# The vutinfth class\*

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### Abstract

This class provides a LaTeX  $2\varepsilon$  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.

<sup>\*</sup>This document corresponds to vutinfth v1.10, dated 2020/02/20.

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### 1 Introduction

This class provides a LATEX  $2_{\varepsilon}$  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 <a href="https://gitlab.com/ThomasAUZINGER/vutinfth">https://gitlab.com/ThomasAUZINGER/vutinfth</a>. Further guidelines may apply to both the format and structure of certain theses. These can be found at <a href="https://informatics.tuwien.ac.at/study-services">https://informatics.tuwien.ac.at/study-services</a>. 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  $\ccommand^P$ , 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
$\strut_{ m P}$	Subtitle of the thesis	All	Yes
$\$	Name of the curriculum	B, M	No
Types: Bachelor (B	), Master (M), Doctoral (D), PhD So	chool (P)	, All (All)

Command	Role	Type	Optional
\setfirstreviewerdata	Affiliation and country of first reviewer	P	No
\setsecondreviewerdata	Affiliation and country of second reviewer	Р	No
Types: Bachelor (B) Maste	or (M) Doctoral (D) PhD	School (P	Δ11 (Δ11)

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  $\command{\langle day \rangle}{\langle wonth \rangle}{\langle year \rangle}$ . 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: Bac	helor (B), Mast	er (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  $\backslash command... \{\langle list \rangle\}...$ , 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
$\begin{tabular}{ll} $$ \operatorname{Command}(\langle . \rangle) (\langle . \rangle) (\langle . \rangle) (\langle . \rangle) $$ \\$	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:

	O	B
Command	Options	Description
$\start$ 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 Natur-
		wissenschaften'.
	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 $\{\langle list  angle\}$	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
$\begin{tabular}{ll} \label{table} \begin{tabular}{ll} tab$	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  $\ensuremath{\mbox{\mbox{begin{acknowledgements}, this environment generates a chapter with the English acknowledgements. Use the starred version, i.e., acknowledgements*, to remove the table of content entry of this environment.$ 

danksagung\*

Used as  $\ensuremath{\texttt{\text}}\$  this environment generates a chapter with the German acknowledgements. Use the starred version, i.e., danksagung\*, to remove the table of content entry of this environment.

abstract\*

Used as  $\ensuremath{\texttt{Vest}}\$  end{abstract}, this environment generates a

chapter with the English abstract. Use the starred version, i.e., abstract\*, to remove the table of content entry of this environment.

kurzfassung
kurzfassung\*

Used as <text> 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  $\c \arrangle \ar$ 

\CreatePerson

Used as  $\ensuremath{\mbox{\mbox{$\backslash$}}} \{\langle name \rangle\}$ , it generates a command  $\ensuremath{\mbox{\mbox{$\backslash$}}} \{\langle name \rangle\}$ . Used as  $\ensuremath{\mbox{$\backslash$}} \{\langle personname \rangle\} \{\langle posttitle \rangle\} \{\langle gender \rangle\}$ , the newly created command assigns the supplied values to the corresponding internal variables  $\ensuremath{\mbox{$\backslash$}}$  vutinfth@person@(name)@...as given in the table below.

Argument	Internal Variable
	$\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ $
$\langle pretitle \rangle$	$\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ $
$\langle personname \rangle$	$\verb \vutinfth@person@  \langle name \rangle @ \texttt{name} $
$\langle posttitle \rangle$	$\verb \vutinfth@person@  \langle name \rangle \\ @posttitle$
$\langle gender \rangle$	$\operatorname{vutinfth@person@}\langle name \rangle$ @gender

The command \vutinfth@person@(name)@def is created to increase source code readability when verifying the existence of a specific person. Furthermore, the command \vutinfth@person@(name)@fullname returns the person's name together with existing titles and correct whitespace in between. The person's gender is either \vutinfth@person@male or \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  $\colon colon colon colon colon by the current language at the time of use. The argument <math>\colon colon co$ 

\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.

 $\verb|\AddStatementPage|$ 

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

SFFont

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

\Qnamexdef 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
- $38 \ \mbox{renewcommand{\sfdefault}{#1}}$

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

39 \ifdefstrequal{\f@family}{\vutinfth@f@family@tmp}{\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 }%

### 5.2 Data

### 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}{}%
- 48 \@namedef{vutinfth@data@#1}{#2}%
- 49 }%

```
\vutinfth@def@data@invalid Initializes the internal storage with error messages.
                                                                50 \newcommand{\vutinfth@def@data@invalid}[2]{%
                                                                          \@namedef{vutinfth@data@#1@error}{%
                                                                              \ClassError{vutinfth}{No #2 issued}{Set #1 with #2.}%
                                                                52
                                                                53
                                                                         \@namedef{vutinfth@data@#1}{\@nameuse{vutinfth@data@#1@error}}%
                                                                54
                                                                55 }%
                                 \CreateData Issues the construction of a setter function for a data entry given by \setdata.
                                                                56 \newcommand{\CreateData}[1]{%
                                                                         \@namedef{set#1}##1{%
                                                                57
                                                                              \vutinfth@def@data{#1}{##1}%
                                                                58
                                                                59
                                                                60
                                                                        \vutinfth@def@data@invalid{#1}{\string\set#1}%
                                                                61 }%
                                                              5.2.3 Persons
                                                             Two genders are differentiated for each person: male and female.
           \vutinfth@person@male
      \vutinfth@person@female
                                                                62 \newcommand{\vutinfth@person@male}{male}%
                                                                63 \newcommand{\vutinfth@person@female}{female}%
                                                              Convenience macros to determine the gender of a person.
                                          \ifmale
                                      \iffemale
                                                                64 \newcommand{\ifmale}[2]{%
                                                                \ifcsstring{vutinfth@person@#1@gender}{\vutinfth@person@male}{#2}{}\% \ifcsstring{vutinfth@person@male}{#2}{}\% \iffsstring{vutinfth@person@male}{#2}{}\% \iffsstring{vutinfth@person@male}{*2}{}\% \
                                                                66 }%
                                                                67 \newcommand{\iffemale}[2]{%
                                                                         \ifcsstring{vutinfth@person@#1@gender}{\vutinfth@person@female}{#2}{}%
                                                                68
                                                                69 }%
                                                              Creates the internal storage for a person's name, titles and gender.
             \vutinfth@def@person
                                                                70 \newcommand{\vutinfth@def@person}[5]{%
                                                                71
                                                                         \@namedef{vutinfth@person@#1@def}{}%
                                                                72
                                                                         \@namedef{vutinfth@person@#1@pretitle}{#2}%
                                                                         \@namedef{vutinfth@person@#1@name}{#3}%
                                                                73
                                                                         \@namedef{vutinfth@person@#1@posttitle}{#4}%
                                                                74
                                                                         75
                                                                              \@namedef{vutinfth@person@#1@gender}{\vutinfth@person@male}%
                                                                76
                                                                77
                                                                         }{}}%
                                                                          \ifdefstring{\vutinfth@person@female}{#5}{%
                                                                78
                                                                              \@namedef{vutinfth@person@#1@gender}{\vutinfth@person@female}%
                                                                79
                                                                         }{}%
                                                                80
                                                              For the full name, additional spaces have to be inserted depending on the presence
                                                              of pre- or posttitles.
```

\ifstrempty{#3}{%

}{%

\ifstrempty{#2}{%

81

82

83 84 \@namedef{vutinfth@person@#1@fullname}{#4}%

```
\ifstrempty{#4}{%
85
            \@namedef{vutinfth@person@#1@fullname}{#2}%
86
         }{%
87
            \Onamedef{vutinfthOpersonO#1Ofullname}{#2 #4}%
88
89
       }%
90
     }{%
91
92
       \ifstrempty{#2}{%
93
         \ifstrempty{#4}{%
            \@namedef{vutinfth@person@#1@fullname}{#3}%
94
95
         }{%
            \@namedef{vutinfth@person@#1@fullname}{#3, #4}%
96
         }%
97
       }{%
98
          \ifstrempty{#4}{%
99
            \Onamedef{vutinfthOpersonO#1Ofullname}{#2 #3}%
100
101
            \@namedef{vutinfth@person@#1@fullname}{#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}{%
108
109
       \ClassError{vutinfth}{No #2 issued}{Set #1 with #2.}%
110
     \@namedef{vutinfth@person@#1@name}{%
111
112
       \@nameuse{vutinfth@person@#1@error}}%
113
     \@namedef{vutinfth@person@#1@pretitle}{%
114
       \@nameuse{vutinfth@person@#1@error}}%
115
     \@namedef{vutinfth@person@#1@posttitle}{%
       \@nameuse{vutinfth@person@#1@error}}%
116
     \@namedef{vutinfth@person@#1@gender}{%
117
       \@nameuse{vutinfth@person@#1@error}}%
118
     \@namedef{vutinfth@person@#1@fullname}{%
119
120
       \@nameuse{vutinfth@person@#1@error}}%
121 }%
```

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

```
122 \newcommand{\CreatePerson}[1]{%
123 \Qnamedef{set#1}##1##2##3##4{%
124 \vutinfthQdefQperson{#1}{##1}{##2}{##3}{##4}%
125 }%
126 \vutinfthQdefQpersonQinvalid{#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 polylin-

gual 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'.]%
```

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.

```
158 \@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.

```
162 \newcommand{\CreatePolylingual}[2][]{%
163 \begingroup
```

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.

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

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

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

### 5.2.5 Thesis Types

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

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

173 vutinfth@graduate}%

# \ifundergraduate \ifgraduate

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

```
174 \newcommand{\ifundergraduate}[1]{%
175 \ifestrequal{\vutinfth@thesis@basetype}{%
176 \vutinfth@thesis@basetype@undergraduate
177 }{#1}{}%
178 }%
179 \newcommand{\ifgraduate}[1]{%
180 \ifestrequal{\vutinfth@thesis@basetype}{%
181 \vutinfth@thesis@basetype@graduate
182 }{#1}{}%
183 }%
```

nfth@thesis@doctortype@doctor utinfth@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 \newcommand{\vutinfth@thesis@doctortype@doctor}{%
185  vutinfth@doctor}%
186 \newcommand{\vutinfth@thesis@doctortype@phd}{%
187  vutinfth@phd}%
```

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

```
188 \newcommand{\ifdoctor}[1]{%
189 \ifestrequal{\vutinfth@thesis@doctortype}{%
190 \vutinfth@thesis@doctortype@doctor
191 }{#1}{}%
192 }%
193 \newcommand{\ifphd}[1]{%
194 \ifestrequal{\vutinfth@thesis@doctortype}{%
195 \vutinfth@thesis@doctortype@phd
```

```
196 }{#1}{}%
                             197 }%
  \vutinfth@thesis@basetype
                             Initialize the thesis category, the type and the specific degree with error messages.
\vutinfth@thesis@doctortype
                             198 \newcommand{\vutinfth@thesis@basetype}{%
\vutinfth@thesis@thesisname
                                  \ClassError{vutinfth}{No \string\setthesis \space issued}{%
                             199
\vutinfth@thesis@degreename
                             200
                                    Set thesis type with \string\setthesis.}%
                             201 }%
                             202 \newcommand{\vutinfth@thesis@doctortype}{%
                                  \ClassError{vutinfth}{No \string\setthesis \space issued}{%
                             204
                                    Set thesis type with \string\setthesis.}%
                             205 }%
                             206 \newcommand{\vutinfth@polylingual@degreename}{%
                             207
                                  \ClassError{vutinfth}{No \string\setthesis \space issued}{%
                             208
                                    Set thesis type with \string\setthesis.}%
                             209 }%
                             210 \newcommand{\vutinfth@polylingual@thesisname}{%
                             211
                                  \ClassError{vutinfth}{No \string\setthesis \space issued}{%
                                    Set thesis type with \string\setthesis.}%
                             212
                             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}%
           \@setthesisname
                            Internal convenience macros.
           \@setdegreename
                             218 \newcommand{\@setthesisname}[1]{%
   \@setgendereddegreename
                                 \renewcommand{\vutinfth@polylingual@thesisname}{#1}}%
                             220 \newcommand{\@setdegreename}[1]{%
                             222 \newcommand{\@setgendereddegreename}[2]{%
                                  \ifmale{author}{\@setdegreename{#1}}%
                             224 \iffemale{author}{\@setdegreename{#2}}%
                             225 }%
                 \setthesis Sets the thesis type.
                             226 \newcommand{\setthesis}[1]{%
                                 \ifdefstring{\vutinfth@thesis@bachelor}{#1}{%
                             Initializes bachelor thesis type.
                                    \renewcommand{\vutinfth@thesis@basetype}{%
                             228
                                      \vutinfth@thesis@basetype@undergraduate}%
                             229
                                    \@setthesisname{\vutinfth@polylingual@BACHELORTHESIS}%
                             230
                                    \@setdegreename{\vutinfth@polylingual@Bdeg}%
                             231
```

}{}%

232

233

\ifdefstring{\vutinfth@thesis@master}{#1}{%

```
Initializes master thesis type.
```

```
\renewcommand{\vutinfth@thesis@basetype}{%
 234
                       \vutinfth@thesis@basetype@undergraduate}%
 235
 236
                  \@setthesisname{%
                       \ClassError{vutinfth}{No \string\setmasterdegree \space issued}{%
 237
                           Set masterdegree with \string\setmasterdegree.}%
 238
 239
 240
                  \@setdegreename{%
                       \ClassError{vutinfth}{No \string\setmasterdegree \space issued}{%
 241
 242
                           Set master degree with \string\setmasterdegree.}%
                  }%
 243
             }{}%
 244
             \ifdefstring{\vutinfth@thesis@doctor}{#1}{%
 245
 Initializes doctor thesis type.
                \renewcommand{\vutinfth@thesis@basetype}{%
 247
                    \vutinfth@thesis@basetype@graduate}%
 248
                \renewcommand{\vutinfth@thesis@doctortype}{%
 249
                     \vutinfth@thesis@doctortype@doctor}%
                \verb|\colored| \label{lem:condition} \label{lem:condition} $$ \end{condition} $$ \end{cond
 250
                \@setdegreename{%
 251
                     \ClassError{vutinfth}{No \string\setdoctordegree \space issued}{%
 252
                         Set doctor degree with \string\setdoctordegree.}%
 253
               }%
 254
 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
                \@setdegreename{\vutinfth@polylingual@Pdeg}%
            }{}%
 263
 264 }%
 Four master degrees can be selected: dipl., master, rer.nat., and
 rer.soc.oec..
 265 \newcommand{\vutinfth@thesis@mdeg@dipl}{dipl.}%
 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

\vutinfth@thesis@mdeg@dipl \vutinfth@thesis@mdeg@master

\vutinfth@thesis@mdeg@rernat

utinfth@thesis@mdeg@rersocoec

```
269 \newcommand{\setmasterdegree}[1]{%
270 \ifdefstring{\vutinfth@thesis@mdeg@dipl}{#1}{%
271 \@setthesisname{\vutinfth@polylingual@DIPLOMATHESIS}%
272 \@setgendereddegreename{%
273 \vutinfth@polylingual@MdegDiplMale
```

```
}{%
274
275
          \vutinfth@polylingual@MdegDiplFemale
       }%
276
     }{}%
277
     \ifdefstring{\vutinfth@thesis@mdeg@master}{#1}{%
278
       \@setthesisname{\vutinfth@polylingual@MASTERTHESIS}%
279
       \@setdegreename{\vutinfth@polylingual@MdegMaster}%
280
281
     }{}%
     \ifdefstring{\vutinfth@thesis@mdeg@rernat}{#1}{%
282
       \@setthesisname{\vutinfth@polylingual@MASTERTHESIS}%
283
       \@setgendereddegreename{%
284
          \vutinfth@polylingual@MdegRerNatMale
285
286
       }{%
287
          \vutinfth@polylingual@MdegRerNatFemale
288
289
     }{}%
     \ifdefstring{\vutinfth@thesis@mdeg@rersocoec}{#1}{%
290
291
        \@setthesisname{\vutinfth@polylingual@MASTERTHESIS}%
292
        \@setgendereddegreename{%
          \vutinfth@polylingual@MdegRerSocOecMale
293
294
          \vutinfth@polylingual@MdegRerSocOecFemale
295
296
       }%
297
     }{}%
298 }%
Three doctor degrees can be selected: rer.nat., techn., and rer.soc.oec..
299 \newcommand{\vutinfth@thesis@ddeg@rernat}{rer.nat.}%
300 \newcommand{\vutinfth@thesis@ddeg@techn}{techn.}%
301 \newcommand{\vutinfth@thesis@ddeg@rersocoec}{rer.soc.oec.}%
Sets the specific doctor degree.
302 \newcommand{\setdoctordegree}[1]{%
     \ifdefstring{\vutinfth@thesis@ddeg@rernat}{#1}{%
304
       \@setgendereddegreename{%
          \vutinfth@polylingual@DdegRerNatMale
305
       }{%
306
          \vutinfth@polylingual@DdegRerNatFemale
307
       }%
308
309
     }{}%
     \ifdefstring{\vutinfth@thesis@ddeg@techn}{#1}{%
310
311
       \@setgendereddegreename{%
          \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
```

\vutinfth@thesis@ddeg@rernat \vutinfth@thesis@ddeg@techn

utinfth@thesis@ddeg@rersocoec

\setdoctordegree

```
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,
341 naustrian=Betreuung]{Advisor}%
342 \CreatePolylingual[
343 english=Second advisor,
344 naustrian=Zweitbetreuung]{Secondadvisor}%
345 \CreatePolylingual[
346 english=submitted in partial fulfillment of the requirements
       for the degree of,
347
    naustrian=zur Erlangung des akademischen Grades]{submission}%
348
349 \CreatePolylingual[
350 english=in,
    naustrian=im Rahmen des Studiums]{in}%
351
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[
366 english=at the TU Wien,
367 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:,
     naustrian=Diese Dissertation haben begutachtet:]{Reviewed}%
373
374 \CreatePolylingual[
     english=External reviewers:]{Reviewers}%
375
376 \CreatePolylingual[
     english=Vienna,
     naustrian=Wien]{Place}%
378
379 \CreatePolylingual[
     english=Declaration of Authorship,
     naustrian=Erkl\"arung zur Verfassung der Arbeit]{StatementChapter}%
381
382 \CreatePolylingual[
     english=\{I\ hereby\ declare\ that\ I\ have\ written\ this\ Doctoral\ Thesis
383
       independently, that I have completely specified the utilized
384
385
       sources and resources and that I have definitely marked all parts
386
       of the work - including tables, maps and figures - which belong
       to other works or to the internet, literally or extracted, by
       referencing the source as borrowed.},
     naustrian={Hiermit erkl\"are ich, dass ich diese Arbeit
389
390
       selbst\"andig verfasst habe, dass ich die verwendeten Quellen
       und Hilfsmittel vollst\"andig angegeben habe und dass ich die
391
       Stellen der Arbeit -- einschlie{\ss}lich Tabellen, Karten und
392
       Abbildungen --, die anderen Werken oder dem Internet im Wortlaut
393
       oder dem Sinn nach entnommen sind, auf jeden Fall unter Angabe
394
       der Quelle als Entlehnung kenntlich gemacht habe.}]{Statement}%
395
Degree titles.
396 \CreatePolylingual[
397 english=Bachelor of Science,
398
```

```
naustrian=Bachelor of Science]{Bdeg}%
399 \CreatePolylingual[
400 english=Master of Science,
    naustrian=Master of Science]{MdegMaster}%
401
402 \CreatePolylingual[
     english=Diplom-Ingenieur,
403
     naustrian=Diplom-Ingenieur]{MdegDiplMale}%
404
405 \CreatePolylingual[
     english=Diplom-Ingenieurin,
     naustrian=Diplom-Ingenieurin]{MdegDiplFemale}%
407
408 \CreatePolylingual[
     english=Magister der Naturwissenschaften,
     naustrian=Magister der Naturwissenschaften]{MdegRerNatMale}%
410
411 \CreatePolylingual[
```

```
english=Magistra der Naturwissenschaften,
           412
           413 naustrian=Magistra der Naturwissenschaften]{MdegRerNatFemale}%
           414 \CreatePolylingual[
          415 english=Magister der Sozial- und Wirtschaftswissenschaften,
           416 naustrian=Magister der Sozial- und Wirtschaftswissenschaften]{%
           417 MdegRerSocOecMale}%
           418 \CreatePolylingual[
           419 english=Magistra der Sozial- und Wirtschaftswissenschaften,
           420 naustrian=Magistra der Sozial- und Wirtschaftswissenschaften] {%
               MdegRerSocOecFemale}%
           421
           422 \CreatePolylingual[
           423 english=Doktor der Naturwissenschaften,
               naustrian=Doktor der Naturwissenschaften]{DdegRerNatMale}%
           424
           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}%
           430
           431 \CreatePolylingual[
           432
                english=Doktorin der Technischen Wissenschaften,
           433 naustrian=Doktorin der Technischen Wissenschaften]{DdegTechnFemale}%
           434 \CreatePolylingual[
           435 english=Doktor der Sozial- und Wirtschaftswissenschaften,
               naustrian=Doktor der Sozial- und Wirtschaftswissenschaften]{%
           436
           437
               DdegRerSocOecMale}%
           438 \CreatePolylingual[
           439 english=Doktorin der Sozial- und Wirtschaftswissenschaften,
           440 naustrian=Doktorin der Sozial- und Wirtschaftswissenschaften] {%
           441
               DdegRerSocOecFemale}%
           442 \CreatePolylingual[
               english=Doctor of Technical Sciences]{%
           443
           444 Pdeg}%
          Thesis types.
           445 \CreatePolylingual[
           446 english=BACHELOR'S THESIS,
           447 naustrian=BACHELORARBEIT]{BACHELORTHESIS}%
           448 \CreatePolylingual[
           449 english=MASTER'S THESIS,
           450 naustrian=MASTERARBEIT]{MASTERTHESIS}%
           451 \CreatePolylingual[
           452 english=DIPLOMA THESIS,
           453 naustrian=DIPLOMARBEIT]{DIPLOMATHESIS}%
           454 \CreatePolylingual[
           455 english=DISSERTATION,
               naustrian=DISSERTATION] {DOCTORTHESIS}%
           457 \CreatePolylingual[
               english=PhD THESIS]{PHDTHESIS}%
\settitle Sets the title of the thesis.
```

459 \newcommand{\settitle}[2]{%

```
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]{%
                                 \CreatePolylingual[english=#1,naustrian=#2]{Curriculum}%
                            467 }%
                            5.3 Layout
                            5.3.1 Setup
    \vutinfth@squarebullet
                            Set internal convenience macros.
                            468 \newcommand{\newsetlength}[2]{%
                                 \newlength{#1}%
                            470
                                 \left\{ 1\right\} 
                            471 }%
                            472 \newcommand{\vutinfth@squarebullet}{\rule[0.47ex]\{0.4ex\}\}%
  \vutinfth@tmp@parindent
                            Temporary storage for page layout lengths.
\vutinfth@tmp@baselineskip
                            473 \newlength{\vutinfth@tmp@parindent}%
     \vutinfth@tmp@parskip
                            474 \newlength{\vutinfth@tmp@baselineskip}%
                            475 \newlength{\vutinfth@tmp@parskip}%
                            Saves and restores relevant page layout lengths.
      \vutinfth@savelayout
  \vutinfth@restorelayout
                            476 \newcommand{\vutinfth@savelayout}{%
                                 \setlength{\vutinfth@tmp@parindent}{\parindent}%
                            477
                            478
                                 \setlength{\vutinfth@tmp@baselineskip}{\baselineskip}%
                            479
                                 \setlength{\vutinfth@tmp@parskip}{\parskip}%
                            480 }%
                            481 \newcommand{\vutinfth@restorelayout}{%
                                 \setlength{\parindent}{\vutinfth@tmp@parindent}%
                                  \setlength{\baselineskip}{\vutinfth@tmp@baselineskip}%
                            484
                                 \setlength{\parskip}{\vutinfth@tmp@parskip}%
                            485 }%
```

\CreatePolylingual[english=#1,naustrian=#2]{Title}%

### 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 \newsetlength{\vutinfth@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 \newsetlength{\vutinfth@header@width}{\paperwidth - \vutinfth@logo@offset@x - \vutinfth@logo
                                                                                                                                 491 \newsetlength{\vutinfth@header@height}{\vutinfth@logo@height}%
                                                                                                                                 492 \newsetlength{\vutinfth@header@separator}{-12mm}%
                                                                                                                               Initialize header.
        \vutinfth@header@titlepage
                                                                                                                                 493 \newcommand{\vutinfth@header@titlepage}{%
                                                                                                                                 494
                                                                                                                                                      \setlength{\unitlength}{1mm}%
                                                                                                                                 495
                                                                                                                                                       \begin{picture}(74, 11)%
                                                                                                                                 496
                                                                                                                                                                {\includegraphics[height=\vutinfth@logo@height]{Logo-schwarz.pdf}}
                                                                                                                                 497
                                                                                                                                                       \end{picture}\hfill
                                                                                                                                 498 }%
                                                                                                                              Initialize footer.
        \vutinfth@footer@titlepage
                                                                                                                                 499 \newcommand{\vutinfth@footer@titlepage}{%
                                                                                                                                                       \centering
                                                                                                                                 500
                                                                                                                                 501
                                                                                                                                                       \begin{minipage}{\textwidth}%
                                                                                                                                 502
                                                                                                                                                               \centering\vutinfth@normalsize\sffamily
                                                                                                                                                               Technische Universit\"{a}t Wien\\
                                                                                                                                 503
                                                                                                                                                               A-1040 Wien \vutinfth@squarebullet\space
                                                                                                                                 504
                                                                                                                                 505
                                                                                                                                                               Karlsplatz 13 \vutinfth@squarebullet\space
                                                                                                                                 506
                                                                                                                                                               Tel. +43-1-58801-0 \vutinfth@squarebullet\space
                                                                                                                                 507
                                                                                                                                                               www.tuwien.at%
                                                                                                                                                    \end{minipage}%
                                                                                                                                 508
                                                                                                                                 509 }%
vutinfth@pagestyle@titlepage
                                                                                                                               Generate the title page style.
                                                                                                                                 510 \makepagestyle{vutinfth@pagestyle@titlepage}%
                                                                                                                                 511 \mbox{ 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}{}{%
                                                                                                                                 518 \vutinfth@header@titlepage}{}%
                                                                                                                                 {\tt 519} \verb| \mbox{makefootrule{vutinfth@pagestyle@titlepage}{{\tt \%}} \\
                                                                                                                                 \verb|\vutinfth@pagestyle@titlepagefootrunwidth|{0.5pt}{\footruleskip}|| % \cite{Control of the page of 
                                                                                                                                 521 \mbox{ \colored} 
                                                                                                                                 522 \vutinfth@footer@titlepage}{}%
                                                                                                                                 523 \verb|\makeoddfoot{vutinfth@pagestyle@titlepage}{}{\%}
                                                                                                                                 524 \vutinfth@footer@titlepage}{}%
                                                                                                                                 Set style element specifications.
```

525 \newsetlength{\vutinfth@bigskipamount}{6mm}%

23

Helper functions.

 $526 \mbox{$\warp{\ww.pace{\ww.pace{\ww.pace{\ww.pace{\ww.pace}}}}} % \mbox{$\warp{\ww.pace{\ww.pace{\ww.pace}}$} $\mbox{$\w.pace{\ww.pace{\ww.pace}}$} $\mbox{$\w.pace{\w.pace{\w.pace}}$} $\mbox{$\w.pace{\w.pace{\w.pace}}$} $\mbox{$\w.pace{\w.pace}$} $\mbox{$\w.pace{\w.pace}$}$} $\mbox{$\w.pace{\w.pace{\w.pace}}$} $\mbox{$\w.pace{\w.pace}$}$} $\mbox{$\w.pace{\w.pace{\w.pace}}$} $\mbox{$\w.pace{\w.pace}$}$} $\mbox{$\w.pace{\w.pace}$}$$ 

\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.

```
527 \newcommand{\AdvisorBlock}{%
     \ifundergraduate{%
528
       \begin{minipage}[t][2.5cm][t]{\textwidth}%
529
         \vutinfth@normalsize
530
531
         \begin{tabular}{@{}1@{ }1}%
532
           \vutinfth@polylingual@Advisor: &
533
           \vutinfth@person@advisor@fullname\\
           \ifdef{\vutinfth@person@firstassistant@def}{%
534
535
              \vutinfth@polylingual@Assistance: &
536
              \vutinfth@person@firstassistant@fullname\\
537
           }{}%
           \ifdef{\vutinfth@person@secondassistant@def}{%
538
539
              \ifundef{\vutinfth@person@firstassistant@def}{%
540
                \vutinfth@person@firstassistant@error
541
             }{%
542
                & \vutinfth@person@secondassistant@fullname\\
             }%
543
           }{}%
544
           \ifdef{\vutinfth@person@thirdassistant@def}{%
545
546
              \ifundef{\vutinfth@person@firstassistant@def}{%
547
                \vutinfth@person@firstassistant@error
             }{%
548
549
                \ifundef{\vutinfth@person@secondassistant@def}{%
550
                  \vutinfth@person@secondassistant@error
551
               }{%
552
                  & \vutinfth@person@thirdassistant@fullname\\
              }%
553
            }%
554
          }{}%
555
         \end{tabular}%
556
557
       \end{minipage}%
558
     }%
559
     \ifgraduate{%
       \begin{minipage}[t][1.6cm][t]{\textwidth}%
560
         \vutinfth@normalsize
561
562
         \vutinfth@polylingual@Advisor:
         \vutinfth@person@advisor@fullname
563
         \ifdef{\vutinfth@person@secondadvisor@def}{%
564
565
           \vutinfth@polylingual@Secondadvisor:
566
567
           \vutinfth@person@secondadvisor@fullname
568
         }{}%
569
       \end{minipage}\par%
570
     }%
571 }%
```

\vutinfth@signature@height \vutinfth@signature@width \vutinfth@placedate@width Set lengths of the signature blocks.

```
572 \newsetlength{\vutinfth@signature@height}{25mm}\% 573 \newsetlength{\vutinfth@signature@width}{51mm}\% 574 \newsetlength{\vutinfth@placedate@width}{50mm}\%
```

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

\ReviewerBlock Generates a block with the relevant signatures.

```
615 \newcommand{\ReviewerBlock}{\%}
     \ifgraduate{%
616
       \ifdoctor{%
617
          {\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
628
         {\vutinfth@normalsize
629
           \vutinfth@polylingual@Reviewers\\
           \vutinfth@person@firstreviewer@name.
630
           \vutinfth@data@firstreviewerdata.\\
631
632
           \vutinfth@person@secondreviewer@name.
633
            \vutinfth@data@secondreviewerdata.\\
634
         }%
       }%
635
     }%
636
637 }%
```

\SignatureBlock Generates a block with the relevant signatures.

```
638 \newcommand{\SignatureBlock}{\%}
     \ifundergraduate{%
639
        {\vutinfth@normalsize
640
          \SignatureFields[y]{%
641
642
            \vutinfth@person@author@name
643
          }{%
644
            \vutinfth@person@advisor@name
645
          }%
       }%
646
     }%
647
     \ifgraduate{%
648
        {\vutinfth@normalsize
649
          \ifdoctor{%
650
            \SignatureFields[y]{}{%
651
               \vutinfth@person@author@name
652
            }%
653
654
          }%
          \left\langle \right\rangle
655
656
            \SignatureFields[y]{%
657
               \vutinfth@person@author@name
            }{%
658
               \vutinfth@person@advisor@name
659
            }%
660
          }%
661
662
       }%
     }%
663
```

\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
681
           \centering
           \vutinfth@HUGE{\bfseries\vutinfth@polylingual@Title}\\
682
683
           \bigskip
           \vutinfth@huge{\bfseries
684
             \ifdef{\vutinfth@polylingual@Subtitle}{%
685
686
                \vutinfth@polylingual@Subtitle}{%
687
             }%
           }%
688
         \end{minipage}\par
689
         \vutinfth@bigskip\vutinfth@bigskip
690
         {\vutinfth@LARGE\vutinfth@polylingual@thesisname}\par
691
692
         \vutinfth@bigskip
         {\vutinfth@large\vutinfth@polylingual@submission}\par
693
         \vutinfth@bigskip
694
         \ifundergraduate{%
695
           {\vutinfth@LARGE{\bfseries\vutinfth@polylingual@degreename}}\par
697
           \vutinfth@bigskip
           {\vutinfth@large\vutinfth@polylingual@in}\par
698
           \vutinfth@bigskip
699
           {\vutinfth@Large{\bfseries\vutinfth@polylingual@Curriculum}}\par
700
```

```
}%
701
         \ifgraduate{%
702
           {\vutinfth@LARGE{\bfseries\vutinfth@polylingual@degreename}}\par
703
           \ifphd{%
704
             \vutinfth@bigskip
705
             {\vutinfth@large\vutinfth@polylingual@within}\par
706
             \vutinfth@bigskip
707
             {\tt \{\vutinfth@LARGE\{\bfseries\vutinfth@polylingual@School\}}\par
708
           }%
709
         }%
710
         \vutinfth@bigskip
711
         712
         \vutinfth@bigskip
713
         {\vutinfth@Large{\bfseries\vutinfth@person@author@fullname}}\par
714
715
         \smallskip
         {\vutinfth@large\vutinfth@polylingual@Registrationnumber\
716
         \vutinfth@data@regnumber}\par
717
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
       \ReviewerBlock\par
728
       \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.

```
\vutinfth@savelayout
                    743
                         \setlength{\parindent}{0pt}%
                    744
                         \setlength{\baselineskip}{13.6pt}%
                    745
                         \setlength{\parskip}{Opt plus 1pt}%
                    746
                         \begin{SFFont}{phv}%
                    747
                           \sffamily
                    748
                             \chapter*{\vutinfth@polylingual@StatementChapter}%
                    749
                             \vutinfth@person@author@fullname\par
                    750
                    751 % ^^A
                                  \vutinfth@data@address\par
                             \vspace{1.2cm}%
                    752
                             {\normalfont\vutinfth@polylingual@Statement}\par
                    753
                             \vspace{1.2cm}%
                    754
                             \SignatureFields[y]{\vutinfth@person@author@name}{}%
                    755
                    756
                         \end{SFFont}%
                    757
                         \cleardoublepage
                         \vutinfth@restorelayout
                    759 %^^A \restoregeometry
                    760 }%
                   Generates the titlepage in given language.
    \addtitlepage
                    761 \newcommand{\addtitlepage}[1]{%
                         \selectlanguage{#1}%
                         \AddTitlePage
                    763
                    764 }%
\addstatementpage
                   Generates the statement page.
                    765 \newcommand{\addstatementpage}{%
                         \selectlanguage{naustrian}%
                    766
                    767
                         \ifundergraduate{\AddStatementPage}%
                         \ifgraduate{%
                    768
                           \ifdoctor{\AddStatementPage}%
                    769
                    770
                           \ifphd{%
                    771
                             \selectlanguage{english}%
                    772
                             \AddStatementPage
                    773
                           }%
                    774
                         }%
                    775 }%
                   Generates the English acknowledgement section.
 {\tt acknowledgements}
                    776 \newenvironment{acknowledgements}{%
                         \selectlanguage{english}%
                    777
                         \chapter{Acknowledgements}%
                    778
                    779 }{%
                    780
                        \cleardoublepage
                    781 }%
```

acknowledgements\* Generates the English acknowledgement section without an entry in the table of contents.

```
782 \newenvironment{acknowledgements*}{\%}
             783 \selectlanguage{english}%
                  \chapter*{Acknowledgements}%
             784
             785 }{%
                  \cleardoublepage
             786
             787 }%
             Generates the German acknowledgement section.
danksagung
             788 \newenvironment{danksagung}{%
                  \selectlanguage{naustrian}%
                  \chapter{Danksagung}%
             790
             791 }{%
             792
                  \cleardoublepage
             793 }%
             Generates the German acknowledgement section without an entry in the table of
danksagung*
             contents.
             794 \newenvironment{danksagung*}{%
                  \selectlanguage{naustrian}%
                  \chapter*{Danksagung}%
             796
             797 }{%
                  \cleardoublepage
             798
             799 }%
   abstract
            Generates the English abstract.
             800 \renewenvironment{abstract}{%
                   \selectlanguage{english}%
                  \chapter{Abstract}%
             802
             803 }{%
             804 \cleardoublepage
             805 }%
             Generates the English abstract without an entry in the table of contents.
 abstract*
             806 \newenvironment{abstract*}{%
                  \selectlanguage{english}%
             807
                  \chapter*{Abstract}%
             808
             809 }{%
             810 \cleardoublepage
             811 }%
             Generates the German abstract without an entry in the table of contents.
kurzfassung
             812 \newenvironment{kurzfassung}{%
                  \selectlanguage{naustrian}%
                  \chapter{Kurzfassung}%
             814
             816
                  \cleardoublepage
             817 }%
```

```
818 \newenvironment{kurzfassung*}{%
                              819
                                   \selectlanguage{naustrian}%
                                   \chapter*{Kurzfassung}%
                              820
                              821 }{%
                              822
                                   \cleardoublepage
                              823 }%
                              5.3.4
                                     Page Style
                             Define the default page style of the thesis.
vutinfth@pagestyle@default
                              824 \makepagestyle{vutinfth@pagestyle@default}%
                              825 \makeevenfoot{vutinfth@pagestyle@default}{\thepage}{}{}%
                              826 \makeoddfoot{vutinfth@pagestyle@default}{}{\thepage}%
                              Apply the default page style to the thesis.
               \frontmatter
                \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
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                                 General: Pre-release version . . . . . 1
                                                                           \addstatementpage: Updated to
                              v1.0
                                                                              support english version. Issue
                                 General: Initial release version . . . 1
                                                                              v1.1
                                                                           \ifdoctor: Added to support
                                 General: Added references to the
                                                                              multiple dissertation types.
                                     GitLab environment . . . . . . . . 1
                                                                              v1.3
                                                                           \ifphd: Added to support multiple
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                                                                              dissertation types. Issue #4 . . 15
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                                     support multiple languages.
                                                                              multiple dissertation types.
                                     Issue #4 . . . . . . . . . . . . . . . . . 28
                                 \AddTitlePage: Added check for
                                                                              Issue #4 . . . . . . . . . . . . . . . . . 16
                                     subtitle existence before usage.
                                                                           \vutinfth@thesis@doctortype:
                                     Issue #1 . . . . . . . . . . . . . . . . 27
                                                                              Added to support multiple
                                    Updated to support PhD School
                                                                              dissertation types. Issue #4 . . 16
```

mentioning and fixed the

\AdvisorBlock: Updated to

\ReviewerBlock: Updated to

\SignatureBlock: Updated to

associated vertical overflow.

support second advisor. Issue

support external reviewers.

support multiple dissertation

Issue #4 . . . . . . . . . . . . . . . . . 27

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Issue #4 . . . . . . . . . . . . . . . . . 25

Generates the German abstract.

kurzfassung\*

\vutinfth@thesis@doctortype@doctor:

dissertation types. Issue #4 . . 15 \vutinfth@thesis@doctortype@phd:

dissertation types. Issue #4 . . 15

Added to support multiple

Added to support multiple

\vutinfth@thesis@phd: Added to

General: Added support for a

dissertation at the Vienna Phd

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second advisor. Issue Issue #4 19	for dissertations $1$
PolyLinguals: Added to support	PolyLinguals: Provided German
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\mainmatter: Added 'Ruled'	Textual⊔Data: Removed address
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\vutinfth@def@person: Added	v1.9
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General: Added comma to	header graphics 28
separate posttitle and changed	\AddTitlePage: Changed header
mainmatter pagestyle to	graphics
'Ruled' 1	\vutinfth@footer@titlepage:
v1.5	Changed university URL 23
General: Updated name of	\vutinfth@header@titlepage:
university to 'TU Wien' 1	Changed header graphics 23
PolyLinguals: Updated name of	General: Changed header graphics
university to 'TU Wien' 19	and unversity URL 1
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Symbols \"	
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Symbols \"	
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Symbols \" \@empty	
Symbols         \"       \@empty          \@namedef       47, 48, 51, 54, 57, 71, 72, 78         108, 111, 113, 115, 117, 119, 123         \@namelet          \@namexdef          \@setdegreename          \@setgendereddegreename          \@setthesisname	
Symbols \" \@empty	
Symbols         \"       \@empty          \@namedef       47, 48, 51, 54, 57, 71, 72, 78         108, 111, 113, 115, 117, 119, 123         \@namelet          \@namexdef          \@setdegreename          \@setgendereddegreename          \@setthesisname	
Symbols         \"          \@empty          \@namedef       47, 48, 51, 54, 57, 71, 72, 73         108, 111, 113, 115, 117, 119, 123         \@namelet          \@namexdef          \@setdegreename          \@setgendereddegreename          \@setthesisname          \%          503, 533, 536, 542, 55	134, 153 3, 74, 76, 79, 83, 86, 88, 94, 96, 100, 102, 3, 129, 130, 167
Symbols         \"       \@empty          \@namedef       47, 48, 51, 54, 57, 71, 72, 78         108, 111, 113, 115, 117, 119, 123         \@namelet          \@namexdef          \@setdegreename          \@setgendereddegreename          \@setthesisname	134, 153 3, 74, 76, 79, 83, 86, 88, 94, 96, 100, 102, 3, 129, 130, 167
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Symbols	
Symbols	$\begin{array}{c} \dots \dots$
Symbols	$\begin{array}{c} \dots \dots$
Symbols	$\begin{array}{c} \dots \dots$
Symbols	$\begin{array}{c} \dots \dots$
Symbols	$\begin{array}{c} \dots \dots$
Symbols	$\begin{array}{c} . \ . \ . \ . \ . \ . \ . \ . \ . \ . $

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\f@family			 	 	 				3	6. 39
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\footruleskip										
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(Ifonomatter			 	 	 • •					041
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\global										36
\graphicspath										
\graphicspach			 	 	 					11
	Н									
\hfill					Δ	197	584	589	503	602
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\ifdefstrequal										
\ifdefstring 75, 78,										
\ifdoctor										
\ifdraftdoc										
\ifestrequal										
\iffemale										
\ifgraduate										
\ifmale										
\ifphd										
\ifstrempty										
\ifstrequal										
\ifundef										
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