0	3.0	1.6	0.2	setosa
5.0	3.5	1.6	0.6	setosa
6.2	2.9	4.3	1.3	versicolor

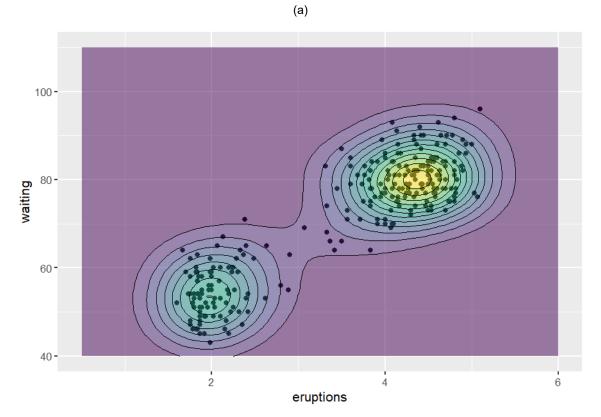
Source: Based on Fisher (1936).

# 1.1.1 Tertiary section

# See Figure 2a.

```
1 # library(datasets)
2 # library(ggplot2)
3
4 ggplot2::ggplot(faithful, ggplot2::aes(x = eruptions, y = waiting)) +
5 ggplot2::geom_point() +
6 ggplot2::xlim(0.5, 6) +
7 ggplot2::ylim(40, 110) +
8 ggplot2::geom_density_2d_filled(alpha = 0.5) +
9 ggplot2::geom_density_2d(linewidth = 0.25, colour = "black") +
10 ggplot2::theme(legend.position = "none")
```

Figure 2 – Relationship between *waiting time to next eruption* (minutes) and *eruption time* (minutes) at Old Faithful Geyser, Yellowstone National Park, Wyoming, USA



Source: Retrieved from the ggplot2 R package documentation (WICKHAM, 2016).

# 1.1.1.1 Quaternary section

- Bullet point
  - Bullet point
    - \* Bullet point

# 1.1.1.1.1 Quinary section

- 1. List
- 2. List
- 3. List

# 1.2 ANOTHER SECONDARY SECTION

See Figure 3a.

```
# library(datasets)
2
   # library(ggExtra)
   # library(ggplot2)
5
   p <- ggplot2::ggplot(</pre>
     datasets::mtcars, ggplot2::aes(x=wt, y=mpg, color=cyl, size=cyl)
     ) +
     ggplot2::geom_point() +
8
     ggplot2::theme(legend.position="none")
10
   ggExtra::ggMarginal(
11
     p, type="histogram",
12
    fill = "slateblue",
13
     xparams = list(bins=10)
15
     )
```

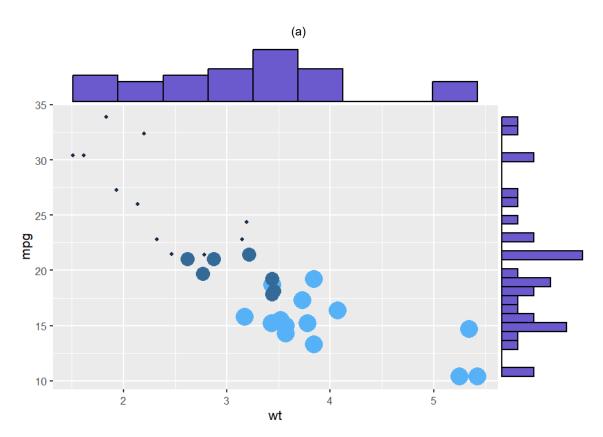


Figure 3 – Relation between *weight (1000lbs)* (wt) and *miles per galon* (mpg) for combustion engine vehicles

Source: Data extracted from the 1974 Motor Trend magazine and published by Henderson and Velleman (1981). Visualization by Holtz (2023), available at The R Graph Gallery.

# [SHOWCASE] DEVELOPMENT



Warning

The text below is for demonstrative purposes only.

See https://github.com/danielvartan/abnt to learn more about this template.

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# 3 [SHOWCASE] CONCLUSION

# Important

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<sup>\*</sup> According to the Brazilian Association of Technical Standards (ABNT NBR 6023).

# APPENDIX A - [SHOWCASE]



The text below is for demonstrative purposes only.

See https://quarto.org/docs/authoring/markdown-basics.html to learn about the basics of Markdown's syntax.

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#### A.1 SECONDARY SECTION

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#### APPENDIX B - SETTINGS

# Important

You are reading the work-in-progress of this manual.

This chapter is undergoing heavy restructuring and may be confusing or incomplete.

#### **B.1 TYPOGRAPHY**

# B.1.1 Typeface

To change typefaces, simply use the Quarto options, such as mainfont, monofont and sansfont in your quarto-[format].yml file.

```
1 format:
2 abnt-pdf:
3 mainfont: Arial
```

The ABNT NBR 14724:2011 norm does not specify the use of any specific font. You have the freedom to choose any font you prefer, but it's important to note that the selected font must be installed on your computer.

## B.1.2 Font size

To adjust the font size, utilize the fontsize option in in the quarto-[format].yml file.

```
1 format:
2 abnt-pdf:
3 fontsize: 12pt
```

It's important to note that the third paragraph of Section 5.1 of ABNT NBR 14724:2011 norm establishes that the font size should be 12pt for the entire document, including the cover, except for quotations longer than three lines, footnotes, pagination, cataloging data, captions, and sources of illustrations and tables, which should be in a smaller and uniform size.

The smaller font is set to \footnotesize, which corresponds to a 10pt font size with the default settings. You can modify this setting by inserting the following LaTeX command into tex/include-in-header.tex:

```
1 \renewcommand{\ABNTEXfontereduzida}{[NEW SIZE (e.g., \small)]}
```

# **B.2 LANGUAGE AND HYPHENATION**

#### **B.3 DOCUMENT SECTIONS**

# B.3.1 Editing pre-textual sections

abnt uses a system of tags to transfer and render the content of Quarto files (.qmd) to LaTeX. These tags look like this:

```
1 %:::% class attribute begin/end %:::%
1 <!-- %:::% class attribute begin/end %:::% -→</pre>
```

Unless you want to customize the template, you don't need to modify the .tex files. You can write directly in the .qmd files. Just ensure that you preserve all the tags.

Please note that some settings regarding the pre-textual sections must be changed in the qmd/\_congfig.qmd file.

# B.3.2 How to include LaTeX commands in Quarto files (.qmd)

To add LaTeX commands in your writing, without worrying that it will contaminate the html format, use a {=latex} chunk.

```
1 \```{=latex}
2 % Some LaTeX code.
3 \```
```

## B.3.3 How to add or remove sections

For pre-textual sections (e.g., list of symbols, abstract), remove them from tex/include-before-body.tex and from R/quarto-pre-render.R.

For textual sections (e.g., chapters), remove them from the .quarto-[format].yml file.

For post-textual sections (e.g., appendices, annexes), if it's a appendix, remove it from .quarto-[format].yml; else, remove them from tex/include-after-body.tex.

It's important to note that, at this moment, the last chapter must have a LaTeX code chunk at the end of it. The same is true for the last appendix chapter. They should look like this:



# Warning

Remove the \ from the beginning and end of the code below when applying it.

```
\```{=latex}
   \postextual
   \begingroup
  \renewcommand{\baselinestretch}{1}
   \setcounter{footnote}{0}
   \renewcommand{\thefootnote}{\fnsymbol{footnote}}
   \printbibliography[heading=bibheading]
9
   \endgroup
10
    \addtocontents{toc}{\protect\vspace{1em}}
11
   \cftinserthook{toc}{bibhook}
12
   \addcontentsline{toc}{chapter}{
13
     \protect\numberline{}
14
     \newbibname
15
     \hspace{-0.25em}
16
17
18
   \begin{apendicesenv}
19
20
```

```
1 \``` {=latex}
2 \end{apendicesenv}
3 \```
```

#### B.4 CITATION MANAGEMENT

#### **B.4.1 Citation method**

This Quarto format was specifically designed to be compatible with BibLaTeX, which is a comprehensive reimplementation of BiBTeX. At first glance, these two systems may appear very similar.

To get started, simply insert your references into the references.bibfile. However, this task can be somewhat tedious and demanding. To simplify the process, we recommend exploring the integration of Zotero along with Better BiBTeX, as demonstrated in a section below.

For detailed guidance on handling citations in Quarto, please refer to Quarto's Citation & Footnotes documentation.

# B.4.2 Citation style

There are two built-in citation styles:

- ABNT (Brazilian Association of Technical Standards);
- APA (American Psychological Association).

To use one of them, simply change the biblio-style option in your yml file with the style of you preference.

```
format:
abnt-pdf:
biblio-style: abnt # options: [abnt, abnt-ibid, abnt-numeric, apa]
```

There are other options related to the citation style; some are shown below. Please refer to biblatex, biblatex-abnt and biblatex-apa manuals to learn more about them.

```
format:
     abnt-pdf:
2
        biblio-footnote: >
          According to the Brazilian Association of Technical Standards
          (ABNT NBR 6023).
       biblatexoptions:
6
          - backend=biber,
          - language=english, # [options: english, brazil, spanish, french]
          - url=true,
9
10
          - useprefix=false,
          - giveninits=true,
11
          - extrayear=true
12
        bibhang: 0cm # Use 0.5cm if `biblio-style: apa`.
13
        bibparsep: 0ex
14
```

## **B.4.3 Zotero integration**

This template can work with Zotero and the Better BiBTeX plugin. The advantage of using this integration is that you don't need to manually input your references into references.bib; they are automatically imported when you render the format.

For this to work, you must activate the zotero option in your yml file and have Zotero, with Better BibTeX installed, open while rendering your thesis (activated by default). A pre-render script (see R/quarto-pre-render.R), created using the rbbt R package, will scan all .qmd and .tex files searching for BibTeX citations (e.g., @watson1953). If they match with your Zotero database, the citations will then be written into the references.bib file.

```
1 format:
2 abnt-pdf:
3 zotero: true
```

# B.4.3.1 Title case change

By using Zotero, you may experience a title casing change when exporting your references. This is the default behavior of Better BibTex while exporting to BibLaTeX.

You can disable this by going to Zotero's configuration editor (go to Edit > Preferences > Advanced > Config Editor) and changing the variable\extensions.zotero.translators.bett bibtex.exportTitleCase to false. Beware that this can produce some issues. You can find more information about this behavior here.

#### B.5 ABNT FIGURES AND TABLES

Thanks for the incredible work of Carlos Scheidegger we now have a built-in solution for figures and tables that require two captions (one at the top and the other at the bottom), as demanded by the ABNT norms. Please note that this feature is only available for Quarto versions >=v1.4.

The procedure for adding these captions is the same for figures and tables. Enclose your figure/table/code in figure divs, as shown in the example below. The first paragraph after the figure content will be rendered as the source (bottom caption), and the last one will be the top caption.

```
1 ::: {#fig-1}
2
3 ::: {.figure-content}
4 This is the figure content.
5 :::
6
7 Source: My source.
8
9 This is a caption.
10
11 :::
```

Please note that, like all cross-reference elements, these divs must follow a naming pattern. Always use the prefixes #fig- for figures and #tbl- for tables.

Visit the showcase chapter "Introduction" (qmd/introduction.qmd) of this Quarto format to see this feature in action. For more detailed information, please refer to Quarto's Crossreferenceable elements article.

#### **B.6 CROSSREFERENCEABLE ELEMENTS**

Quarto allow you to create and reference almost anything by using div enclosures. Example: See Theorem B.1.

**Theorem B.1** (Line). The equation of any straight line, called a linear equation, can be written as:

$$y = mx + b$$

Although, it's important to note that for this to work, each type of div must use pre-defined prefixes. If you don't follow these rules your document will not be rendered.

Here are most of the the label prefixes.

• cnj-: Conjecture

cor-: Corollary

def-: Definition

eq-: Equation

• exm-: Example

• exr-: Exercise

• fig-: Figure

• 1em-: Lemma

• 1st-: Listings

• prp-: Proposition

sec-: Section

• tb1-: Table

• thm-: Theorem

For more information about cross-reference elements, see Quarto's guideBook Crossrefs, Cross References and Crossreferenceable elements articles.

## B.7 FREEZING AND CACHE

See Freeze.

## B.8 HOW TO CUSTOMIZE THIS QUARTO FORMAT

## B.8.1 Quarto system

See Quarto's guide.

# **B.8.2** Template and template partials

See Tempalte partials.

# B.8.3 **Spacing rules**

- Set fixed dimensions (e.g., page dimensions) in cm or pt. cm is the prefer unit for margins.
- Set line spacing as a proportion of \baselineskip (e.g., 1.5\baselineskip).
- Use the settings \tinyskipamount, \smallskipamount, \midskipamount, \bigskipamount, \hugeskipamount and their counterparts \tinyskip, \smallskip, \midskip, \bigskip, \hugeskip. You can find them in the lengths.tex template partial.
- For other kinds of relative vertical spacing, use the ex unit.
- For relative horizontal spacing, use the em unit.

See Oetiker et al. (2023, section 7.5) to learn more about LaTeX spacing features. The articles on Overleaf are also a great source of information. Check Lengths in LaTeX and How to change paragraph spacing in LaTeX to get a sense of the subject.

#### B.8.3.1 Unit equivalences

- 1em == 12pt or  $\approx 0.423333$ \$cm.
- $1ex == \approx 6.22266pt$  or  $\approx 0.219521cm$ .

## B.8.3.1.1 \baselineskip

These are the equivalences for a Arial typeface with size 12pt:

Use \the\baselineskip and \gevalue{} to figure out the exact value. Note that \gevalue{} will return the value in pt.

Example of using \getvalue{}:

```
1 \begingroup
2 \setlength{\parskip}{1em}
3 \getlength{\parskip}
4 \endgroup
```

• \linestretch=1

- 1\baselineskip == 14.5pt. That's about 1.2x (or (\$≈\$1.208333x) the font size (standard procedure).
- \linestretch=1.5
  - **-** 0.25\baselineskip == 5.4375pt or  $\approx 0.191822917$ cm;
  - 0.5\baselineskip == 10.875pt or  $\approx 0.383645833$ cm;
  - **-** 0.75\baselineskip == 16.3125pt or  $\approx 0.57546875$ cm;
  - 1\baselineskip == 21.75pt or  $\approx 0.76729167$ cm;
  - 1.5\baselineskip == 32.625pt or  $\approx 1.1509375$ cm;
  - 2\baselineskip == 43.5pt or  $\approx 1.534583$ cm;
  - 2.5\baselineskip == 54.375pt or  $\approx 1.91822917$ cm;
  - 3\baselineskip == 65.25pt or  $\approx 2.301875$ cm.

# B.8.4 How to add new citation styles

## B.8.5 Must see references

To learn the basics about LaTeX, see Oetiker et al. (2023). To delve deeper into the LaTeX system, see Lamport (1994) and Knuth (1986).

# B.8.5.1 Manuals

- Quarto
- abntex2
- memoir
- biblatex
- biblatex-abnt

- biblatex-apa
- babel
- fontspec
- makeidx

# B.8.5.2 R packages

• gt • rutils

# ANNEX A - [SHOWCASE]

# Note

The text below is for demonstrative purposes only.

See https://quarto.org/docs/authoring/markdown-basics.html to learn about the basics of Markdown's syntax.

Cillum qui eu non ipsum pariatur ad exercitation pariatur dolore veniam amet cillum. Aliqua do nostrud aliquip in amet. Commodo sit tempor nulla ipsum officia voluptate laborum elit minim proident Lorem. Id pariatur reprehenderit non officia fugiat incididunt anim aliquip anim anim. Ipsum irure magna quis est aute. Nostrud nulla mollit non labore. In laboris mollit ea in. Excepteur eu do elit proident. Commodo tempor nisi enim ex velit voluptate dolor mollit eiusmod in ullamco aliqua nostrud id.



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