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MINIMAL

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THESIS

– Quick-Start-Guide –

for the "minimalthesis" LaTeX Documentclass, Version 0.0.2-alpha-2

Contents

1 Preface

1.1 What is minimalthesis?

A LaTeX documentclass for `pdflatex`, which produces a minimalistic layout with minimal effort by the end user, but still allows for customization.

1.2 What is minimalthesis not (yet)?

- feature complete,
- LuaLaTeX, XeTeX, etc. compatible,
- `otf`, `ttf` font capable

2 General Information

2.1 Default Settings & User Choice

2.1.1 Base Class & Basic Layout

Per default, `minimalthesis` uses the `scrreprt` koma document class with a two sided layout (binding correction: 1 cm) as a basis. The page headers and footers are centered; the footer contains the current page number. The header either contains the current section name (if a section exists; see e.g. page 6) or the current chapter name).
Captions include in small, bold font the type of float, its number and are separated by a colon from the description in normal, small font (see e.g. table 4.3).

2.1.2 Language & Locale

The default document language is set to `english` and currently cannot be changed by the user. The settings for typesetting units (see section 4.3) are directly derived from the default language.

2.1.3 Font, Visuals & Color

The typesetting design is more classic-minimalist: The user has the choice between the standard serif `lmodern` LaTeX font or a sans serif variant as well as three visual styles (`plain`, `fancy-grayscale`, `fancy-colorful`), which differ in highlighting/usage of color.

2.1.4 Hyperlinks & pdf Metadata

Per default, hidden hyperlinks are activated. The pdf Metadata is created from the user information: It can be configured via the key value pairs offered by `pdfmetadata`. If there is no additional configuartion provided by the user, default values and logic will be used.

2.2 General Functionality Overview

2.2.1 Quotation Marks

To facilitate the usage of quotation marks, `minimalthesis` loads the `csquotes` package, which allows to automatically selects the appropriate quotation marks based on language preset and sentence parameters by using `\enquote{text}`.
For example,

```
\enquote{A quotation mark test.}            →   "A quotation mark test."
\enquote{A \enquote{quotation mark} test.}  →   "A 'quotation mark' test."
```

3 Bibliography: Prerequisites, Usage & Functionality

The bibliography is created by using `biber`. On a Linux based OS with `TeXlive` as a LATEX back-end, it can be installed via the

```
texlive-bibtex-extra    (Debian based distro)
texlive-bibtexextra     (Arch based disto)
```

packages.

To create the required bibliography files, one has to run in the terminal:

```
biber TEXFILENAME
```

To update the output pdf accordingly, the following sequence of commands is recommended:

```
pdflatex TEXFILENAME.tex &&
biber TEXFILENAME &&
pdflatex TEXFILENAME.tex &&
pdflatex TEXFILENAME.tex
```

For `TeXstudio` users, it is possible to select under

```
Options → Configure TeXstudio → Build→ Default Bibliography Tool
```

`biber` as the default bibliography tool. After that, as soon as a change will occur in any of the bibliography files/data, `TeXstudio` will automatically rebuild the bibliography during the next compilation (so no additional user interaction required). If `TeXstudio` will not do that, a bibliography rebuild can be forced manually by pressing `F8`.

`minimalthesis` uses per default the "Angewandte Chemie" (`chem-angew`) bibliography standard. Currently, this cannot be changed by the user, except by modifying the preamble file.

In addition, `minimalthesis` provides the `@arxiv` [**arxivExample**] and `@thesis` [**thesisExample**] bibliography drivers, so that Arxiv preprints and theses can be cited properly without any manual adjustments by the user.

4 Natural Science

4.1 Mathematical Formulae

To facilitate the typesetting of mathematical equations, especially with respect to physical use cases, `minimalthesis` not only loads the `amsmath`, `bm` and `amssymb` packages, but also the `derivative` and `physics` package to especially help with typesetting differentials and derivatives.

Typesetting derivatives via the `derivative` package is very flexible: An example for typesetting

Table 4.1: Examples on how to typeset derivatives with the `derivative` package

```
\pdv{f}{x}, \quad \odv{Q}{t}=\odv{s}{t}, \quad \pdv{f}{x,y}, \quad
\derivset{\odv}[switch-*=false] \odv{y}{x}, \quad \odv[order=n]{y}{x},
\quad\derivset{\odv}[] \odv*{\odv{y}{x}}{x}, \quad
\derivset{\pdv}[sort-method={sign,symbol,abs}]
\pdv[order={c+kn,-b+2a}]{f}{x,y}
```

$$c\frac{\partial f}{\partial x}, \quad \frac{\mathrm{d}Q}{\mathrm{d}t} = \frac{\mathrm{d}s}{\mathrm{d}t}, \quad \frac{\partial^2 f}{\partial x \, \partial y}, \quad \frac{\mathrm{d}y}{\mathrm{d}x}, \quad \frac{\mathrm{d}^n y}{\mathrm{d}x^n}, \quad \frac{\mathrm{d}}{\mathrm{d}x}\frac{\mathrm{d}y}{\mathrm{d}x}, \quad \frac{\partial^{kn+2a+c-b} f}{\partial x^{c+kn} \, \partial y^{-b+2a}}$$

differentials with the `physics` and `derivative` packages:

Table 4.2: Examples on how to typeset differentials with the `physics` and `derivative` package

```
T = \int_{0}^{\infty}t\dd{t},
\quad V = \int_{a}^{b} r \dd[3]{r} = \int_{a}^{b} r \odif{x,y,z}
```

$$T = \int_0^\infty t \, \mathrm{d}t, \quad V = \int_a^b r \, \mathrm{d}^3 r = \int_a^b r \, \mathrm{d}x \, \mathrm{d}y \, \mathrm{d}z$$

4.2 Chemical Formulae

For typesetting chemical formulae, `minimalthesis` loads the `mhchem` package.

Table 4.3: Examples how to use `mhchem`. Excerpt from the manual.

`\ce{H2O}, \ce{CO2}, \ce{NH3}`	$\rightarrow$	H_2O, CO_2, NH_3
`\ce{H+}, \ce{CrO4^2-}, \ce{[AgCl2]-}`	$\rightarrow$	H^+, $CrO_4{}^{2-}$, $[AgCl_2]^-$
`\ce{Y^99+}, \ce{^{227}_{90}Th+}`	$\rightarrow$	Y^{99+}, $^{227}_{90}Th^+$
`\ce{Fe^{II}Fe^{III}2O4}`	$\rightarrow$	$Fe^{II}Fe^{III}_2O_4$
`\ce{(NH4)2S}, \ce{[\{(X2)3\}2]^3+}`	$\rightarrow$	$(NH_4)_2S$, $[\{(X_2)_3\}_2]^{3+}$
`\ce{CO2 + C -> 2 CO}`	$\rightarrow$	$CO_2 + C \longrightarrow 2\,CO$

For more information, please refer to the official `mhchem` manual.

4.3 Units

To aid with typesetting units, `minimalthesis` loads the `siunitx` package. This package ensures that independent of the user input, all the number and unit conventions derived from the locale settings are satisfied. It also handles the different behavior in math and text environments.

Table 4.4: Examples how to use `siunitx`.

`\num{23,3}, \num{23.3}`	$\rightarrow$	23.3, 23.3
`\SI{23,3}{\volt}, \SI{23.3}{\volt}`	$\rightarrow$	23.3 V, 23.3 V
`\si{\kilo\metre},`	$\rightarrow$	km,
`\si{\kilogram\meter\per\second\squared}`	$\rightarrow$	$kg\,m\,s^{-2}$
`\si[per-mode=fraction]{... ARG AS ABOVE ...}`	$\rightarrow$	$\frac{kg\,m}{s^2}$
`$s = \SI{9.81}{\meter\per\second\squared}\cdot` `\int_{0}^{t} t \dd{t}$`	$\rightarrow$	$s = 9.81\,m\,s^{-2} \cdot \int_0^t t\,dt$

5 Changelog

5.1 v0.0.2-alpha-2

Release Date: 2023-11-22
Functionality wise identical to v0.0.2-alpha-1, but increased supported TeXlive installations; works now with TeXlive 2020 and newer.

5.2 v0.0.2-alpha-1

Release Date: 2023-11-14
Warning: Not backwards compatible to v0.0.1-alpha!

- Ported user settings from `komavar` to `pgfkeys` (breaking change)
- Renamed `\mtTitlepage` and `\mtTOC` to `\mtGenerateTitlepage` and `\mtGenerateTOC` (breaking change)
- Changed Sans Serif font from `tgtermes` to `newtxtext`

5.3 v0.0.1-alpha

Release Date: 2023-09-27,
Initial implementation with `komavar`