Docs - LaTeX helpers

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USAGE GUIDE FOR VERSION 2.0.0
https://git.janishutz.com/janishutz/latex

Contents

1 Introduction

This set of LaTeXfiles is designed to give you a good looking, pre-configured LaTeXsetup, which helps you get started much more quickly.

There are quite a lot of configuration options, but it is likely that more are to come in the future. If you have any suggestions as to what should be added, don't hesitate to open a support ticket or contacting me via email to development@janishutz.com.

2 Breaking Changes

The current version is almost entirely incompatible with Version 1.X and you should familiarize yourself with the new commands.

The docs contain a section (section **??**) on migrating from V1.X to V2.X

3 Installation

You can install these helper files by downloading this repo and storing it to any location on your PC, remembering where that location is.

You may also install the VSCode snippets found in the vscode-snippets folder. These snippets provide autocompletion for many of the commands that this helper file provides.

4   Usage

You can type `latex-prepare` and press tab, if you have installed the VSCode snippets, or copy over this code snippet:

```
\documentclass{article}

\input{~/path/to/helpers/janishutz-helpers.tex} % TODO: Change your path here

\setup{Type your title here}

\begin{document}
\startDocument

Type your \LaTeX here

\end{document}
```

4.1   Configuration

You can set a global config in the config files in the helper files directory. They are located at

`/<path to helpers>/config/`. All config options are documented there. After changing them, run `build.sh` in the main directory.

Each of the options can also be overridden directly on a per-document (see 5.2) basis using

```
\renewcommand{\<command>}{<value>}
```

4.2   Letters

Letters require a different setup compared to a normal LaTeXdocument:

```
\documentclass[12pt,a4paper]{scrlttr2}

\input{~/path/to/helper/letter.tex} % TODO: Change your path here

\setkomavar{subject}{} % type your subject here
\begin{document}\raggedright
    % below, type the address, being careful not to remove the backslashes
    \begin{letter}{Company \\ Name \\ Address \\ CH-Place}
        \opening{Intro}

        Your text

        \closing{Kind regards} % Your closing sentence
    \end{letter}
\end{document}
```

If you are using the snippets, you can type `latex-letter` and press tab.

5 Full Command Reference

5.1 Variables

- *string*: Any normal text

- *boolean*: `true` or `false`

- *math*: Any math input

- *number*: Any non-negative integer, i.e. no commas

- *color*: Any of the `dvipsnames` colours of `xcolor` or as defined in the color config file

5.2 Per-File config

- `\renewcommand{\authorTitle}{`*string*`}` Change the author (in the title) for this document only

- `\renewcommand{\authorHeaders}{`*string*`}` Change the author (in the header) for this document only

- `\renewcommand{\<descriptor>NamingDE}{`*string*`}` Configure translations for descriptors on the fly (for DE)

- `\renewcommand{\<descriptor>NamingEN}{`*string*`}` Configure translations for descriptors on the fly (for EN)

- `\setnumberingpreset{`*string*`}` Change the numbering preset of definitions, lemmas, etc for this document. Value can be `off`, `separate`, `combined`.

- `\renewcommand{<descriptor>numbering}{`*string*`}` Change the numbering for an individual descriptor, passed as first argument. The second value can be `off`, `separate`, `combined` or `default`. If set to `default`, it will follow the `\numberingpreset` setting. If you do not override it here, it will follow your global config as set in the config directory and if unset there, it will follow the `\numberingpreset` setting.

- `\renew{`*string*`}` Change the format of the numbering of definitions, etc. The value can be set to any of the below

  - none = <section>.<number>
  - section = <section>.<number>
  - subsection = <section>.<subsection>.<number>
  - subsubsection = <section>.<subsection>.<subsubsection>.<number>
  - paragraph = <section>.<subsection>.<subsubsection>.<paragraph>.<number>

  Changing this won't affect all of numbering prior to the command, only after. You can change this setting (and the ones above) at any point in the document

- `\setcounter{descriptorShadeStrength}{`*number*`}` Change the colour saturation of the inline descriptors

- `\setcounter{shadeStrength}{`*number*`}` Change the colour saturation of the `\shade` command

- `\loadGerman` Load german configuration. Needs to be in preamble and you may only use it once

- To change the font for the entire document, load the font package using `\usepackage`, with the last occurrence of a font package determining the active one. Then select the type by using `\setFontType{`*mono* | *serif* | *sans*`}`. A list of fonts is available here. You may change the font only for a specific section, by enclosing `\setFont` and the text that should be written in said typeface in curly braces.

5.2.1 Letters

- `\renewcommand{\name}{`*string*`}` Change the name (for letters) for this document only

- `\renewcommand{\street}{`*string*`}` Change the street (for letters) for this document only

- `\renewcommand{\city}{`*string*`}` Change the city (for letters) for this document only

- `\renewcommand{\countrycode}{`*string*`}` Change the country-code (for letters) for this document only

5.3   Setup, Loading & Translation

- \setup{*string*} Prepare the document with the *string* being the title

- \setupCheatSheet[*boolean*]{*string*} Prepare the document with smaller borders and no headers / footers. The mandatory argument is the title, the optional argument will, if set to `true` use a landscape layout (default) and a horizontal layout if set to `false`.

- \setupBarebones{*string*} Minimal setup, only borders and title set

- \startDocument Initialize the document. Has to be called after \begin{document}

- \translate{*string*}{*string*} First *string* is English, second *string* is German. Switches automatically based on language selected

- \tr{*string*}{*string*} Shorthand for \translate

- \numberingOn Turn on the numbering (if previously turned off using \numberingOff or set in the config)

- \numberingOff Turn off the numbering (useful to temporarily turn off numbering)

5.4   Math-Commands

All these have to be executed in the math environment.

- \R Prints $\mathbb{R}$. Same goes for \C printing $\mathbb{C}$, etc.

- \floor{*math*} Round down symbol, e.g. $\lfloor n \rfloor$

- \ceil{*math*} Round up symbol, e.g. $\lceil n \rceil$

- \Leftrightarrowequiv Equivalence transformation symbol, $\dot{\Leftrightarrow}$.

- \Rightarrowequiv Equivalence transformation symbol, $\dot{\Rightarrow}$.

- \Leftarrowequiv Equivalence transformation symbol, $\dot{\Leftarrow}$.

- \defAs Define as, i.e. $\stackrel{\text{def}}{=}$

- \defEquiv Define as, but with a two-sided implication instead of equality, i.e. $\stackrel{\text{def}}{\Leftrightarrow}$

- \defImplies Define as, but with one-sided implication, i.e. $\stackrel{\text{def}}{\Rightarrow}$

- \divider Divider or divides symbol, e.g. $a \mid b$

- \lcm Least common multiple, lcm

- \arcsinh Inverse of hyperbolic sine, arcsinh

- \arccosh Inverse of hyperbolic cosine, arccosh

- \arctanh Inverse of hyperbolic tangent, arctanh

- \limit{*math*}{*math*} Shortened limit notation, $\lim\limits_{x \to x_0}$

- \limni Shortened limit notation for $n \to \infty$, $\lim\limits_{n \to \infty}$

- \liminfni Shortened limit inferior notation for $n \to \infty$, $\liminf\limits_{n \to \infty}$

- \limsupni Shortened limit superior notation for $n \to \infty$, $\limsup\limits_{n \to \infty}$

- \diff{*math*} Derivative, $\dfrac{\mathrm{d}}{\mathrm{d}x}$

- \diffn{*math*}{*math*} Higher derivative, $\dfrac{\mathrm{d}^2}{\mathrm{d}^2 x}$

- \pardiff{*math*} Partial derivative, $\dfrac{\partial}{\partial x}$

- \pardiffn{*math*}{*math*} Higher partial derivative, $\dfrac{\partial^2}{\partial^2 x}$

- \elementstack{*math*}{*math*} Stack two elements on top of eachother. Uses \genfrac under the hood. Can be used for example in limits as an alternative to \atop or \substack.

5.5   CS-Commands

These commands have to be executed inside math environment

- \tct Time complexity in Θ ()-notation (average case)
- \tco Time complexity in $\mathcal{O}$ ()-notation (worst case / upper bound)
- \tcl Time complexity in Ω ()-notation (best case / lower bound)
- \t[R, C, N] Simply prints a capital R, C or N in math mode as normal text. So e.g. use R to print an R
- \wordbool Prints $(\Sigma_{\text{bool}})^*$
- \words{*string*} Prints $(\Sigma_{\text{test}})^*$
- \wordm{*math*} Prints Σ_1^*
- \word Prints Σ^*
- \alphabets{*string*} Prints Σ_{test}
- \alphabetbool Prints Σ_{bool}

5.5.1   Algorithms

```
\begin{algo}{functionName(A)}
    \Procedure{functionName}{$(A)$}
        \State\Return "Hello World"
    \EndProcedure
\end{algo}
```

Algorithm 1 FUNCTIONNAME(A)

---

1 **procedure** FUNCTIONNAME$((A))$
2   **return** "Hello World"

5.5.2   Code

If you get compilation errors, be sure to enable `-shell-escape` for your compiler. *(Note: Some newer versions of LaTeX do no longer require this and it is better to keep it turned off for security reasons, if it works without)*!

5.5.2.1   Code inlined in tex file

```
\begin{code}{language}
    //Code goes here
\end{code}
```

This is nothing different than a wrapper for a minted environment with a box drawn around it.

Example (in python):

```
1  def hello_world():
2  print("hello world!")
```

5.5.2.2   Code in separate files   It is also possible to load code from a source file using the provided commands:

- \inputcode{*language*}{*file*}, where *language* is the programming language and *file* is the file name of the file to be loaded, relative to the main tex file.
- \inputcodewithfilename{*language*}{*hidden-path*}{*shown-path*}, where *language* is the programming language, *hidden-path* is the part of the path you want to hide of the file to be loaded, relative to the main tex file and *shown-path* is the displayed part.

Example 5.5.1

```
\inputcodewithfilename{python}{/start/of/path}{/shown/path/file.py}
```

5.6   Style

- `\TODO` Print a highlighted <mark>TODO:</mark>

- `\background`{*color*}{*number*}{*string*} Print **shaded text, with colour saturation**

- `\shade`{*color*}{*string*} Print **shaded text**

- `\backdrop`{*string*} Print **text with gray backdrop**

- `\printtoc`{*color*} Print the table of contents (as seen on the first page). The normal `\tableofcontents` still works as expected

5.6.1   Spacing

For spacing in math mode, prefer using the methods described here , for vertical spacing prefer the commands described below

- `\smallhspace` Prints a 2mm hspace

- `\mediumhspace` Prints a 5mm hspace

- `\largehspace` Prints a 10mm = 1cm hspace

- `\rmvspace`[*number*] Removes an amount of vertical space. Should not be used unless can be avoided with general settings. Defaults to 0.5

Vertical spacing config for the entire document. By default, the LaTeX defaults are used.

- `\noverticalspacing`

- `\smallverticalspacing`

- `\mediumverticalspacing` (approximately the same as the LaTeXdefaults)

- `\largeverticalspacing`

You are of course free to redefine commands like `\parskip`, etc to your liking, these commands are just provided for your convenience. See here for more details and here for a good guide on spacing .

To control paragraph spacing, see here and here

To make use of TeX's automatic wrapping of short alignment environments, use the `aligned` (or, if no alignment is needed, use the normal `\[ <math> \]`) instead of the `align` environment for short equations.

Below a demonstration on the effects of the different settings:

No vertical spacing

This is text:

$$\int_0^{10} 4x^2 + 3x \cdot \frac{3\ln(10)}{x^3} \, dx$$

This is very long introductory text that exceeds the limit (same applies to long equations)

$$\int_0^{10} 4x^2 + 3x \cdot \frac{3\ln(10)}{x^3} \, dx$$

Text following the equation (no paragraph break!)

Small vertical spacing

This is text:

$$\int_0^{10} 4x^2 + 3x \cdot \frac{3\ln(10)}{x^3} \, dx$$

This is very long introductory text that exceeds the limit (same applies to long equations)

$$\int_0^{10} 4x^2 + 3x \cdot \frac{3\ln(10)}{x^3} \, dx$$

Text following the equation (no paragraph break!)

Medium vertical spacing

This is text:

$$\int_0^{10} 4x^2 + 3x \cdot \frac{3\ln(10)}{x^3} \, dx$$

This is very long introductory text that exceeds the limit (same applies to long equations)

$$\int_0^{10} 4x^2 + 3x \cdot \frac{3\ln(10)}{x^3} \, dx$$

Text following the equation (no paragraph break!)

Large vertical spacing

This is text:

$$\int_0^{10} 4x^2 + 3x \cdot \frac{3\ln(10)}{x^3} \, dx$$

This is very long introductory text that exceeds the limit (same applies to long equations)

$$\int_0^{10} 4x^2 + 3x \cdot \frac{3\ln(10)}{x^3} \, dx$$

Text following the equation (no paragraph break!)

5.6.2   Tcolorboxes

5.6.2.1   General boxes   These tcolorboxes can be created using the code displayed inside them.

Title here   **Terms**

```
\begin{terms}[]{Title here}

\end{terms}
```

Title here   **Notation**

```
\begin{notation}[]{Title here}

\end{notation}
```

Title here   **Recall**

```
\begin{recall}[]{Title here}

\end{recall}
```

Title here   **Usage**

```
\begin{usage}[]{Title here}

\end{usage}
```

Title here   **Properties**

```
\begin{properties}[]{Title here}

\end{properties}
```

Title here   **Restrictions**

```
\begin{restrictions}[]{Title here}

\end{restrictions}
```

Title here   **Limitations**

```
\begin{limitations}[]{Title here}

\end{limitations}
```

Title here   **Intuition**

```
\begin{intuition}[]{Title here}

\end{intuition}
```

Can also be used inline using `\inlineintuition`, which renders **Intuition:**

5.6.2.2 Counter-enabled These ones also have two settings, namely, you can change the counter behaviour and the inclusion of subsections in the numbering. See 5.2.

See 5.6.4 for a guide on how to change the current number and how to reference them.

Title here **Definition 5.6.1**

```
\begin{definition}[]{Title here}

\end{definition}
```

Title here **Theorem 5.6.2**

```
\begin{theorem}[]{Title here}

\end{theorem}
```

Title here **Lemma 5.6.3**

```
\begin{lemma}[]{Title here}

\end{lemma}
```

Title here **Corollary 5.6.4**

```
\begin{corollary}[]{Title here}

\end{corollary}
```

Title here **Proposition 5.6.5**

```
\begin{proposition}[]{Title here}

\end{proposition}
```

Title here **Fact 5.6.6**

```
\begin{fact}[]{Title here}

\end{fact}
```

Title here **Axiom 5.6.7**

```
\begin{axiom}[]{Title here}

\end{axiom}
```

Title here **Example 5.6.8**

```
\begin{example}[]{Title here}

\end{example}
```

Title here   **Remark 5.6.9**

> `\begin{remark}[]{Title here}`
>
> `\end{remark}`

Title here   **Formula 5.6.10**

> `\begin{formula}[]{Title here}`
>
> `\end{formula}`

5.6.2.3   Flexible   This tcolorbox has all the styles applied, but allows configuring the colour and both title boxes

title   **second title**

> This Tcolorbox is flexible and can take any main and secondary title, as well as any colour.
> `\begin{general}[]{title}{second title}{red}`
>
> `\end{general}`

5.6.3 Inline & Shortened descriptors

See 5.6.4 for a guide on how to change the current number.

5.6.3.1 Inline

Command	Output
\inlineexample	**Example 5.6.11**
\inlinedefinition	**Definition 5.6.12**
\inlinetheorem	**Theorem 5.6.13**
\inlinelemma	**Lemma 5.6.14**
\inlinecorollary	**Corollary 5.6.15**
\inlineproposition	**Proposition 5.6.16**
\inlinefact	**Fact 5.6.17**
\inlineaxiom	**Axiom 5.6.18**
\inlineremark	**Remark 5.6.19**
\inlineproof	**Proof**

5.6.3.2 Shortened

Command	Output
\shortexample	**E 5.6.20**
\shortdefinition	**D 5.6.21**
\shorttheorem	**T 5.6.22**
\shortlemma	**L 5.6.23**
\shortcorollary	**C 5.6.24**
\shortproposition	**P 5.6.25**
\shortfact	**F 5.6.26**
\shortaxiom	**A 5.6.27**
\shortremark	**R 5.6.28**
\shortproof	**Proof**

5.6.4   Changing the counters

You may set the current number for the elements by setting their corresponding counter to the selected number. You can do this using `\setLabelNumber{`*name of the environment*`}{`*number*`}`, where you replace *name of the environment* with one of the following: `definition`, `lemma`, `theorem`, `corollary`, `proposition`, `fact`, `formula`, `axiom`, `example`, `remark`

This only applies if you have set `numberingConfig` to 1 (for all of them) and 2 (only for `definitions`). To change the combined numbering, use `\setLabelNumber{all}` to your desired number.

You may also use `\stepLabelNumber{`*name of the environment*`}` to step the counter by one.

5.6.5   Referencing counters

With recent overhaul has not been re-introduced yet, will be a feature again soon, with some changes

If you wish to reference a counter, you can do so by writing

`\ref{<counter name>:<section>-<subsection>-<subsubsection>-<counter value>}`,

or of course, if you do not label subsections and / or subsubsection, dropping them.

5.7   Tables

You can set up nice looking tables using the `booktab` and `tabulary` environments.

New as of October 28 2025: Tables and figures are now also numbered according to your settings

```latex
\begin{tables}{ll}{Left & Right}
    Left content & Right Content\\
\end{tables}
```

This outputs as

Left	Right
Left content	Right Content

This doesn't use the `table` environment, so no captions are possible, as to why there is also

```latex
\begin{fullTable}{ll}{Left & Right}{This is a caption}
    Left content & Right Content\\
\end{fullTable}
```

This outputs as

Left	Right
Left content	Right Content

Table 5.1: This is a caption

5.8   Index

If you want to use index, add `\prepareIndex` to the preamble. Using `\addIndexBold{`*string*`}`, you can add entries to the index. They are printed in bold typeface in your document. Using `\addIndex{`*string*`}`, you can do the same, but the text remains normal and using `\addIndexItalic{`*string*`}`, it is printed in italics