The vutinfth class*

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Abstract

This class provides a LaTeX 2ε template for theses at the Faculty of Informatics at the TU Wien. In the current version, bachelor and master theses as well as dissertations are supported in both English and German.

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1 Introduction

This class provides a LATEX 2_{ε} template for all theses at the Faculty of Informations at the TU Wien. Further information on the document class and accompanying support can be found at https://gitlab.com/ThomasAUZINGER/vutinfth. Further guidelines may apply to both the format and structure of certain theses. These can be found at https://informatics.tuwien.ac.at/study-services. Thesis authors are advised to consult Section 3 for a documentation of all relevant commands. Information for class developers is provided in Section 4.

2 Known Issues

This class is incompatible with the minitoc package as of version 60, due to the incompatibility of the underlying memoir class. Use the titletoc package as a replacement.

3 Usage for Document Authors

This section contains relevant information for authors of theses that are based on the vutinfth document class.

3.1 Data

To allow the generation of the title pages, signature fields, statements, etc., several pieces of information have to be set by the author using the commands in the subsequent sections. We discern several categories of data: (i) textual data, which is given by a simple text string, (ii) persons, which are defined by their names, optional titles, and their gender, as well as, (iii) dates and (iv) list data, which allow the selection of one argument from a list of permissible arguments. Several commands have polylingual capabilities and support different languages (see Section 3.1.5). A superscript P, i.e., \command^P, indicates such a command.

3.1.1 Textual Data

\setregnumber
\settitle
\setsubtitle
\setcurriculum
\setfirstreviewerdata
\setsecondreviewerdata

All commands in this section are called with one mandatory argument, e.g., as $\command{\langle text \rangle}$, where $\langle text \rangle$ defines the content of the commands. For polylingual commands, given by \command^P , one $\langle text \rangle$ argument has to supplied for each language (see Section 3.1.5). The following textual data can be set:

Command	Role	Type	Optional	
\setregnumber	Registration number of the author	All	No	
$ackslash$ settitle $^{ m P}$	Title of the thesis	All	No	
$ackslash$ setsubtitle $^{ m P}$	Subtitle of the thesis	All	Yes	
$\$ setcurriculum $^{\mathrm{P}}$	Name of the curriculum	B, M	No	
Types: Bachelor (B), Master (M), Doctoral (D), PhD School (P), All (All)				

Types: Bachelor	(B), Master	(M), Doctoral	(D), PhD	School (P), All	(All)
-----------------	-------------	---------------	----------	-----------------	-------

Command	Role	Type	Optional
\setfirstreviewerdata	Affiliation and country of first reviewer	Р	No
\setsecondreviewerdata	Affiliation and country of second reviewer	Р	No

Types: Bachelor (B), Master (M), Doctoral (D), PhD School (P), All (All)

3.1.2 Persons

\setauthor \setadvisor \setsecondadvisor \setfirstassistant \setsecondassistant \setthirdassistant \setfirstreviewer \setsecondreviewer

All commands in this section are called with four mandatory arguments, e.g., as $\command{\langle pretitle \rangle} {\langle name \rangle} {\langle posttitle \rangle} {\langle gender \rangle}, where \langle name \rangle defines both$ the first name(s) and family name(s) of the person. A title that is placed before the name is assigned with $\langle pretitle \rangle$, while a trailing title is given with $\langle posttitle \rangle$. Both \(\langle pretitle \rangle \) and \(\langle posttitle \rangle \) can be left empty, to indicate an absence of such a title; the insertion of appropriate glue between titles and names is handled by the vutinfth class. The declaration of the persons gender via $\langle gender \rangle$ allows the use of gender-specific terms in languages that support them, e.g., German. The possible options for $\langle gender \rangle$ are male and female (see Section 3.1.4). The following persons can be set:

Command	Role	Type	Optional
\setauthor	Author of the thesis	All	No
\setadvisor	Main advisor of the thesis	All	No
\setsecondadvisor	Second advisor of the thesis	D, P	Yes
\setfirstassistant	First advising assistant	B, M	Yes
\setsecondassistant	Second advising assistant	B, M	Yes
\setthirdassistant	Third advising assistant	B, M	Yes
\setfirstreviewer	First thesis reviewer	D, P	No
\setsecondreviewer	Second thesis reviewer	D, P	No

Types: Bachelor (B), Master (M), Doctoral (D), PhD School (P), All (All)

3.1.3 Dates

\setdate

All commands in this section are called with three madatory arguments, e.g., as $\command{\langle day \rangle} {\langle month \rangle} {\langle year \rangle}$. The syntax is identical to the last three arguments of the \newdate command of the datetime package, from which these commands derive. The following dates can be set:

Command	Role	Type	Optional	
\setdate	Signing date	All	No	
Types: Bachelor (B), Master (M), Doctoral (D), PhD School (P), All (All)				

3.1.4 List Data

All commands in this section are called with at least one madatory argument called $\langle list \rangle$, e.g., as \command... $\{\langle list \rangle\}$..., where $\langle list \rangle$ is given one element from a set of possible arguments.

\setauthor \setadvisor

When setting a person, the person's gender is specified with a list argument (see Section 3.1.2):

Command	Options	Description
$\verb \command{ \langle.\rangle}{ \langle.\rangle}{ \langle.\rangle}{ \langle.\rangle}{ \langle.ist\rangle} $	male female	Specifies a male person. Specifies a female person.

No pronouns are generated based on the gender choice and it should be chosen in a way to reflect the preferred use of nouns (e.g., Autor or Autorin in German).

\setthesis

The thesis type is selected from one of the fundamental types:

Command	Options	Description
\setthesis $\{\langle list \rangle\}$	bachelor master doctor phd-school	Specifies a bachelor's thesis. Specifies a master's thesis. Specifies a dissertation. Specifies a dissertation at the Vienna PhD school of Informatics.

\setmasterdegree

With a master's curriculum, different degrees can be achieved and the appropriate type has to be chosen based on the curriculum that the author is enrolled in:

Command	Options	Description
\setmasterdegree $\{\langle list \rangle\}$	dipl.	Specifies the degree 'Diplom-Ingenieur(in)'.
	master	Specifies the degree 'Master of Science'.
	rer.nat.	Specifies the degree 'Magist(er/ra) der Naturwissenschaften'.
	rer.soc.oec.	Specifies the degree 'Magist(er/ra) der Sozial- und Wirtschaftswissenschaften'.

\setdoctordegree With a doctorate study, different degrees can be achieved and the appropriate

type has to be chosen based on the program that the author is enrolled in:

Command	Options	Description
\setdoctordegree $\{\langle list \rangle\}$	techn.	Specifies the degree 'Doktor(in) der Technischen' Wissenschaften'.
	rer.nat.	Specifies the degree 'Doktor(in) der Naturwissenschaften'.
	rer.soc.oec.	Specifies the degree 'Doktor(in) der Sozial- und Wirtschaftswissenschaften'.

3.1.5 Polylingual Data

\setcurriculum

Used as $\setcurriculum{\langle english\rangle}{\langle german\rangle}$, it sets the name of the curriculum that the student is enrolled in. The name can be given in English, with $\langle english\rangle$, and in German, with $\langle german\rangle$. Note that the curriculum name does not need to be supplied for all thesis types, since, e.g., doctoral studies do not have a curriculum per se. If a title page of one of the languages is not used, the corresponding argument can be left empty.

\settitle

Used as $\settitle{\langle english\rangle}{\langle german\rangle}$, it sets the title of the thesis. The title can be given both in an English version, with $\langle english\rangle$, and in a German version, with $\langle german\rangle$. For title pages in a given language, the corresponding title will be used. Unused languages can be supplied as empty brackets and it is possible to use the English or German title for both language versions.

\setsubtitle

Used as $\setsubtitle{\langle english\rangle}{\langle german\rangle}$, it sets the subtitle of the thesis. The same specifications as for \settitle apply.

\addtitlepage

The titlepage can be generated in the following languages (see Section 3.2):

Command	Options	Description
$\verb \addtitlepage{ \langle list \rangle }$	english naustrian	Generates an English title page. Generates a German title page.

Note that a non-English title page is not available for a dissertation at the Vienna PhD School of Informatics.

3.2 Layout

Most of the data that is supplied with the commands of the previous sections is used to generate the front matter of the thesis. It consists of obligatory items such as the title page(s) and the statement of originality as well as optional items such as the acknowledgements or the abstract in different languages. In the remainder of this section, the available items of the front matter are given.

\addtitlepage

Used as $\addtitlepage{\langle lang \rangle}$, where $\langle lang \rangle$ is the name of a language as given in the babel package (see Section 3.1.4). The necessary pieces of information have to be set beforehand (as described in Section 3.1). This command is usually used directly after $\begin{described} begin{described} begin{des$

\addstatementpage

Used as \addstatementpage, it generates a page with the statement of originality.

acknowledgements acknowledgements*

Used as $\ensuremath{\mbox{\mbox{begin{acknowledgements}}}\xspace, this environment generates a chapter with the English acknowledgements. Use the starred version, i.e., acknowledgements*, to remove the table of content entry of this environment.$

danksagung*

Used as $\ensuremath{\verb|begin{danksagung}|\langle text\rangle|}\ensuremath{\verb|content||}\ensuremath{\verb|content||}\ensuremath{\verb|content||}\ensuremath{\verb|content||}\ensuremath{\verb|content||}\ensuremath{\verb|content||}\ensuremath{\verb|content||}\ensuremath{\verb|content||}\ensuremath{\verb|content||}\ensuremath{\verb|content||}\ensuremath{\verb|content||}\ensuremath{\verb|content||}\ensuremath{\verb|content||}\ensuremath{\verb|content||}\ensuremath{\verb|content||}\ensuremath{\verb|content||}\ensuremath{\ensuremath{|content||}\ensuremath{\ensuremath{|content||}\ensuremath{\ensuremath{|content||}\ensuremath{\ensuremath{|content||}\ensuremath{\ensuremath{|content||}\ensuremath{\ensuremath{|content||}\ensuremath{\ensuremath{|content||}\ensuremath{\ensuremath{|content||}\ensuremath{\ensuremath{|content||}\ensuremath{\ensuremath{|content||}\ensuremath{\ensuremath{|content||}\ensuremath{\ensuremath{|content||}\ensuremath{\ensuremath{|content||}\ensuremath{\ensuremath{|content||}\ensuremath{\ensuremath{|content||}\ensuremath{\ensuremath{|content||}\ensuremath{\ensuremath{|content||}\ensuremath{\ensuremath{|content||}\ensuremath{\ensuremath{|content||}\ensuremath{\ensuremath{|content||}\ensuremath{\ensuremath{|content||}\ensuremath{\ensuremath{|content||}\ensuremath{\ensuremath{|content||}\ensuremath{\ensuremath{|content||}\ensuremath{\ensuremath{|content||}\ensuremath{\ensuremath{|content||}\ensuremath{\ensuremath{|content||}\ensuremath{\ensuremath{|content||}\ensuremath{\ensuremath{|content||}\ensuremath{\ensuremath{|content||}\ensuremath{\ensuremath{|content||}\ensuremath{\ensuremath{|content||}\ensuremath{\ensuremath{|content||}\ensuremath{\ensuremath{|content||}\ensuremath{\ensuremath{|content||}\ensuremath{\ensuremath{|content||}\ensuremath{\ensuremath{|content||}\ensuremath{\ensuremath{|content||}\ensuremath{\ensuremath{|content||}\ensuremath{\ensuremath{|content||}\ensuremath{\ensuremath{|content||}\ensuremath{\ensuremath{|content||}\ensuremath{\ensuremath{|content||}\ensuremath{\ensuremath{|content||}\ensuremath{\ensuremath{|content||}\ensuremath{\ensuremath{|content||}\$

abstract*

Used as $\ensuremath{\operatorname{begin}{\operatorname{abstract}}}\langle \operatorname{text}\rangle = 1$, this environment generates a chapter with the English abstract. Use the starred version, i.e., $\operatorname{abstract*}$, to remove the table of content entry of this environment.

kurzfassung*

Used as $\ensuremath{\mbox{\mbox{$\setminus$}}}{\ensuremath{\mbox{$\setminus$}}}$ end{kurzfassung}, this environment generates a chapter with the German abstract. Use the starred version, i.e., kurzfassung*, to remove the table of content entry of this environment.

4 Usage for Class Writers

To accommodate shifting requirements, the vutinfth class provides various convenience functions that allow the modification and extension of its functionality.

4.1 Data

To compose several parts of the thesis layout, input from the thesis author is required. For the vutinfth class, this is realized by the commands provided in Section 3.1. Additional data can be defined with the the commands in the remainder of this section.

\CreateData

Used as $\c \arraycolong{\c VerateData}{\langle name \rangle}$, it generates a command $\s \c \arraycolong{\c Verated}$. Used as $\s \arraycolong{\c Verated}$, the newly created command assigns the value $\arraycolong{\c Verated}$ to the internal variable $\arraycolong{\c Verated}$. The variable is initialized with an error value to alert the user of the fact that $\arraycolong{\c Verated}$ was not supplied via the $\arraycolong{\c Verated}$ command. Furthermore, a command $\arraycolong{\c Verated}$ when verifying the existence of a specific data item. See Section 5.2.6 for examples.

\CreatePerson

Used as $\command \set(name)$, it generates a command $\set(name)$. Used

as $\set\langle name\rangle \{\langle pretitle\rangle\} \{\langle personname\rangle\} \{\langle posttitle\rangle\} \{\langle gender\rangle\}$, the newly created command assigns the supplied values to the corresponding internal variables $\tvutinfth@person@\langle name\rangle@...$ as given in the table below.

Argument	Internal Variable
$\langle pretitle \rangle$ $\langle personname \rangle$ $\langle posttitle \rangle$ $\langle gender \rangle$	$\label{eq:cond_name} $$ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \$

The command \vert when verifying the existence of a specific person. Furthermore, the command \vert with existing titles and correct whitespace in between. The person's name together with existing titles and correct whitespace in between. The person's gender is either \vert vutinfth@person@male or \vert vutinfth@person@female, depending on the input. See Section 5.2.6 for examples.

\AddLanguage

Used as $\AddLanguage{\langle lang \rangle}$, it enables the language $\langle lang \rangle$ to by used by polylingual expressions. $\langle lang \rangle$ has to be chosed from the languages of the babel package that is used by this class. Currently, vutinfth uses two languages, i.e., english for English expressions and naustrian for German expressions.

\CreatePolylingual

Used as $\colon colon c$

\CreatePolylingual[english=advisor,naustrian=Betreuer]{advisor} \CreatePolylingual[english=Advisor,naustrian=Betreuer]{Advisor} \CreatePolylingual[english=ADVISOR,naustrian=BETREUER]{ADVISOR}. See Section 5.2.6 for examples.

4.2 Layout

Several key elements in the layout of the frontmatter are encapsulated to allow a convenient extension of this functionality.

\SignatureFields

Used as $\signatureFields[\langle mode \rangle] \{\langle center \rangle\} \{\langle right \rangle\}$, it creates a place and date description and/or one or two signature fields. $\langle mode \rangle$ can be set to y, which adds an entry with date and place to the left, to h, which adds the corresponding whitespace, or to n, which adds nothing. If text is supplied to $\langle center \rangle$, it is added below a rule, right to the possible date and place entry. If text is supplied to $\langle right \rangle$, it is added below a rule, right to the possible signature field created by

 $\langle center \rangle$. This command ensures a uniform width and positioning of the signature fields on both the title pages and the statement of originality.

\SignatureBlock Used as \SignatureBlock, it generates the signature fields for both author and advisor.

\ReviewerBlock Used as \ReviewerBlock, it generates the signature fields for both reviewers.

\AdvisorBlock Used as \AdvisorBlock, it generates the name fields for both the advisor and the potential assistants.

\AddTitlePage Used as \AddTitlePage, it generates a title page in the current language. This command contains the placement of the header graphics, the footer, the appropriate blocks, etc.

\AddStatementPage Used as \AddStatementPage, it generates a chapter with the statement of originality together with the author's signature field.

Alters the sans serif font inside the environment. Called with one mandatory argument as $\ensuremath{\mbox{begin{SFFont}{\langle family \rangle}}}$, which determines the sans serif font family that should be used, e.g., phy for Helvetica.

5 Implementation

5.1 Initialization

5.1.1 Class Options

Pass the options to the underlying memoir class.

- 1 \DeclareOption*{%
- 2 \PassOptionsToClass{\CurrentOption}{memoir}%
- 3 **}**%

SFFont.

4 \ProcessOptions\relax

5.1.2 Loaded Class and Packages

The vutinfth class is based on the memoir class.

- 5 \LoadClass[a4paper,11pt]{memoir}%
- 6 \chapterstyle{veelo}%

The following packages are required for the functionality and style of the document class.

- 7 \RequirePackage[scaled]{helvet}%
- 8 \RequirePackage{lmodern}%
- 9 \RequirePackage{courier}%
- 10 \RequirePackage[T1]{fontenc}%
- 11 \RequirePackage[english,naustrian]{babel}%

```
12 \RequirePackage[nodayofweek]{datetime}%
13 \RequirePackage{geometry}%
14 \RequirePackage{calc}%
15 \RequirePackage{etoolbox}%
16 \RequirePackage{graphicx}%
17 \graphicspath{{graphics}}}%
```

5.1.3 Low-Level Functionality

This section provides low-level functionality for macro definitions and macro expansions.

\@namexdef Globally defines a control sequence with an expanded argument.

18 \newcommand{\@namexdef}[1]{\expandafter\xdef\csname#1\endcsname}%

\ifestrequal A variant of \ifstrequal that fully expands the first two arguments.

```
19 \newcommand{\ifestrequal}[4]{%
20 \begingroup
21 \edef\vutinfth@tempa{{#1}}%
22 \edef\vutinfth@tempb{{#2}}%
23 \expandafter\expandafter\ifstrequal
24 \expandafter\vutinfth@tempa\vutinfth@tempb{#3}{#4}%
25 \endgroup
26 }%
```

5.1.4 Fonts

\vutinfth@HUGE \vutinfth@huge \vutinfth@LARGE \vutinfth@Large \vutinfth@large \vutinfth@normalsize Initializes the font sizes.

```
27 \newcommand{\vutinfth@HUGE}{\fontsize{30}{34}\selectfont}%
28 \newcommand{\vutinfth@huge}{\fontsize{20}{23}\selectfont}%
29 \newcommand{\vutinfth@LARGE}{\fontsize{17}{22}\selectfont}%
30 \newcommand{\vutinfth@Large}{\fontsize{14}{18}\selectfont}%
31 \newcommand{\vutinfth@large}{\fontsize{12}{14.5}\selectfont}%
32 \newcommand{\vutinfth@normalsize}{\fontsize{11}{13.6}\selectfont}%
```

SFFont Selects the given font family as sans serif font.

33 \newenvironment{SFFont}[1]{%

Stores the current sans serif font in \vutinfth@f@family@tmp and changes to the given sans serif font.

```
34 \begingroup
35 \sffamily
36 \global\let\vutinfth@f@family@tmp=\f@family
37 \endgroup
38 \renewcommand{\sfdefault}{#1}%
```

In case the outer scope is already sans serif, the new font has to be activated.

```
39 \ifdefstrequal{\f0family}{\vutinfth0f0family0tmp}{\sffamily}{}%
40 }{%
```

The scope of the font change is the environment itself. Thus, no cleanup code is required in case the outer scope was already sans serif.

```
41 \renewcommand{\sfdefault}{\vutinfth@f@family@tmp}%
42 }%
```

5.2Data

5.2.1 Dates

\setdate Creates the internal storage for the signing date.

```
43 \newcommand{\setdate}[3]{%
44 \newdate{vutinfth@date@signing}{#1}{#2}{#3}%
45 }%
```

5.2.2 Textual Data

\vutinfth@def@data Creates the internal storage for simple data entries.

```
46 \newcommand{\vutinfth@def@data}[2]{%
47 \@namedef{vutinfth@data@#1@def}{}%
   \@namedef{vutinfth@data@#1}{#2}%
49 }%
```

\vutinfth@def@data@invalid Initializes the internal storage with error messages.

```
50 \newcommand{\vutinfth@def@data@invalid}[2]{%
51 \@namedef{vutinfth@data@#1@error}{%
52
      \ClassError{vutinfth}{No #2 issued}{Set #1 with #2.}%
   \Onamedef{vutinfthOdataO#1}{\Onameuse{vutinfthOdataO#1Oerror}}%
54
55 }%
```

\CreateData Issues the construction of a setter function for a data entry given by \setdata.

```
56 \newcommand{\CreateData}[1]{%
57 \@namedef{set#1}##1{%
      \vutinfth@def@data{#1}{##1}%
60 \vutinfth@def@data@invalid{#1}{\string\set#1}%
61 }%
```

5.2.3 Persons

\vutinfth@person@male \vutinfth@person@female Two genders are differentiated for each person: male and female.

- 62 \newcommand{\vutinfth@person@male}{male}%
- 63 \newcommand{\vutinfth@person@female}{female}%

\ifmale \iffemale

Convenience macros to determine the gender of a person.

```
64 \end{ ifmale} [2] {% } $65 \end{ ifmale} [2] {% } $65 \end{ ifmale} {*2}{}% $66 }%
```

- $67 \newcommand{\iffemale}[2]{\%}$

\vutinfth@def@person

Creates the internal storage for a person's name, titles and gender.

```
70 \newcommand{\vutinfth@def@person}[5]{%
    \@namedef{vutinfth@person@#1@def}{}%
72
    \@namedef{vutinfth@person@#1@pretitle}{#2}%
    \@namedef{vutinfth@person@#1@name}{#3}%
    \@namedef{vutinfth@person@#1@posttitle}{#4}%
74
    \ifdefstring{\vutinfth@person@male}{#5}{%
75
      \Onamedef{vutinfthOpersonO#1Ogender}{\vutinfthOpersonOmale}%
76
77
    }{}%
    \ifdefstring{\vutinfth@person@female}{#5}{%
78
      \@namedef{vutinfth@person@#1@gender}{\vutinfth@person@female}%
79
```

For the full name, additional spaces have to be inserted depending on the presence of pre- or posttitles.

```
\ifstrempty{#3}{%
82
                                          \ifstrempty{#2}{%
83
                                                        \verb|\cong| with the person @#1@fullname| {#4}| % in the person of the pe
84
                                                        \ifstrempty{#4}{%
85
86
                                                                      \@namedef{vutinfth@person@#1@fullname}{#2}%
87
88
                                                                      \Onamedef{vutinfthOpersonO#1Ofullname}{#2 #4}%
89
                                                      }%
90
                                         }%
                           }{%
91
                                          \ifstrempty{#2}{%
92
93
                                                        \ifstrempty{#4}{%
94
                                                                      \@namedef{vutinfth@person@#1@fullname}{#3}%
95
                                                                      \Onamedef{vutinfthOpersonO#1Ofullname}{#3, #4}%
96
                                                       }%
97
```

```
}{%
98
          \ifstrempty{#4}{%
99
            \@namedef{vutinfth@person@#1@fullname}{#2 #3}%
100
101
            \Onamedef{vutinfthOpersonO#1Ofullname}{#2 #3, #4}%
102
         }%
103
104
       }%
105
     }%
106 }%
```

\vutinfth@def@person@invalid Initializes the internal storage with error messages.

```
107 \newcommand{\vutinfth@def@person@invalid}[2]{%
     \@namedef{vutinfth@person@#1@error}{%
       \ClassError{vutinfth}{No #2 issued}{Set #1 with #2.}%
109
110
    }%
     \@namedef{vutinfth@person@#1@name}{%
111
       \@nameuse{vutinfth@person@#1@error}}%
112
     \@namedef{vutinfth@person@#1@pretitle}{%
113
       \@nameuse{vutinfth@person@#1@error}}%
114
     \@namedef{vutinfth@person@#1@posttitle}{%
115
       \@nameuse{vutinfth@person@#1@error}}%
116
     \@namedef{vutinfth@person@#1@gender}{%
117
       \@nameuse{vutinfth@person@#1@error}}%
118
     \@namedef{vutinfth@person@#1@fullname}{%
119
       \@nameuse{vutinfth@person@#1@error}}%
120
121 }%
```

\CreatePerson Issues the construction of a setter function for a person given by \setperson.

```
122 \newcommand{\CreatePerson}[1]{%

123 \@namedef{set#1}##1##2##3##4{%

124 \vutinfth@def@person{#1}{##1}{##2}{##3}{##4}%

125 }%

126 \vutinfth@def@person@invalid{#1}{\string\set#1}%

127 }%
```

5.2.4 Polylingual Text

This class supports bi- and polylingual text via a key-value mechanism. See the \CreatePolylingual command further down for the actual definition of polylingual expressions.

\AddLanguage

Constructs the temporary variables and the permanent storage for polylingual text in the given language.

```
128 \newcommand{\AddLanguage}[1]{%
```

First, the key for the current language, given by its name in the babel package, is created. Keys of the keyval package are internally stored as KV@family@keyname,

where we use **vutinfth** as family name and the argument as key name. The value that is given to this key as part of a function argument is assigned to a temporary storage.

```
129 \@namedef{KV@vutinfth@#1}##1{%
130 \@namedef{vutinfth@current@#1}{##1}%
131 }%
```

The key value is initialized as empty.

```
132 \@nameuse{KV@vutinfth@#1}{}%
```

The transfer from temporary to permanent storage is achieved by adding code to the already existing transfer routine. This causes each new language to issue the transfer for the previously defined language.

```
133 \ifundef{\vutinfth@allocate@polylingual}{%
```

Define the transfer function, if it has not been defined so far.

```
134 \newcommand{\vutinfth@allocate@polylingual}[1]{\@empty}% 135 \}{}%
```

Store the current transfer function via \let to allow recursion.

```
136 \@namelet{vutinfth@allocate@polylingual@#1}%137 \vutinfth@allocate@polylingual
```

Define the transfer function to permanent storage.

```
138 \renewcommand{\vutinfth@allocate@polylingual}[1]{%
```

Call the transfer routine of the previously defined language.

```
139 \@nameuse{vutinfth@allocate@polylingual@#1}{##1}%
```

To define the permanent storage, \@namexdef is used the definition's scope has to be global.

```
140 \@namexdef{vutinfth@##1@#1}{%
141 \ifcsempty{vutinfth@current@#1}{%
```

In draft mode we mark unassigned languages, i.e., polylingual expression that were not defined for a language that is in use when the polylingual expression is called.

```
142     \ifdraftdoc{%
143          [Draft: No '#1' text for polylingual '##1'.]%
144          }\else{%
145          \relax
146      }\fi
147     }{%
```

The use of \@namexdef expands the content of the temporary storage before assigning it to the permanent one.

```
148 \@nameuse{vutinfth@current@#1}%
149 }%
150 }%
151 }%
```

At time of usage, the language, which is given as an argument, is checked against the currently active language.

```
152 \ifundef{\vutinfth@selectlanguage@polylingual}{%
```

Define the language selection function, if it has not been defined so far.

```
153 \newcommand{\vutinfth@selectlanguage@polylingual}[1]{\@empty}% 154 }{}%
```

Store the current selection function via \let to allow recursion.

```
155 \@namelet{vutinfth@selectlanguage@polylingual@#1}%
156 \vutinfth@selectlanguage@polylingual
```

Define the selection function.

```
157 \renewcommand{\vutinfth@selectlanguage@polylingual}[1]{%
```

Call the selection routine of the previously defined language.

```
\verb|\colored| 158 & \verb|\colored| nameuse{vutinfth@selectlanguage@polylingual@#1}{##1}% \\
```

The currently active language is given by \languagename. If it matches the language, which was supplied as the argument, the content of the current permanent storage is returned.

\CreatePolylingual

Creates the actual polylingual expressions.

The key-value pairs of the optional argument define the text that is returned for the respective languages. We use vutinfth as the family name for the keys.

```
164 \setkeys{vutinfth}{#1}%
```

Each key was already assigned a temporary storage, whose content has to be transfered to permanent storage.

```
\vutinfth@allocate@polylingual{#2}%
165
166
     \endgroup
```

The mandatory argument $\{\langle arg \rangle\}$ is used to define the macro that returns the appropriate text for the currently active language.

```
\@namedef{vutinfth@polylingual@#2}{%
167
168
       \vutinfth@selectlanguage@polylingual{#2}}%
169 }%
```

5.2.5Thesis Types

n@thesis@basetype@undergraduate tinfth@thesis@basetype@graduate Two thesis categories are differentiated: undergraduate and graduate.

```
170 \newcommand{\vutinfth@thesis@basetype@undergraduate}{\%
```

171 vutinfth@undergraduate}%

172 \newcommand{\vutinfth@thesis@basetype@graduate}{%

vutinfth@graduate}%

\ifundergraduate \ifgraduate

Convenience macros to determine the category of the selected thesis type.

```
174 \newcommand{\ifundergraduate}[1]{%
    \ifestrequal{\vutinfth@thesis@basetype}{%
       \vutinfth@thesis@basetype@undergraduate
176
177
    }{#1}{}%
178 }%
179 \newcommand{\ifgraduate}[1]{%
    \ifestrequal{\vutinfth@thesis@basetype}{%
180
       \vutinfth@thesis@basetype@graduate
181
    }{#1}{}%
182
```

cinfth@thesis@doctortype@doctor vutinfth@thesis@doctortype@phd

Two doctor thesis categories are differentiated: doctor and phd, where the latter is for dissertation in the context of the Vienna PhD School of Informatics.

```
184 \verb|\newcommand{\vutinfth@thesis@doctortype@doctor}{\%}
185 vutinfth@doctor}%
186 \newcommand{\vutinfth@thesis@doctortype@phd}{%
    vutinfth@phd}%
```

183 }%

\ifdoctor Convenience macros to determine the category of the selected doctor thesis type. \ifphd These need to be nested inside \ifgraduate conditions.

```
188 \newcommand{\ifdoctor}[1]{%
189
    \ifestrequal{\vutinfth@thesis@doctortype}{%
       \vutinfth@thesis@doctortype@doctor
190
191 }{#1}{}%
```

```
\ifestrequal{\vutinfth@thesis@doctortype}{%
                                     \vutinfth@thesis@doctortype@phd
                             195
                             196
                                  }{#1}{}%
                             197 }%
                             Initialize the thesis category, the type and the specific degree with error messages.
  \vutinfth@thesis@basetype
\vutinfth@thesis@doctortype
                             198 \newcommand{\vutinfth@thesis@basetype}{%
\vutinfth@thesis@thesisname
                                   \ClassError{vutinfth}{No \string\setthesis \space issued}{%
\vutinfth@thesis@degreename
                                     Set thesis type with \string\setthesis.}%
                             200
                             201 }%
                             202 \newcommand{\vutinfth@thesis@doctortype}{%
                                  \ClassError{vutinfth}{No \string\setthesis \space issued}{%
                                     Set thesis type with \string\setthesis.}%
                             204
                             205 }%
                             206 \newcommand{\vutinfth@polylingual@degreename}{%
                                   \ClassError{vutinfth}{No \string\setthesis \space issued}{%
                                     Set thesis type with \string\setthesis.}%
                             208
                             209 }%
                             210 \newcommand{\vutinfth@polylingual@thesisname}{%
                                  \ClassError{vutinfth}{No \string\setthesis \space issued}{%
                             212
                                     Set thesis type with \string\setthesis.}%
                             213 }%
  \vutinfth@thesis@bachelor Four main thesis types are differentiated: bachelor, master, doctor, and
    \vutinfth@thesis@master
                             phd-school.
    \vutinfth@thesis@doctor
                             214 \newcommand{\vutinfth@thesis@bachelor}{bachelor}%
       \vutinfth@thesis@phd
                             215 \newcommand{\vutinfth@thesis@master}{master}%
                             216 \newcommand{\vutinfth@thesis@doctor}{doctor}%
                             217 \newcommand{\vutinfth@thesis@phd}{phd-school}%
                             Internal convenience macros.
            \@setthesisname
            \@setdegreename
                             218 \newcommand{\@setthesisname}[1]{%
    \@setgendereddegreename
                             219 \renewcommand{\vutinfth@polylingual@thesisname}{#1}}%
                             220 \newcommand{\@setdegreename}[1]{%
                             221 \renewcommand{\vutinfth@polylingual@degreename}{#1}}%
                             222 \newcommand{\@setgendereddegreename}[2]{%
                                  \ifmale{author}{\@setdegreename{#1}}%
                                  \iffemale{author}{\@setdegreename{#2}}%
                             225 }%
                 \setthesis Sets the thesis type.
                             226 \newcommand{\setthesis}[1]{%
                                  \ifdefstring{\vutinfth@thesis@bachelor}{#1}{%
```

192 }%

193 \newcommand{\ifphd}[1]{%

```
Initializes bachelor thesis type.
```

```
228
       \renewcommand{\vutinfth@thesis@basetype}{%
229
         \vutinfth@thesis@basetype@undergraduate}%
230
       \@setthesisname{\vutinfth@polylingual@BACHELORTHESIS}%
       \@setdegreename{\vutinfth@polylingual@Bdeg}%
231
232
     }{}%
     \ifdefstring{\vutinfth@thesis@master}{#1}{%
233
Initializes master thesis type.
       \renewcommand{\vutinfth@thesis@basetype}{%
234
         \vutinfth@thesis@basetype@undergraduate}%
235
236
       \@setthesisname{%
237
         \ClassError{vutinfth}{No \string\setmasterdegree \space issued}{%
           Set masterdegree with \string\setmasterdegree.}%
238
239
       }%
240
       \@setdegreename{%
         \ClassError{vutinfth}{No \string\setmasterdegree \space issued}{%
241
           Set master degree with \string\setmasterdegree.}%
242
       }%
243
     }{}%
244
     \ifdefstring{\vutinfth@thesis@doctor}{#1}{%
245
Initializes doctor thesis type.
      \renewcommand{\vutinfth@thesis@basetype}{%
246
        \vutinfth@thesis@basetype@graduate}%
247
      \renewcommand{\vutinfth@thesis@doctortype}{%
248
        \vutinfth@thesis@doctortype@doctor}%
249
      \@setthesisname{\vutinfth@polylingual@DOCTORTHESIS}%
250
251
      \@setdegreename{%
        \ClassError{vutinfth}{No \string\setdoctordegree \space issued}{%
252
          Set doctor degree with \string\setdoctordegree.}%
253
      }%
254
     ጉ ና ጉ %
255
     \ifdefstring{\vutinfth@thesis@phd}{#1}{%
256
Initializes phd-school thesis type.
      \renewcommand{\vutinfth@thesis@basetype}{%
257
258
        \vutinfth@thesis@basetype@graduate}%
      \renewcommand{\vutinfth@thesis@doctortype}{%
259
        \vutinfth@thesis@doctortype@phd}%
260
      \@setthesisname{\vutinfth@polylingual@PHDTHESIS}%
261
262
      \@setdegreename{\vutinfth@polylingual@Pdeg}%
263
     }{}%
264 }%
```

```
\vutinfth@thesis@mdeg@dipl
                                 Four master degrees can be selected: dipl., master, rer.nat., and
                                 rer.soc.oec..
  \vutinfth@thesis@mdeg@master
  \vutinfth@thesis@mdeg@rernat
                                 265 \newcommand{\vutinfth@thesis@mdeg@dipl}{dipl.}%
vutinfth@thesis@mdeg@rersocoec
                                 266 \newcommand{\vutinfth@thesis@mdeg@master}{master}%
                                 267 \newcommand{\vutinfth@thesis@mdeg@rernat}{rer.nat.}%
                                 268 \newcommand{\vutinfth@thesis@mdeg@rersocoec}{rer.soc.oec.}%
                                 Sets the specific master degree.
               \setmasterdegree
                                 269 \newcommand{\setmasterdegree}[1]{%
                                       \ifdefstring{\vutinfth@thesis@mdeg@dipl}{#1}{%
                                 270
                                 271
                                         \@setthesisname{\vutinfth@polylingual@DIPLOMATHESIS}%
                                 272
                                         \@setgendereddegreename{%
                                           \vutinfth@polylingual@MdegDiplMale
                                 273
                                         }{%
                                 274
                                           \vutinfth@polylingual@MdegDiplFemale
                                 275
                                         }%
                                 276
                                 277
                                       }{}%
                                 278
                                       \ifdefstring{\vutinfth@thesis@mdeg@master}{#1}{%
                                         \@setthesisname{\vutinfth@polylingual@MASTERTHESIS}%
                                 279
                                         \@setdegreename{\vutinfth@polylingual@MdegMaster}%
                                 280
                                 281
                                       \ifdefstring{\vutinfth@thesis@mdeg@rernat}{#1}{%
                                 282
                                         \@setthesisname{\vutinfth@polylingual@MASTERTHESIS}%
                                 283
                                 284
                                         \@setgendereddegreename{%
                                           \vutinfth@polylingual@MdegRerNatMale
                                 285
                                 286
                                           \vutinfth@polylingual@MdegRerNatFemale
                                 287
                                         }%
                                 288
                                      }{}%
                                 289
                                 290
                                       \ifdefstring{\vutinfth@thesis@mdeg@rersocoec}{#1}{%
                                 291
                                         \@setthesisname{\vutinfth@polylingual@MASTERTHESIS}%
                                         \@setgendereddegreename{%
                                 292
                                 293
                                           \vutinfth@polylingual@MdegRerSocOecMale
                                 294
                                         }{%
                                 295
                                           \vutinfth@polylingual@MdegRerSocOecFemale
                                         }%
                                 296
                                 297
                                      }{}%
                                 298 }%
                                 Three doctor degrees can be selected: rer.nat., techn., and rer.soc.oec..
  \vutinfth@thesis@ddeg@rernat
   \vutinfth@thesis@ddeg@techn
                                 299 \newcommand{\vutinfth@thesis@ddeg@rernat}{rer.nat.}%
vutinfth@thesis@ddeg@rersocoec
                                 300 \newcommand{\vutinfth@thesis@ddeg@techn}{techn.}%
                                 301 \newcommand{\vutinfth@thesis@ddeg@rersocoec}{rer.soc.oec.}%
               \setdoctordegree
                                 Sets the specific doctor degree.
```

302 \newcommand{\setdoctordegree}[1]{%

```
\ifdefstring{\vutinfth@thesis@ddeg@rernat}{#1}{%
303
       \@setgendereddegreename{%
304
         \vutinfth@polylingual@DdegRerNatMale
305
       }{%
306
         \vutinfth@polylingual@DdegRerNatFemale
307
       }%
308
309
     }{}%
     \ifdefstring{\vutinfth@thesis@ddeg@techn}{#1}{%
310
       \@setgendereddegreename{%
311
         \verb|\vutinfth@polylingual@DdegTechnMale| \\
312
       }{%
313
         \vutinfth@polylingual@DdegTechnFemale
314
       }%
315
     }{}%
316
     \ifdefstring{\vutinfth@thesis@ddeg@rersocoec}{#1}{%
317
       \@setgendereddegreename{%
318
         \vutinfth@polylingual@DdegRerSocOecMale
319
320
321
         \vutinfth@polylingual@DdegRerSocOecFemale
322
       }%
    }{}%
323
324 }%
```

5.2.6 Declarations

Textual Data Creates the required textual data entries.

```
325 % ^^A\CreateData{address}%
326 \CreateData{regnumber}%
327 \CreateData{firstreviewerdata}%
328 \CreateData{secondreviewerdata}%
```

Persons Creates the required person entries.

```
329 \CreatePerson{author}%
330 \CreatePerson{advisor}%
331 \CreatePerson{secondadvisor}%
332 \CreatePerson{firstassistant}%
333 \CreatePerson{secondassistant}%
334 \CreatePerson{thirdassistant}%
335 \CreatePerson{firstreviewer}%
336 \CreatePerson{secondreviewer}%
```

Languages Adds the desired languages to the polylingual expressions. All added languages have to be given as arguments to the babel package.

```
337 \AddLanguage{english}% 338 \AddLanguage{naustrian}%
```

PolyLinguals Creates the polylingual expressions.

```
339 \CreatePolylingual[
340 english=Advisor,
    naustrian=Betreuung]{Advisor}%
342 \CreatePolylingual[
343 english=Second advisor,
    naustrian=Zweitbetreuung]{Secondadvisor}%
344
345 \CreatePolylingual[
    english=submitted in partial fulfillment of the requirements
347
       for the degree of,
348 naustrian=zur Erlangung des akademischen Grades]{submission}%
349 \CreatePolylingual[
350 english=in,
351 naustrian=im Rahmen des Studiums]{in}%
352 \CreatePolylingual[
353 english=within the]{within}%
354 \CreatePolylingual[
355 english=Vienna PhD School of Informatics]{School}%
356 \CreatePolylingual[
357 english=by,
358 naustrian=eingereicht von]{by}%
359 \CreatePolylingual[
360 english=Registration Number,
361 naustrian=Matrikelnummer]{Registrationnumber}%
362 \CreatePolylingual[
363 english=to the Faculty of Informatics,
364 naustrian=an der Fakult\"at f\"ur Informatik]{faculty}%
365 \CreatePolylingual[
    english=at the TU Wien,
    naustrian=der Technischen Universit\"at Wien]{university}%
368 \CreatePolylingual[
    english=Assistance,
369
    naustrian=Mitwirkung]{Assistance}%
370
371 \CreatePolylingual[
    english=The dissertation has been reviewed by:,
373 naustrian=Diese Dissertation haben begutachtet:]{Reviewed}%
374 \CreatePolylingual[
375 english=External reviewers:]{Reviewers}%
376 \CreatePolylingual[
377 english=Vienna,
378 naustrian=Wien]{Place}%
379 \CreatePolylingual[
    english=Declaration of Authorship,
    naustrian=Erkl\"arung zur Verfassung der Arbeit]{StatementChapter}%
382 \CreatePolylingual[
    english={I hereby declare that I have written this Doctoral Thesis
383
       independently, that I have completely specified the utilized
384
       sources and resources and that I have definitely marked all parts
385
       of the work - including tables, maps and figures - which belong
386
```

```
to other works or to the internet, literally or extracted, by
387
       referencing the source as borrowed.},
388
    naustrian={Hiermit erkl\"are ich, dass ich diese Arbeit
389
       selbst\"andig verfasst habe, dass ich die verwendeten Quellen
390
391
       und Hilfsmittel vollst\"andig angegeben habe und dass ich die
       Stellen der Arbeit -- einschlie{\ss}lich Tabellen, Karten und
392
393
       Abbildungen --, die anderen Werken oder dem Internet im Wortlaut
394
       oder dem Sinn nach entnommen sind, auf jeden Fall unter Angabe
       der Quelle als Entlehnung kenntlich gemacht habe.}]{Statement}%
395
```

Degree titles.

```
396 \CreatePolylingual[
     english=Bachelor of Science,
     naustrian=Bachelor of Science]{Bdeg}%
399 \CreatePolylingual[
    english=Master of Science,
    naustrian=Master of Science]{MdegMaster}%
402 \CreatePolylingual[
     english=Diplom-Ingenieur,
     naustrian=Diplom-Ingenieur]{MdegDiplMale}%
405 \CreatePolylingual[
     english=Diplom-Ingenieurin,
     naustrian=Diplom-Ingenieurin]{MdegDiplFemale}%
407
408 \CreatePolylingual[
     english=Magister der Naturwissenschaften,
     naustrian=Magister der Naturwissenschaften]{MdegRerNatMale}%
411 \CreatePolylingual[
     english=Magistra der Naturwissenschaften,
     \verb|naustrian=Mag| is tra| der | \verb|Naturwissenschaften| \{ \verb|MdegRerNatFemale| \} \\ | |
414 \CreatePolylingual[
     english=Magister der Sozial- und Wirtschaftswissenschaften,
415
     naustrian=Magister der Sozial- und Wirtschaftswissenschaften]{%
     MdegRerSocOecMale}%
418 \CreatePolylingual[
419
     english=Magistra der Sozial- und Wirtschaftswissenschaften,
     naustrian=Magistra der Sozial- und Wirtschaftswissenschaften]{%
420
421
     MdegRerSocOecFemale}%
422 \CreatePolylingual[
     english=Doktor der Naturwissenschaften,
     naustrian=Doktor der Naturwissenschaften]{DdegRerNatMale}%
425 \CreatePolylingual[
     english=Doktorin der Naturwissenschaften,
     naustrian=Doktorin der Naturwissenschaften]{DdegRerNatFemale}%
427
428 \CreatePolylingual[
     english=Doktor der Technischen Wissenschaften,
     naustrian=Doktor der Technischen Wissenschaften]{DdegTechnMale}%
431 \CreatePolylingual[
432
     english=Doktorin der Technischen Wissenschaften,
     naustrian=Doktorin der Technischen Wissenschaften]{DdegTechnFemale}%
```

```
434 \CreatePolylingual[
                435
                     english=Doktor der Sozial- und Wirtschaftswissenschaften,
                     naustrian=Doktor der Sozial- und Wirtschaftswissenschaften]{%
                436
                     DdegRerSocOecMale}%
                437
                438 \CreatePolylingual[
                     english=Doktorin der Sozial- und Wirtschaftswissenschaften,
                440
                     naustrian=Doktorin der Sozial- und Wirtschaftswissenschaften]{%
                441 DdegRerSocOecFemale}%
                442 \CreatePolylingual[
                    english=Doctor of Technical Sciences]{%
                     Pdeg}%
                444
                Thesis types.
                445 \CreatePolylingual[
                446 english=BACHELOR'S THESIS,
                447 naustrian=BACHELORARBEIT] {BACHELORTHESIS}%
                448 \CreatePolylingual[
                449 english=MASTER'S THESIS,
                    naustrian=MASTERARBEIT]{MASTERTHESIS}%
                451 \CreatePolylingual[
                452 english=DIPLOMA THESIS,
                    naustrian=DIPLOMARBEIT]{DIPLOMATHESIS}%
                453
                454 \CreatePolylingual[
                455 english=DISSERTATION,
                456 naustrian=DISSERTATION] {DOCTORTHESIS}%
                457 \CreatePolylingual[
                458 english=PhD THESIS]{PHDTHESIS}%
     \settitle Sets the title of the thesis.
                459 \newcommand{\settitle}[2]{%
                460 \CreatePolylingual[english=#1,naustrian=#2]{Title}%
                461 }%
  \setsubtitle Sets the subtitle of the thesis.
                462 \newcommand{\setsubtitle}[2]{%
                463 \CreatePolylingual[english=#1,naustrian=#2]{Subtitle}%
                464 }%
\setcurriculum Sets the curriculum name.
                465 \newcommand{\setcurriculum}[2]{\%
                466 \CreatePolylingual[english=#1,naustrian=#2]{Curriculum}%
                467 }%
```

5.3 Layout

5.3.1 Setup

\vutinfth@squarebullet Set internal convenience macros.

```
468 \newcommand{\newsetlength}[2]{%
```

- 469 \newlength{#1}%
- 470 \setlength{#1}{#2}%
- 471 }%
- 472 \newcommand{\vutinfth@squarebullet}{\rule[0.47ex] $\{0.4ex\}$ }%

\vutinfth@tmp@parindent \vutinfth@tmp@baselineskip \vutinfth@tmp@parskip

Temporary storage for page layout lengths.

- 473 \newlength{\vutinfth@tmp@parindent}%
- 474 \newlength{\vutinfth@tmp@baselineskip}%
- 475 \newlength{\vutinfth@tmp@parskip}%

\vutinfth@savelayout \vutinfth@restorelayout

Saves and restores relevant page layout lengths.

- 476 \newcommand{\vutinfth@savelayout}{%
- 477 \setlength{\vutinfth@tmp@parindent}{\parindent}%
- 478 \setlength{\vutinfth@tmp@baselineskip}{\baselineskip}%
- 479 \setlength{\vutinfth@tmp@parskip}{\parskip}%
- 480 }%
- 481 \newcommand{\vutinfth@restorelayout}{%
- $482 \quad \texttt{\parindent}{\texttt{\wutinfth@tmp@parindent}}\%$
- 483 \setlength{\baselineskip}{\vutinfth@tmp@baselineskip}%
- 484 \setlength{\parskip}{\vutinfth@tmp@parskip}%
- 485 }%

5.3.2 Title Page

Initialize the header graphics. The vertical placement of the header graphics on the title pages are given by \vutinfth@header@placement, while the composition of the graphical elements are determined by the subsequent lengths, which constitute direct measurements of the graphics. If the header graphics are changed, these values have to be adapted.

```
486 \ensuremath{\tt logo@offset@x}{10.6mm}\%
```

- 487 \newsetlength{\vutinfth@logo@offset@y}{22mm}%
- 488 \newsetlength{\vutinfth@logo@width@safe}{74mm}%
- 489 \newsetlength{\vutinfth@logo@height}{11mm}%
- $490 \end{area} $$ 490 \rightarrow \end{area} \end{area} \end{area} \end{area} $$ 490 \rightarrow \end{area} \end{a$
- 491 \newsetlength{\vutinfth@header@height}{\vutinfth@logo@height}%
- 492 \newsetlength{\vutinfth@header@separator}{-12mm}%

\vutinfth@header@titlepage

Initialize header.

 $493 \verb| newcommand{\{\vutinfth@header@titlepage\}}{\%}$

```
\setlength{\unitlength}{1mm}%
                               494
                                    \begin{picture}(74, 11)%
                               495
                                      {\includegraphics[height=\vutinfth@logo@height]{Logo-schwarz.pdf}}
                               496
                                    \end{picture}\hfill
                               497
                               498 }%
  \vutinfth@footer@titlepage
                              Initialize footer.
                               499 \newcommand{\vutinfth@footer@titlepage}{%
                               500
                                    \centering
                               501
                                    \begin{minipage}{\textwidth}%
                                      \centering\vutinfth@normalsize\sffamily
                               502
                                      Technische Universit\"{a}t Wien\\
                               503
                                      A-1040 Wien \vutinfth@squarebullet\space
                               504
                                      Karlsplatz 13 \vutinfth@squarebullet\space
                               505
                                      Tel. +43-1-58801-0 \vutinfth@squarebullet\space
                               506
                                      www.tuwien.at%
                               507
                                   \end{minipage}%
                               509 }%
                               Generate the title page style.
vutinfth@pagestyle@titlepage
                               510 \makepagestyle{vutinfth@pagestyle@titlepage}%
                               511 \verb|\makerunningwidth{vutinfth@pagestyle@titlepage}[\textwidth]{\%}|
                               512
                                    \vutinfth@header@width}%
                               513 \makeheadposition{vutinfth@pagestyle@titlepage}{%
                               514 center}{center}{center}%
                               515 \makeevenhead{vutinfth@pagestyle@titlepage}{}{%
                               516 \vutinfth@header@titlepage}{}%
                               517 \makeoddhead{vutinfth@pagestyle@titlepage}{}{%
                                    \vutinfth@header@titlepage}{}%
                               519 \makefootrule{vutinfth@pagestyle@titlepage}{%
                                   \vutinfth@pagestyle@titlepagefootrunwidth}{0.5pt}{\footruleskip}%
                               521 \mbox{ makeevenfoot{vutinfth@pagestyle@titlepage}{}{%}
                               522 \vutinfth@footer@titlepage}{}%
                               523 \makeoddfoot{vutinfth@pagestyle@titlepage}{}{%
                                   \vutinfth@footer@titlepage}{}%
                               Set style element specifications.
                               525 \mbox{ \newsetlength{\wwtinfth@bigskipamount}{6mm}}\
                               Helper functions.
                               526 \newcommand{\vutinfth@bigskip}{\vspace{\vutinfth@bigskipamount}}%
               \AdvisorBlock Generates a block with the advisor's name (and potential assistances' names). An
                               error is thrown, if the advisors are not defined consecutively, starting with the
```

first.

```
\ifundergraduate{%
                              528
                                     \begin{minipage}[t][2.5cm][t]{\textwidth}%
                              529
                                        \vutinfth@normalsize
                              530
                                        \begin{tabular}{0{}10{}}\%
                              531
                              532
                                          \vutinfth@polylingual@Advisor: &
                              533
                                          \vutinfth@person@advisor@fullname\\
                              534
                                          \ifdef{\vutinfth@person@firstassistant@def}{%
                                            \vutinfth@polylingual@Assistance: &
                              535
                                            \vutinfth@person@firstassistant@fullname\\
                              536
                                          }{}%
                              537
                              538
                                          \ifdef{\vutinfth@person@secondassistant@def}{%
                                            \ifundef{\vutinfth@person@firstassistant@def}{%
                              539
                                              \vutinfth@person@firstassistant@error
                              540
                                           }{%
                              541
                                              & \vutinfth@person@secondassistant@fullname\\
                              542
                                           }%
                              543
                                          }{}%
                              544
                              545
                                          \ifdef{\vutinfth@person@thirdassistant@def}{%
                              546
                                            \ifundef{\vutinfth@person@firstassistant@def}{%
                              547
                                              \vutinfth@person@firstassistant@error
                                           }{%
                              548
                                              \ifundef{\vutinfth@person@secondassistant@def}{%
                              549
                                                \vutinfth@person@secondassistant@error
                              550
                              551
                              552
                                                & \vutinfth@person@thirdassistant@fullname\\
                                             }%
                              553
                                           }%
                              554
                                        }{}%
                              555
                                        \end{tabular}%
                              556
                                     \end{minipage}%
                              557
                              558
                                   }%
                              559
                                   \ifgraduate{%
                                     \begin{minipage}[t][1.6cm][t]{\textwidth}%
                              560
                              561
                                        \vutinfth@normalsize
                              562
                                       \vutinfth@polylingual@Advisor:
                              563
                                       \vutinfth@person@advisor@fullname
                              564
                                       \ifdef{\vutinfth@person@secondadvisor@def}{%
                              565
                                          \vutinfth@polylingual@Secondadvisor:
                              566
                              567
                                          \vutinfth@person@secondadvisor@fullname
                              568
                              569
                                     \end{minipage}\par%
                                   }%
                              570
                              571 }%
                              Set lengths of the signature blocks.
\vutinfth@signature@height
 \vutinfth@signature@width
                              572 \mbox{ }\mbox{\ensuremath{\mbox{\colored} height}{25mm}}\mbox{\colored}
 \vutinfth@placedate@width
                              573 \newsetlength{\vutinfth@signature@width}{51mm}%
```

527 \newcommand{\AdvisorBlock}{%

\SignatureFields

Generates a block with signatures and an optional place-date entry. The first argument is optional and adds an entry with date and place [y], or adds corresponding whitespace [h] or adds nothing [n], which is also the default value. The second arguments adds a rule and the given text below it, if a text is given, or the corresponding whitespace, if not. The third argument adds a rule and the given text below it, if a text is given.

```
575 \newcommand{\SignatureFields}[3][n]{%
576
     {\vutinfth@normalsize
577
       \ifstrequal{#1}{y}{%
          \begin{minipage}[b][\vutinfth@signature@height]{%
578
579
              \vutinfth@placedate@width
580
            \vutinfth@polylingual@Place,
581
            \displaydate{vutinfth@date@signing}\vspace*{\baselineskip}%
582
         \end{minipage}%
583
         \hfill
584
585
       }{}%
       \left\{ 1\right\} 
586
587
       \left\{ \frac{\#1}{h}\right\} 
588
          \hspace*{\vutinfth@placedate@width}%
         \hfill
589
590
       }{}%
       \ifstrempty{#2}{%
591
592
          \hspace*{\vutinfth@signature@width}%
593
       }{%
594
          \begin{minipage}[b][\vutinfth@signature@height]{%
595
              \vutinfth@signature@width
596
           }%
597
            \centering
598
            \rule{\vutinfth@signature@width}{0.5pt}\\
599
600
601
         \end{minipage}%
602
         \hfill
603
       \left\{ \frac{43}{3} \right\}
604
          \begin{minipage}[b][\vutinfth@signature@height]{%
605
606
              \vutinfth@signature@width
607
608
            \centering
            \rule{\vutinfth@signature@width}{0.5pt}\\
609
610
          \end{minipage}%
611
612
       }%
     }%
613
614 }%
```

\ReviewerBlock Generates a block with the relevant signatures.

```
615 \mbox{ } \mbox{\ensuremath{\mbox{ReviewerBlock}}} \mbox{\ensuremath{\mbox{\%}}}
616
     \ifgraduate{%
617
        \ifdoctor{%
          {\vutinfth@normalsize
618
             \vutinfth@polylingual@Reviewed\\
619
             \SignatureFields[h]{%
620
               \vutinfth@person@firstreviewer@name
621
622
            }{%
               \vutinfth@person@secondreviewer@name
623
624
            }%
625
          }%
        }%
626
        \ifphd{%
627
          {\vutinfth@normalsize
628
             \vutinfth@polylingual@Reviewers\\
629
630
             \vutinfth@person@firstreviewer@name.
             \vutinfth@data@firstreviewerdata.\\
631
             \vutinfth@person@secondreviewer@name.
632
             \vutinfth@data@secondreviewerdata.\\
633
          }%
634
        }%
635
     }%
636
637 }%
```

\SignatureBlock Generates a block with the relevant signatures.

```
638 \newcommand{\SignatureBlock}{%
639
     \ifundergraduate{%
       {\vutinfth@normalsize
640
          \SignatureFields[y]{%
641
            \vutinfth@person@author@name
642
         }{%
643
            \vutinfth@person@advisor@name
644
645
         }%
       }%
646
     }%
647
     \ifgraduate{%
648
       {\vutinfth@normalsize
649
650
          \ifdoctor{%
651
            \SignatureFields[y]{}{%
652
              \vutinfth@person@author@name
            }%
653
         }%
654
          \ifphd{%
655
            \SignatureFields[y]{%
656
              \vutinfth@person@author@name
657
658
            }{%
              \vutinfth@person@advisor@name
659
```

```
660 }%
661 }%
662 }%
663 }%
664 }%
```

 \AddTitlePage

Generates the language-dependant title page. Multiline title and subtitle are supported.

```
665 \newcommand{\AddTitlePage}{
666 \thispagestyle{vutinfth@pagestyle@titlepage}}%
```

Set a new page geometry where the header separation length (headsep) places the header. The actual header height (head) has to be large enough to contain the header content otherwise the underlying memoir class issues a warning.

```
667 \newgeometry{%
668 left=2.4cm,right=2.4cm,bottom=2.5cm,top=2cm,
669 headsep=\vutinfth@header@separator,
670 head=\vutinfth@header@height
671 }%
```

Save the current page layout lengths for later restoration.

```
672 \vutinfth@savelayout
673 \setlength{\parindent}{0pt}%
674 \setlength{\baselineskip}{13.6pt}%
675 \setlength{\parskip}{0pt plus 1pt}%
```

Set title page text to helvetica.

```
676 \begin{SFFont}{phv}\%
677 \sffamily
678 {\centering
679 \vspace*{1.2cm}\par
```

Title and subtitle are bottom aligned and grow upwards.

```
\begin{minipage}[t][5cm][b]{\textwidth}%
680
           \centering
681
           \vutinfth@HUGE{\bfseries\vutinfth@polylingual@Title}\\
682
           \bigskip
683
           \vutinfth@huge{\bfseries
684
             \ifdef{\vutinfth@polylingual@Subtitle}{%
685
                \vutinfth@polylingual@Subtitle}{%
686
             }%
687
           }%
688
         \end{minipage}\par
689
         \vutinfth@bigskip\vutinfth@bigskip
690
691
         {\vutinfth@LARGE\vutinfth@polylingual@thesisname}\par
692
         \vutinfth@bigskip
```

```
{\vutinfth@large\vutinfth@polylingual@submission}\par
693
         \vutinfth@bigskip
694
         \ifundergraduate{%
695
           {\vutinfth@LARGE{\bfseries\vutinfth@polylingual@degreename}}\par
696
697
           \vutinfth@bigskip
698
           {\vutinfth@large\vutinfth@polylingual@in}\par
699
           \vutinfth@bigskip
           {\vutinfth@Large{\bfseries\vutinfth@polylingual@Curriculum}}\par
700
         }%
701
         \ifgraduate{%
702
           {\vutinfth@LARGE{\bfseries\vutinfth@polylingual@degreename}}\par
703
704
           \ifphd{%
             \vutinfth@bigskip
705
             {\vutinfth@large\vutinfth@polylingual@within}\par
706
             \vutinfth@bigskip
707
             {\vutinfth@LARGE{\bfseries\vutinfth@polylingual@School}}\par
708
           }%
709
         }%
710
711
         \vutinfth@bigskip
712
         {\vutinfth@large\vutinfth@polylingual@by}\par
713
         \vutinfth@bigskip
         {\vutinfth@Large{\bfseries\vutinfth@person@author@fullname}}\par
714
715
         \smallskip
         {\vutinfth@large\vutinfth@polylingual@Registrationnumber\
716
717
         \vutinfth@data@regnumber}\par
718
       \vutinfth@bigskip\vutinfth@bigskip
719
       \ifgraduate{\ifphd{\vspace*{-8mm}}}%
720
       \begin{minipage}[b][1.6cm][c]{\textwidth}%
721
         \vutinfth@normalsize%
722
         \vutinfth@polylingual@faculty\par
723
724
         \vutinfth@polylingual@university
725
       \end{minipage}\par
       \AdvisorBlock\par
726
```

Add stretchable glue between the advisor block and the signatures. This ensures that the signature part is always at the bottom of the page.

```
727
       \vfill
728
       \ReviewerBlock\par
       \SignatureBlock\par
729
       \vspace*{1cm}%
730
     \end{SFFont}%
731
     \pagestyle{empty}%
732
     \cleardoublepage
733
     \vutinfth@restorelayout
734
     \restoregeometry
735
736 }%
```

5.3.3 Front Matter Material

```
\AddStatementPage
                   Generates the statement page.
                   737 \newcommand{\AddStatementPage}{
                   Set the same page geometry as for the titlepages.
                   738 %^^A \newgeometry{%
                   739 %^^A
                              left=2.4cm,right=2.4cm,bottom=2.5cm,top=2cm,
                   740 %^^A
                              headsep=\vutinfth@header@separator,
                   741 %^^A
                              head=\vutinfth@header@height
                   742 %^^A }%
                   Save the current page layout lengths for later restoration.
                   743
                        \vutinfth@savelayout
                   744
                        \setlength{\parindent}{0pt}%
                   745
                        \setlength{\baselineskip}{13.6pt}%
                        \setlength{\parskip}{Opt plus 1pt}%
                   746
                        \begin{SFFont}{phv}%
                   747
                   748
                          \sffamily
                            \chapter*{\vutinfth@polylingual@StatementChapter}%
                   749
                   750
                            \vutinfth@person@author@fullname\par
                   751 % ^^A
                                 \vutinfth@data@address\par
                            \vspace{1.2cm}%
                   752
                            {\normalfont\vutinfth@polylingual@Statement}\par
                   753
                   754
                            \vspace{1.2cm}%
                   755
                            \SignatureFields[y]{\vutinfth@person@author@name}{}%
                   756
                        \end{SFFont}%
                        \cleardoublepage
                   757
                   758
                        \vutinfth@restorelayout
                   759 %^^A \restoregeometry
                   760 }%
                   Generates the titlepage in given language.
    \addtitlepage
                   761 \newcommand{\addtitlepage}[1]{%
                   762 \selectlanguage{#1}%
                   763
                       \AddTitlePage
                   764 }%
\addstatementpage
                   Generates the statement page.
                   765 \newcommand{\addstatementpage}{%
                        \selectlanguage{naustrian}%
                   766
                   767
                        768
                        \ifgraduate{%
                          \ifdoctor{\AddStatementPage}%
                   769
                   770
                          \ifphd{%
```

\selectlanguage{english}%

771

```
772
                             \AddStatementPage
                   773
                          }%
                   774 }%
                   775 }%
                   Generates the English acknowledgement section.
acknowledgements
                   776 \newenvironment{acknowledgements}{%
                        \selectlanguage{english}%
                         \chapter{Acknowledgements}%
                   779 }{%
                   780
                        \cleardoublepage
                   781 }%
                   Generates the English acknowledgement section without an entry in the table of
acknowledgements*
                   contents.
                   782 \newenvironment{acknowledgements*}{%
                        \selectlanguage{english}%
                        \chapter*{Acknowledgements}%
                   784
                   785 }{%
                       \cleardoublepage
                   786
                   787 }%
       danksagung
                   Generates the German acknowledgement section.
                   788 \newenvironment{danksagung}{%
                   789 \selectlanguage{naustrian}%
                        \chapter{Danksagung}%
                   791 }{%
                   792 \cleardoublepage
                   793 }%
                   Generates the German acknowledgement section without an entry in the table of
      danksagung*
                   contents.
                   794 \newenvironment{danksagung*}{%
                        \selectlanguage{naustrian}%
                   796
                        \chapter*{Danksagung}%
                   797 }{%
                   798 \cleardoublepage
                   799 }%
         abstract Generates the English abstract.
                   800 \renewenvironment{abstract}{\%}
                       \selectlanguage{english}%
                        \chapter{Abstract}%
                   803 }{%
```

```
804 \cleardoublepage
                                                                          805 }%
                                                                          Generates the English abstract without an entry in the table of contents.
                                             abstract*
                                                                          806 \newenvironment{abstract*}{%
                                                                                     \selectlanguage{english}%
                                                                                     \chapter*{Abstract}%
                                                                          808
                                                                          809 }{%
                                                                          810 \cleardoublepage
                                                                          811 }%
                                        kurzfassung Generates the German abstract without an entry in the table of contents.
                                                                          812 \newenvironment{kurzfassung}{%
                                                                          813 \selectlanguage{naustrian}%
                                                                          814 \chapter{Kurzfassung}%
                                                                          815 }{%
                                                                          816 \cleardoublepage
                                                                          817 }%
                                     kurzfassung*
                                                                          Generates the German abstract.
                                                                          818 \newenvironment{kurzfassung*}{%
                                                                                      \selectlanguage{naustrian}%
                                                                                      \chapter*{Kurzfassung}%
                                                                          821 }{%
                                                                          822 \cleardoublepage
                                                                          823 }%
                                                                          5.3.4 Page Style
vutinfth@pagestyle@default Define the default page style of the thesis.
                                                                          824 \makepagestyle{vutinfth@pagestyle@default}%
                                                                          826 \mbox{ \mbox{$1$}{}} {\mbox{$1$}{}} {\mbox{$1
                                     \frontmatter Apply the default page style to the thesis.
                                        \mainmatter
                                                                          827 \aliaspagestyle{chapter}{vutinfth@pagestyle@default}%
                                        \backmatter
                                                                          828 \aliaspagestyle{part}{vutinfth@pagestyle@default}%
                                                                          829 \add to front matter {\pagestyle {\it vutinfth@pagestyle@default}} \%
                                                                          830 \addto\mainmatter{\pagestyle{Ruled}}%
                                                                          831 \addto\backmatter{\pagestyle{vutinfth@pagestyle@default}}%
```

6 Change History

v0.9	\vutinfth@thesis@phd: Added to
General: Pre-release version 1	support multiple dissertation
v1.0	types. Issue #4 17
General: Initial release version 1	General: Added support for a
v1.1	dissertation at the Vienna Phd
General: Added references to the	School of Informatics. Issue #4
$GitLab environment \dots 1$	Persons: Updated to support
v1.3	second advisor. Issue Issue #4 20
\AddStatementPage: Updated to	PolyLinguals: Added to support
support multiple languages.	multiple dissertation types.
Issue #4	Issue #4
\AddTitlePage: Added check for	Textual Data: Updated to support
subtitle existence before usage.	external reviewer data. Issue
Issue #1 29	#4
Updated to support PhD School	v1.4
mentioning and fixed the	\mainmatter: Added 'Ruled'
associated vertical overflow.	pagestyle 33
Issue #4 29	\vutinfth@def@person: Added
\AdvisorBlock: Updated to	comma to separate posttitle 12
support second advisor. Issue	General: Added comma to
#4	separate posttitle and changed
\ReviewerBlock: Updated to	mainmatter pagestyle to
support external reviewers.	'Ruled' 1
Issue #4 27	v1.5
\SignatureBlock: Updated to	General: Updated name of
support multiple dissertation	university to 'TU Wien' 1
types. Issue #4 28	PolyLinguals: Updated name of
\addstatementpage: Updated to	university to 'TU Wien' 20
support english version. Issue	v1.6
#4 31	\AdvisorBlock: Enabled second
\ifdoctor: Added to support	advisor for dissertations 25
multiple dissertation types.	General: Enabled second advisor
Issue #4	for dissertations
\ifphd: Added to support multiple	PolyLinguals: Provided German
dissertation types. Issue #4 16	term for second advisor 20
\setthesis: Altered to support	v1.8
multiple dissertation types.	\AddStatementPage: Removed
Issue #4 17	address information 31
\vutinfth@thesis@doctortype:	General: Removed address
Added to support multiple	information
dissertation types. Issue $#4$ 17	Textual Data: Removed address
\vutinfth@thesis@doctortype@doctor:	information 20
Added to support multiple	v1.9
dissertation types. Issue $\#4$ 16	\AddStatementPage: Changed
\vutinfth@thesis@doctortype@phd:	header graphics 31
Added to support multiple	\AddTitlePage: Changed header
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\vutinfth@footer@titlepage: Changed university URL 25	General: Changed header graphics and unversity URL 1
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\ifphd
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