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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`.

If you are fairly new to LaTeX, then you may find `Detextify` (or the iOS app `DeTeXt`) very handy. There you can draw a symbol and it tells you how to typeset the symbol in LaTeX

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:

<MINTED>

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 **??**) basis using

<MINTED>

4.2 Letters

Letters require a different setup compared to a normal LaTeXdocument:

<MINTED>

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

5 Migration from janishutz-helpers V1.X

The updated helpers do not feature scopes anymore. You can continue using the old helpers, simply check out the `v1` branch, using `git checkout v1`. To switch back to the latest version, run `git checkout main`.

Alternatively, you can change one line: The input line should point to `<repo>/old/janishutz-helpers-v1.tex`

1. Update the import path to `/path/to/helpers/janishutz-helpers.tex`
2. If you don't plan to change the design of your cheat sheet, then replace `\setupCheatSheet`{*string*} with `\setupCheatSheet[false]`{*string*}
3. Remove `\usetcolorboxes` if it was used (now integrated into `\startDocument`)
4. Replace any `\setNumberingStyle`{*number*} with `\setnumberingpreset`{*preset*} (see **??**)
5. Replace any `\setSubsectionNumbering`{*number*} with `\setsubsectionnumbering`{*preset*}
6. Remove any `\drmvspace` and the like, they have been deprecated. `\rmvspace`[*number*] is still around, but only for edge cases, where the `Xverticalspacing` (`X` can be replaced with `no`, `small`, `medium` or `large`) commands don't do a good enough job.
7. `\fhlc` and `\fhl` have been removed. The closes replacement is `\shade`.
8. Environments `remarks`, `conjugation`, `forms` and `guides` have been removed
9. All descriptors no longer automatically have a label attached to them. If you want to make a label `ref`able, then use `\labeledShort`, or `\labeledInline`, respectively (see **??**).
10. The descriptors `\shortdef` and `\shortex` have been renamed to `\shortdefinition` and `\shortexample` (same for the inline versions)
11. The descriptors `\fancyY` and `\compactY` (where Y is a type like `definition`) have been removed and you can now use an optional argument on the descriptors. See **??**
12. The deprecated `\tc` and `\timecomplexity` commands have been removed.
13. Was not mentioned, but was already possible, is to import code from a source code file. See **??**
14. `\der`, `\parder`, etc. have been renamed to `\diff`, `\pardiff`, etc
15. `\divides` has been renamed `\divider`
16. `\seq` and `\ser` have been renamed `\sequence` and `\series` resepctively

6 Full Command Reference

6.1 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

6.2 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.

6.2.1 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

6.3 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)

6.4 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. $\overset{\text{def}}{=}$
- `\defEquiv` Define as, but with a two-sided implication instead of equality, i.e. $\overset{\text{def}}{\Leftrightarrow}$
- `\defImplies` Define as, but with one-sided implication, i.e. $\overset{\text{def}}{\Rightarrow}$
- `\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, $\dfrac{\partial^2}{\partial^2 x}$
- `\sequence{`*math*`}` Sequence, $(x_n)_{n \geq 1}$
- `\series{`*math*`}{`*math*`}` Series, prints `\series{x}{2x}` as, $\sum_{k=1}^{2x} x_k$
- `\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`.

6.5 CS-Commands

These commands have to be executed inside math environment

- `\tct` Time complexity in $\Theta()$-notation (average case)
- `\tco` Time complexity in $\mathcal{O}()$-notation (worst case / upper bound)
- `\tcl` Time complexity in $\Omega()$-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}

6.5.1 Algorithms

<MINTED>

Algorithm 1 FUNCTIONNAME(A)

```
1 procedure FUNCTIONNAME((A))
2     return "Hello World"
```

6.5.2 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)*!

6.5.2.1 Code inlined in tex file <MINTED>

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

Example (in python):

<MINTED>

6.5.2.2 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 6.5.1

<MINTED>

6.6 Style

- `\TODO` Print a highlighted TODO:
- `\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

6.6.1 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. Do make sure to put the `usepackage` *before* loading the helpers. Alternatively, you can use `\PassOptionsToPackage{options}{package}`

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:
$$\int_0^{10} 4x^2 + 3x \cdot \frac{3\ln(10)}{x^3} \, \mathrm{d}x$$
This is very long introductory text that exceeds the limit (same applies to long equations)
$$\int_0^{10} 4x^2 + 3x \cdot \frac{3\ln(10)}{x^3} \, \mathrm{d}x$$
Text following the equation (no paragraph break!)

Small vertical spacing

This is text:
$$\int_0^{10} 4x^2 + 3x \cdot \frac{3\ln(10)}{x^3} \, \mathrm{d}x$$
This is very long introductory text that exceeds the limit (same applies to long equations)
$$\int_0^{10} 4x^2 + 3x \cdot \frac{3\ln(10)}{x^3} \, \mathrm{d}x$$
Text following the equation (no paragraph break!)

Medium vertical spacing

This is text:
$$\int_0^{10} 4x^2 + 3x \cdot \frac{3\ln(10)}{x^3} \, \mathrm{d}x$$
This is very long introductory text that exceeds the limit (same applies to long equations)
$$\int_0^{10} 4x^2 + 3x \cdot \frac{3\ln(10)}{x^3} \, \mathrm{d}x$$
Text following the equation (no paragraph break!)

Large vertical spacing

This is text:
$$\int_0^{10} 4x^2 + 3x \cdot \frac{3\ln(10)}{x^3} \, \mathrm{d}x$$
This is very long introductory text that exceeds the limit (same applies to long equations)
$$\int_0^{10} 4x^2 + 3x \cdot \frac{3\ln(10)}{x^3} \, \mathrm{d}x$$
Text following the equation (no paragraph break!)

6.6.2 Tcolorboxes

6.6.2.1 General boxes

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

Title here — **Terms**

<MINTED>

Title here — **Notation**

<MINTED>

Title here — **Recall**

<MINTED>

Title here — **Usage**

<MINTED>

Title here — **Properties**

<MINTED>

Title here — **Restrictions**

<MINTED>

Title here — **Limitations**

<MINTED>

Title here — **Intuition**

<MINTED>

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

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

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

Title here **Definition6.6.1**

<MINTED>

Title here **Theorem6.6.2**

<MINTED>

Title here **Lemma6.6.3**

<MINTED>

Title here **Corollary6.6.4**

<MINTED>

Title here **Proposition6.6.5**

<MINTED>

Title here **Fact6.6.6**

<MINTED>

Title here **Axiom6.6.7**

<MINTED>

Title here **Example6.6.8**

<MINTED>

Title here **Remark6.6.9**

<MINTED>

Title here **Formula6.6.10**

<MINTED>

6.6.2.3 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.
<MINTED>

6.6.3 Inline & Shortened descriptors

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

The signature is `\inlinedefinition`[*description*], where the description is optional (and if you omit it, don't write the square brackets!)

Alternatively, you can use `\inline[desc]{definition}`.

6.6.3.1 Inline

Command	Output
`\inlineexample`	**Example 6.6.11**
`\inlinedefinition`	**Definition 6.6.12**
`\inlinetheorem`	**Theorem 6.6.13**
`\inlinelemma`	**Lemma 6.6.14**
`\inlinecorollary`	**Corollary 6.6.15**
`\inlineproposition`	**Proposition 6.6.16**
`\inlinefact`	**Fact 6.6.17**
`\inlineaxiom`	**Axiom 6.6.18**
`\inlineremark`	**Remark 6.6.19**
`\inlineproof`	**Proof**

6.6.3.2 Shortened

Command	Output
`\shortexample`	**E 6.6.20**
`\shortdefinition`	**D 6.6.21**
`\shorttheorem`	**T 6.6.22**
`\shortlemma`	**L 6.6.23**
`\shortcorollary`	**C 6.6.24**
`\shortproposition`	**P 6.6.25**
`\shortfact`	**F 6.6.26**
`\shortaxiom`	**A 6.6.27**
`\shortremark`	**R 6.6.28**
`\shortproof`	**Proof**

6.6.4 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.

6.6.5 Referencing counters

If you wish to reference a counter, you can do so by using the `\labeledInline` and `\labeledShort`, which have the following signature

<MINTED>

where you can replace `<your label>` with a label like `def:your-def-name`

6.7 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

<MINTED>

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

<MINTED>

This outputs as

Left	Right
Left content	Right Content

Table 6.1: This is a caption

6.8 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, whereas using `\addIndexBI`{*string*}, it is printed in bold and italics

6.9 BibTeX

Use `\setupBiber`{*/path/to/your/bib/sources.bib file*} in the preamble to prepare, then use `\printbib` to print your bibliography.

To add more sources, simply use bibter's built-in macro `\addbibresource`{*filepath*}, which will load your `.bib` file. You need to use that inside the preamble as well.

6.10 Glossary

Use `\setupGlossary` in the preamble to prepare, then use the normal glossary commands to add entries to the glossary. When you want to print it, use `\printGlossary`.

7 Troubleshooting

7.1 Visual Errors

7.1.1 Missing headers & footers

You have most likely forgotten about `\startDocument` after `\begin{document}`, or you are using `\setupBarebones` or `\setupexams`.

You can easily distinguish from simply looking at the PDF. If the title is missing too, it's the first one, if it is there, it is most likely the second.

7.1.2 Right box of guides tcolorbox is a weird title

You have most likely forgotten about the second argument. Then, the first letter is removed from the body and used as the title.

7.2 Minted

`minted` is a syntax highlighting library. It can cause issues when running, as it needs extra configuration for the compiler.

7.2.1 You must invoke LaTeX with the -shell-escape flag

You have set the *scope* to `full`, which loads the `minted` package for code highlighting. You will need to configure your latex compiler to use `-shell-escape` if you want to use it. If you do not plan to use it, simply switch to a smaller *scope*.

7.2.2 You must have pygmentize installed

Your host system is lacking the `pygmentize` package or you have not added the `pip` path to your $PATH. This is also the reason as to why the `-shell-escape` flag has to be set, as minted needs to access external libraries (namely `pygmentize`) to do the syntax highlighting.

7.3 Any other error

Ensure that you are not missing any closing brackets or a math environment is still open. If nothing helps, contact support at `https://support.janishutz.com`