Department of Information Systems
Prof. Dr. Gottfried Vossen

How to write a paper at the DBIS Group

Version 1.0.6

Seminar: Doing it the right way

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Databases &
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Abstract

The abstract is a short summary of the work at hand. Its purpose is to give a concise overview of the work's contents and enable potential readers to judge the relevance of the work. To achieve this, abstracts of academic writings should state the purpose and aims of the work (including some context information, if necessary), the methods applied, and the main findings in approximately 100–150 words.

Contents

Acronyms iv

List of Symbols iv

1. Introduction 1

2. Formatting 1

2.1. General Considerations 1

2.1.1. Page layout 1

2.1.2. Lists, footnotes, writing of dates and numbers 2

2.1.3. Font faces 4

2.2. Structure 4

2.3. Listings, Figures, and Tables 4

2.3.1. Listings 5

2.3.2. Tables 5

2.3.3. Figures 6

2.4. Abbreviations, Symbols, and Formulas 6

2.4.1. Abbreviations and Acronyms 6

2.4.2. Symbols and Formulas 7

2.5. Miscellanea 7

2.5.1. Multilingual Texts 7

2.5.2. Graphics in LaTeX 7

2.6. Bibliography and Citation 8

2.6.1. Bibliography 8

2.6.2. Citing 9

3. Template 10

3.1. A Note about Unicode Encoding 10

3.2. Choosing the appropriate LaTeX class 10

3.3. Installation 11

3.4. The Preamble and the Body 11

3.5. Typesetting your Document 12

3.6. Writing a German Thesis or Paper 14

4. Examples **14**
4.1. Headings 14
4.1.1. Subheadings 14
4.2. Meta information 15
4.2.1. Definition of Meta Information 15
4.2.2. Usage Meta Information 15
4.3. Meta information 15
4.3.1. Definition of Meta Information 15
4.3.2. Usage Meta Information 15
4.4. Use cases of various macros described in this document 15
4.4.1. Quotes 15
4.5. Listings, Figures, and Tables 16

5. Guide to Academic Writing **16**
5.1. Parts of an Academic Writing 18
5.2. Good Approaches to Academic Writing 19

Bibliography **20**

List of Web Pages **21**

A. Test **21**

Acronyms

ACC	Apple Audio CODEC
DOS	Disk Operating System
dpi	dots per inch
ISDN	Integrated Services Network
KMU	kleines oder mittleres Unternehmen
LNI	Lecture Notes in Informatics
NPV	Net Present Value
PO	Prüfungsordnung
SSI	Server Side Includes
VBA	Visual Basic for Applications
WI	Wirtschaftsinformatik

List of Symbols

C	Net Present Value (NPV)
a_0	Inital cost in $t = 0$
Rt	Net cash flow in t
i	Interest/discount rate
n	Average useful life
t	Time index
Π	Projection
σ	Selection

1. Introduction

The purpose of this document is to outline the guidelines of Prof. Vossen's DBIS Group for creating and formatting seminar papers, as well as Bachelor and Master theses. It will be explained which general formatting rules should be applied for any written submission and how the provided LaTeX template can help produce a well formatted piece of work. Throughout the document, a number of examples will illustrate the structure of an academic work and at the same time show how the template can be used. Note, though, that there are so many aspects of writing a good paper and producing a good-looking result that it is impossible to cover all of them in this guide. For further references on what we expect from seminar participants please consult our Guide to Seminars.

A frequently asked question is that of length. While we recommend you talk to your supervisor about your specific case, some general remarks can be made here. A Bachelor thesis is supposed to have "approximately 40 pages" according to the Examination Rules (PO Bachelor WI 2010). For Master theses, it is much more difficult to specify a number of pages due to variations in the assigned topics. Typically, however, a length of about 80 pages seems appropriate. Seminar papers ought to be about 15 pages in length and never exceed 20 pages.

2. Formatting

In this section we describe the general formatting guidelines that your final submission must adhere to, including listings, figures, and tables (cf. Section 2.3); abbreviations, symbols and formulas (cf. Section 2.4); and multilingual texts as well as graphics (cf. Section 2.5). Section 2.6 is concluding this formatting section by outlining how to create a bibliography and use it as basis for correct citations.

These formatting guidelines hold true no matter what software you choose for creating the final PDF submission. For your convenience, we provide a LaTeX template that already incorporates these guidelines. Specific aspects of the template are referenced throughout this section. For a technical overview of how to install the template, see Section 3.

2.1. General Considerations

2.1.1. Page layout

A typical page should have the following layout:

- Paper format: DIN A4, i. e., $210 \times 297\,\mathrm{mm}^2$ (single-sided print)

- Left margin: 3.25 cm; right margin: 2.75 cm (leaves 15 cm of text horizontally)
- Top and bottom margin 3 cm (leaves 23.7 cm of text vertically)

This is depicted in Figure 1. The main body is typeset in 12 pt with a line spread of 1.3 (to simplify correction). To emphasise particular passages in the text *italics* are preferred over **bold face**. Section headings are typeset in 14 pt bold, subheadings are also typeset in bold but in 12 pt. Headings and subheadings are numbered consecutively. The first line of all paragraphs (except for the first after a heading) are indented by 1 em (12 pt, for this font size, i. e., approx. 4.25 mm). In English texts two spaces after a full stop shall be used whereas in German Texts "French spacing" is preferred (single space after a full stop).

The pages of your work have to be numbered as well. All pages preceding the actual work (e. g. table of contents, list of figures, etc.) have to be numbered in lower-case Roman numerals (i, ii, iii, iv, ...). The actual work and all subsequent pages, including the appendix, have to be numbered using Arabic numerals (1, 2, 3, ...).

2.1.2. Lists, footnotes, writing of dates and numbers

In case it is necessary to generate a list of items, there are several functions that allow to do so. For bullet point lists, use the `itemize` environment. For enumerations, `enumerate` is available. For lists that require definition of terms, you may consider using either the `description` environment (a list) or the `\paragraph{...}` command (a structural command). The available options are illustrated at the end of this document in Section 4. Note that standard LaTeX lists are optimised for longer items. If you have many short items, consider using the starred versions of the commands, i. e., `itemize*`, `enumerate*` and `description*`.

Footnotes interrupt the flow of reading and shall therefore only be used rarely. Accordingly, one has to evaluate whether a piece of information is important enough for the body – in which case it should go there – or not. In the latter case it can as well be omitted.

Figures in body text are spelt in full up to (and including) ten; for German texts, this is extended up to 12. If a measurement unit is associated with a number, the numerical figure is used. As an example it could be stated that four hard drives of 10 GiB each have only $\frac{3}{4}$ the capacity of 15 hard drives with 2 GiB each, even though two of the former are much more expensive than five of the latter.

Whenever dates appear in a work, they have to be formatted according to the language the work is written in. For English papers the ISO date format (e. g., 1969-07-20) shall be used. In German works, however, the German date format (e. g., 20.07.1969) is appropriate.

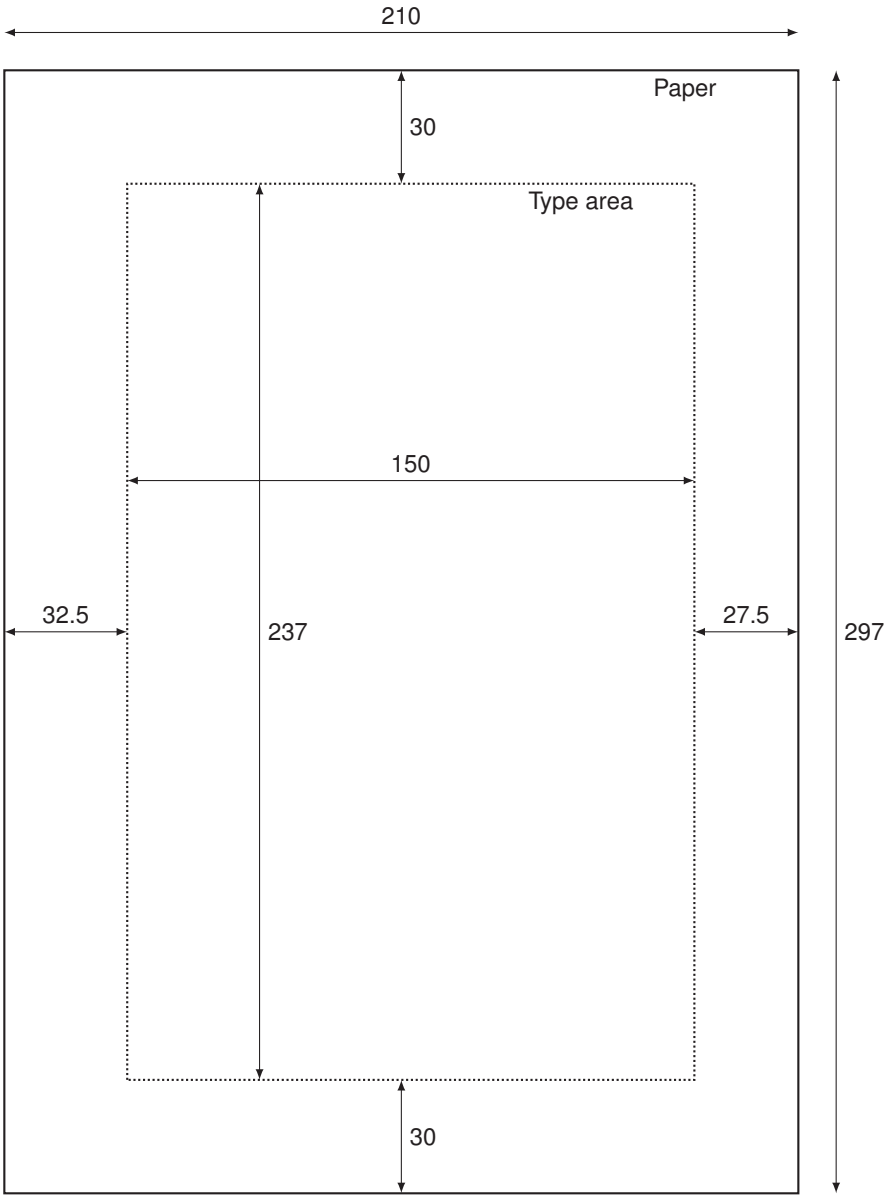

Figure 1: Page layout (all measurements are given in mm).

2.1.3. Font faces

In previous versions of this template, *Garamond No. 8* was used. We have dropped this requirement; you are free to activate it if that works for you (using the class option `garamond=true`).

2.2. Structure

When structuring an academic work in particular the criterion *completeness* has to be observed. This, however, should be achieved without any redundancies and overlap. The entire work should follow a common theme and each section, even each argument, should logically follow this theme. Furthermore, the theme has to be evident to readers, who should be able to know at any time whilst reading at which point of the argument they are. In order to achieve this, it may be handy to develop a continuous example throughout the writing.

In theses, the structuring shall be done by using the LaTeX-commands `\chapter`, `\section`, `\subsection` und `\subsubsection`. Seminar papers differ only in the number of structural levels, i. e. they do not have chapters but start on the section level. In both cases, additional structural levels are *not* asked for and strongly discouraged.[1]

Regarding meta information of the structure, one can choose from one of two "philosophies." Either two headings are *never* placed one after another and each subsection is motivated by a brief introduction or headings are *always* placed directly after one another in which case the writing starts on the lowest hierarchical level. No matter which variant is chosen, it shall be applied consistently. It is not necessary to aim for the same structural depth in each section, i. e., the number of hierarchical levels may vary from section to section. It is, furthermore, incorrect to have sections with only one subsection as this defeats the idea of subsections. Examples of this can be found in Section 4.

2.3. Listings, Figures, and Tables

Listings, tables, and figures shall be centered horizontally. Both have to be referenced and explained in the main body; *interpretation must never be left to the reader*. To reference a listing, figure, or table, LaTeX offers the `\ref{...}` macro. In the main body "Table" and "Figure" may be abbreviated (e. g. Fig. 1.3 or Tab. 3.1). If it is opted to do so, it should be adhered to this decision consequently throughout the piece of writing. Captions, however,

[1] The attentive reader will have noticed already that a division into "parts" – as used in this documentation – is not appropriate for a typical paper.

shall never be abbreviated. When referencing a specific section/figure/table/etc. of your paper, the word is capitalized, e. g., Section 2.3 or Listing 1. We recommend you use the macros `\Chpref`, `\Secref`, `\Tblref`, `\Figref` and `\Lstref` provided by our LaTeX template to keep your style consistent.

A list of listings, figures, and tables is only necessary if a sufficiently large number of listings, figures and tables is used, in which case it can simplify looking up a particular float. This is usually not the case for seminar papers; therefore, it is *generally discouraged* to have a such lists unless there are good reasons to include them. Even most master theses are not "figure-laden" enough to justify the list. In case lists are appropriate, they are placed after the table of contents and before the main body.

Listings, tables and figures are numbered consecutively but independently of one another, i. e., Figure 4 may be placed right after Table 12 and before Listing 1. For theses, the current chapter is prepended like so: *Chapter number* + "." + *consecutive number*. For example the third table in Chapter 2 would be numbered as "Table 2.3" and the fifth figure in Chapter 3 would be numbered "Figure 3.5." Anyway, LaTeX automatically numbers everything correctly if the `\caption` macro is used inside the appropriate environment. By the way, the macro `\caption{...}` automatically adds a full stop at the end of the caption, for all captions shall end with a full stop.

2.3.1. Listings

Listings are used to typeset source code. They are put inside a `lstlisting` environment, optionally followed by square brackets with additional options. The code is put inside the environment (mind the spaces at the beginnings of each line!). This very document provides a few examples of how to use listings. In particular, have a look at Listing 3 in the example section (Section 4). If you plan to include many listings in your paper, we recommend you look at the package documentation of the `listings` package.

2.3.2. Tables

Tables shall be created using the `booktabs` package, the documentation of which extensively elaborates on how to create well-structured tables. In essence, tables can be defined by the following macros: `\begin{table}`, `\begin{tabular}`, `\toprule`, `\midrule`, `\bottomrule`, `\end{tabular}` and `\end{table}`. If you use this package, you must not create vertical lines. A caption (above the table) is compulsory. It should briefly and concisely describe the table (and its contents). An example can be found in Section 4.

2.3.3. Figures

When creating figures, it is important to create self-similar figures, i. e., size, font face, shading, line type, etc. have to be alike in all figures. In particular regarding three-dimensional elements it has to be ensured that all figures do have the same perspective. It is recommendable to use a sans-serif font (ideally the same as in the main document, e. g., Optima). Furthermore, figures should as far as possible be created rather than scanned. Even cited or adapted figures from other authors may only be used in scanned versions if a) having a high complexity and b) having sufficiently high quality. In contrast to tables, captions of figures are placed below the figure. In order to create easily readable figures, use only black and white lines plus one or two shadings of 90%, 80% or 70% gray. These colors are already defined in the template as `darkgray`, `mediumgray`, and `lightgray`, respectively. If you would like to use colors anyway, ensure that they are clearly discernible in a grayscale printout!

2.4. Abbreviations, Symbols, and Formulas

Usually many abbreviations are used in a piece of academic writing which shall be listed in a list of abbreviations. In case of repetitively used symbols in mathematical formulas, symbols shall be summarized in a separate list of symbols. In the LaTeX template, both are managed using the `glossaries` package. Whilst abbreviations are sorted alphabetically, symbols appear in the order they were defined in. As with the lists of figures and tables, lists of symbols and abbreviations are only required if a sufficiently large number is used; also both appear between the table of contents and the main body, too, if used.

2.4.1. Abbreviations and Acronyms

Only abbreviations and acronyms (used interchangeably here) which are *unusual* or only defined for the *purpose of the work* shall appear in the list of abbreviations; by implication this also means common abbreviations, such as “e. g.” or “i. e.”, shall not be listed. Using the LaTeX-commands `\newacronym{`*`abbrev`*`}{`*`abbrev`*`}{`*`long version`*`}` and `\ac{`*`abbrev`*`}` abbreviations can be defined and used, respectively. Upon the first usage of an abbreviation, e. g. “dots per inch (dpi)”, the abbreviation will be spelt in full and explained. On further usages only the abbreviation “dpi” will be used automatically.

Since German grammar is not as straight-forward as English grammar regarding the declension of words, German authors will often find that the automatism of the `glossaries` package leads to wrong sentences. For such cases, the `glossaries` package offers a variety

of configuration options. A simple example is shown in the sources to this document for the term “kleines oder mittleres Unternehmen (KMU)”, which is replaced by “kleine und mittlere Unternehmen (KMU)” when used in plural. Another helpful option in this regard are the `user`*i* keys ($1 \leq i \leq 6$). Check the documentation of the `glossaries` package for more details.

When describing abbreviations, it has to be mentioned that each full stop used should be followed by a non-breaking space (generated using a ~) or – preferably – the half-width space (“`\,`”). Ctrl + Shift + Space (Option-Space on the Mac) generate a non-breaking space in MS Word. Many abbreviations (e. g. `\etc` = “etc.”) are provided in the right format as macros by this template. Refer to `dbisabbreviations.sty` for a list.

2.4.2. Symbols and Formulas

Symbols are mainly used in mathematical formulas. To add a symbol to the list of symbols this template provides the command `\addsymboltovz{`*`symbol`*`}{`*`explanation`*`}`.

Formulas – as the one depicted below – can be generated using the `equation`-environment. A formula can be referenced by its consecutive number, in this case Equation (1).

$$\ln\left[\lim_{\delta\to\infty}\left((X')^{-1}-(X^{-1})'+\frac{1}{\delta}\right)^{\delta}\right]+(\sin^2 q+\cos^2 q)=\sum_{n=0}^{\infty}\frac{\cosh p\sqrt{1-\tanh^2 p}}{2^n} \tag{1}$$

2.5. Miscellanea

2.5.1. Multilingual Texts

English quotes in German texts or vice versa can be introduced using a command from the `babel` package: `\begin{otherlanguage}{`*`language`*`}`. This adapts LaTeX to special characteristics of the cited *`language`*, e. g., hyphenation patterns.

2.5.2. Graphics in LaTeX

LaTeX can be used to create beautiful, consistent graphics for your paper. The recommended way of doing this is the TikZ/PGF package. However, most students will likely use their favorite graphics or diagramming software. In that case, the preferred way of including graphics is via the `\includegraphics` command, which can handle many formats. PDF files are preferable for vector graphics. PNG files are the best way of including pixel graphics, such as graphs or diagrams not available in vector format. JPEG files may be used to include photographic or artistic images.

2.6. Bibliography and Citation

In this section it will be elaborated on a) how to generate a proper bibliography and b) how to properly cite literature.

2.6.1. Bibliography

Bibliographies are an important part of any piece of academic writing. On the one hand they enable readers to easily extend research on the given work. On the other hand they help writers to correctly address their sources as well as keeping track of them. Not indicating the correct sources of quotes or ideas is considered plagiarism and is a very severe academic offence. Seminar papers or theses will be marked as *fail* (5.0) if this happens repeatedly (as this leads to the conclusions it was plagiarized on purpose).

This template requires two separate lists of used sources: a bibliography for literature (published works) of any kind and another list for Internet sources. Both shall be created according to DIN 1505-2 (which is done automatically by LaTeX). Sources appear in the alphabetical order of the surname of the first author. In case of several works by the same author, they are sorted by year. German umlauts are sorted according to DIN 5007 variant 2, which states that ä becomes ae and shall be sorted before ae.

The main difference between both lists is the identifiers used with them. Just as literature references, Web references should also have dedicated BibTeXfields for `title`, `author` etc. (where applicable!) as well as the `last-accessed` field for the date you last visited the site (see [4] for an example). Whilst Internet sources are identified by a consecutive number (like the BibTeX-style `plaindin`), literature sources are labeled using an alpha-numerical identifier (like BibTeX-style `alphadin`). The identifier is built according to these rules

- In case of one author it is the first three letters of their surname (the first being capitalized), e. g., [Vos08]
- In case of two to four authors the first letter of each surname (all capitalized), e. g., [OV06] or [HLV07]
- In case of five or more authors the first letter of the surnames (all capitalized) of the first three authors followed by a superscript $^+$, e. g., [AFG$^+$10].

All letters are followed by the year in 2-digit format. In case this rule leads to a collision in IDs, a lower case letter is used to distinguish them (e. g., [Vos08a] and [Vos08b]), which is also used for sorting. This typically happens when an author has more than one publication per year. As a hint, it is worth mentioning that “multi-part names” such as

“Große Kathöfer” need to be put in curly brackets in order to be recognized as one entity by BibTEX.

For those not willing to use LATEX, the style “LNI” in Citavi may provide a suitable alternative (see document “LNI-Autorenrichtlinien”). Using the LNI style, identifiers for four and five or more authors have to be adjusted according to the aforementioned scheme.

2.6.2. Citing

This section describes the correct way of citing and properly addressing the source. Generally it can be said that each source has to be named. How this can be done varies between institutions and departments. For our purposes it is correct to identify each source by a short identifier as explained in the previous section. The names of authors can be typeset using SMALL CAPS. This, however, is not compulsory. If you choose to refer to the authors’ names, up to three names are mentioned in the text in full. If more than three authors contributed to a work, only the first author is named and “et al.” is added after that.

Quotes can be divided into direct and indirect quotes. Direct quotes should be used as rarely as possible and only for definitions or strengthening one’s own argument significantly if one cannot rephrase the content any better. Page references are mandatory in case of direct quotes and generally encouraged if specific aspects of third party works are quoted. By doing so, the correctness of the citation may be checked more easily and readers can more easily understand details of the referenced article. Following the quote, the key ideas have to be lined out as otherwise different readers may interpret the quote in different ways. Therefore, interpretation must never be left to the reader.

Indirect quotes reproduce contents of other authors in a paraphrased manner. Authors do not have to be mentioned explicitly (the source, i. e., the identifiers will do). However, in certain situations, for instance in a literature review, it may be sensible to emphasise the authors’ names.

Figures which are not cited or adopted from other authors (i. e. are one’s own work) are depicted without any reference to the source. Has a figure been adopted without major changes, it has to be cited as “Source: [ABC12, p. 264]”. If changes have been made, the correct citation would be “Source: based on [ABC12, p. 264]”; the changes have to be described in the text. As is evident from these examples, page references are mandatory for figures, too.

3. Template

We would strongly encourage you to try out LaTeX at least once for a university paper. Therefore, we have decided to publish a LaTeX template that obeys to the style described in this guide.[2] Even though the LaTeX template is a convenient way to obey to the layout requirements, there are no objections against the usage of other software such as Microsoft Office or LibreOffice – especially since the final submission is always a PDF file. However, the appearance of papers and theses should closely resemble this style guide. It may make sense to use this (emptied) template for structural guidance and to add own content subsequently.

3.1. A Note about Unicode Encoding

Please note that the template uses a file-encoding of UTF-8, enabling you to input most characters – even symbols like Ø, ¶, correct quotes ("...") or the en-dash – directly without knowing the sometimes cryptic LaTeX macros. The drawback to this is, however, that many editors for Windows are not unicode-aware, yet (even though support for this has been integrated into Windows several years ago). *Therefore, please make sure that your editor supports (and actually uses) UTF-8 as a file encoding.* Notepad++ and TeXMaker are known to work well. TeXnicCenter and WinEDT (prior to version 7), on the other hand, are two programs known for their ancient implementation that supports the "latin1" encoding only.

Linux and Mac users shouldn't have any problems as UTF-8 is the default encoding for all popular text editors on these platforms.

3.2. Choosing the appropriate LaTeX class

In order to use the template, you need to specify the appropriate `documentclass` in your LaTeX document, e. g., `\documentclass[`*`options`*`]{dbisseminar}`. For seminar papers, use the class `dbisseminar`. For Bachelor or Master theses use `dbisbachelor` or `dbismaster`, respectively. The remaining files, in particular `dbispaper` and `dbisthesis`, are additional files that need to be present but are not accessed directly by the template user. Figure 2 shows these files in a graphic overview. A sample preamble, which should get you started quickly, can be found in the file `documentation.tex` included in the template archive.

[2] This document is written for version 1.0.4 of the DBIS Group Template.

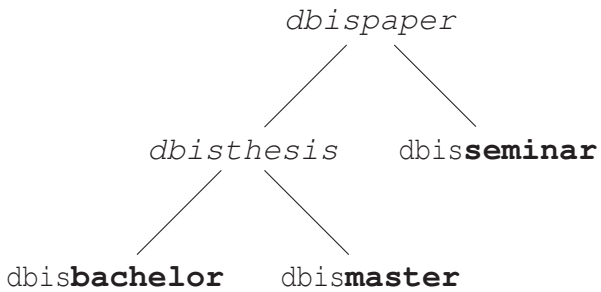

Figure 2: Hierarchy of the DBIS LaTeX classes. Classes in italics should not be used directly ("abstract classes").

Table 1 shows a list of possible *options* that can be passed to any of the basic classes. So far, only the `language` option should be of relevance for most students; it must be set to the correct language (either `english` or `german`). The additional options are for rather rare use-cases.

3.3. Installation

Installing the template files is easy. Simply unzip the contents into the folder where your document resides. More advanced users may prefer extracting this file into their local `texmf` tree, which is the recommended way of installing the template. Current TeX distributions, such as TeX Live, MacTeX or MikTeX provide all required packages.

3.4. The Preamble and the Body

Make sure to include the relevant information about you and your work in the document preamble. A sample preamble is shown in Listing 1 on page 13. In the body of the paper, you can include different listings and also external files. It is recommended to include the

Table 1: Options provided by the various `dbis*`-classes.

Option	Values	Default	Meaning
`language`	`english`, `german`	n/a	Specify the language of your paper. Always set this explicitly.
`garamond`	`true`, `false`	`false`	Choice of fonts (see Section 2.1)
`glossaries`	`true`, `false`	`true`	Control loading of the glossaries package. If you use neither the abbreviations features nor the list of symbols, you might gain a few milliseconds of compile time by disabling this.
`cmykgraphics`	`true`, `false`	`false`	Use high-quality CMYK logos instead of the standard RGB variants. *Irrelevant to the average user.*

main corpus of your work from a separate file, e. g., as in Listing 2 on page 17.[3] Both listings are taken from the `documentation.tex` file that is included with this template and was used to typeset this documentation.

3.5. Typesetting your Document

In order to generate a PDF-file from your TEX-file you have to run the following commands. We assume you have a master file `documentName.tex` that you want to typeset.

- On Linux system the process is relatively straightforward because the `latexmk` wrapper takes care of calling `pdflatex`, `bibtex` and even `makeindex`. Only the list of abbreviations and the list of symbols have to be generated manually by calling the `makeglossaries` wrapper. While working on your files, it should be enough to simply use `latexmk` most of the time. Make sure, though, that you do a full run of the following commands before handing in your paper:

  ```
  latexmk -pdf documentName
  makeglossaries documentName
  latexmk -pdf documentName
  ```

- On windows systems the process can be more complicated because the helper scripts are not readily available. Note that it's usually sufficient to call `pdflatex` just once to see your changes. Make sure, though, that you do a full run of the following commands before handing in your paper:

  ```
  pdflatex documentName
  bibtex documentName1
  bibtex documentName2
  makeglossaries documentName
  pdflatex documentName
  pdflatex documentName
  pdflatex documentName
  ```

  Just like the recommended method for Linux, the process can be simplified by installing Perl and using `latexmk` (see above).

[3] This is an example of TEX's way of handling so-called *floats*. Since TEX has determined that the listing is too long to fit nicely on any page in the vicinity of this passage, it is stored in a queue waiting for the best place to be put. In this case, we even manually told TEX to place the listing on a page by itself (because everything else looked ugly). The downside is that floats may appear in "unexpected" places, like, in this case, several pages later.

Listing 1: Sample preamble for a seminar paper.

```
\documentclass[
    language=english % Set language to "english" or "german"
  ]{dbisseminar}

% Author(s) of paper
% Format like this: Firstname Lastname \email{Email Address}
% Multiple authors can be separated by \and
\author{%
  Florian Stahl \email{florian.stahl@wi.uni-muenster.de} \and
  Till Haselmann \email{haselmann@wi.uni-muenster.de}
}

% Topic of paper
\title{How to write a paper at the DBIS Group}

% Due date of paper in format YYYY-MM-DD
\date{2012-03-31}

% Responsible supervisor(s) at DBIS Group
% Multiple supervisors can be separated by \and
\supervisor{Dr.\ Jens Lechtenb{\"o}rger}

% Title of seminar
\seminartitle{Doing it the right way}

% Place and date of handing in the paper (for plagiarism
    declaration)
% For the date field use the following convention:
%   German date   -> dd.mm.yyyy       e.g.: 31.05.2011
%   English date  -> Month dd, yyyy   e.g.: May 31, 2011
\placeOfSignature{M{\"u}nster}
\dateOfSignature{11.11.2011}
\studentNumber{123456}
\studentAddress{Meine Stra{\ss}e 42, 12345 Irgendwo}
\courseOfStudy{Wirtschaftsinformatik} % or Information Systems
```

3.6. Writing a German Thesis or Paper

If you specify `language=german` in the class options, all labels and formatting will be set up accordingly. Notably, also the `icomma` package is loaded giving you the possibility to use the comma (“,”) as a decimal separator. To do so, simply use the comma as you would do anyway in math mode, e. g., write `$1.234,56$` for 1.234,56 – instead of $1.234,56$ (mind the space after the comma) without the `icomma` package. See Figure 3 for a magnified example. *However*, this also means that the spacing for constructs like these is *wrong*: `$(a,b)$` must be spaced like so (a,b) and *not* like so (a,b). This is done automatically by LaTeX if you insert a space after the comma, i. e., `$(a, b)$`. Even though the difference may appear minor, it will annoy your attentive readers when you disregard this fact.

4. Examples

The following sections show by example how this style guide should be applied. Please note that all section in this examples are very short. For a real work too many headings and subheadings can destroy the flow of reading as a guide line 1 sub category per page is about right for seminar papers. Less for theses.

4.1. Headings

As mentioned above, if a section is broken further down, at least two subheadings shall follow.

4.1.1. Subheadings

This means a structure like this is *NOT* appreciated for this is the only subheading. Therefore, there is no need to have it in the first place.

Figure 3: Different spacing after the comma when typesetting `$1.234,56$` with (left) and without (right) the `icomma` package.

4.2. Meta information

This short example shall illustrate where to place meta information. This example sticks to the *always-use-meta-information-rule*. Therefore, it is now mentioned. The first subsection will elaborate on what meta information is, before the subsequent subsection describes its usage.

4.2.1. Definition of Meta Information

Meta information is information that is not related to the content but guides the reader.

4.2.2. Usage Meta Information

It is generally used at the end of the introduction and at the beginning of each section. Alternatively, the section about meta information could be written as follows:

4.3. Meta information

4.3.1. Definition of Meta Information

Meta information is information that is not related to the content but guides the reader. The usage is explained in the following subsection.

4.3.2. Usage Meta Information

It is generally used at the end of the introduction and at the beginning of each section. If the second model is used, meta information and content are more interwoven.

4.4. Use cases of various macros described in this document

4.4.1. Quotes

The following example shows two things at once. Firstly, how to change the language environment, secondly, how to quote directly.

> Aus logischer Sicht besitzt ein Von-Neumann-Rechner neben der CPU einen *Speicher*, welcher begrifflich zusammengesetzt ist aus einem ROM- und einem RAM-Teil. [OV06, p. 230]

Paraphrased quotes shall be marked by putting an identifier at the end of the relevant sentence or paragraph. This sentence contains a sample identifier at the end (although

Table 2: Comparison of Cluster-, Grid- und Cloud-Computing chracteristics.

Characteristic	Cluster	Grid	Cloud
joint usage of resources	✔	✔	✔
joint network access	✔	✔	✔
immediate scalability according to demand	✖	✖	✔
independent self-service according to demand	✖	✖	✔
Measurement of servie usage	✖	✔	✔
Working wiht virtual resources	✖	✖	✔

the cited book is unrelated to quotes and references) [Lev10]. If authors or book titles are mentioned by name, the source should be cited right after them, e.g.: The book *Rechneraufbau und Rechnerstrukturen* [OV06] has been written by W. Oberschelp and G. Vossen. In 2007 Hagemann, Letz, and Vossen [HLV07] conducted research regarding Web service discovery. Also evident by the last example is that up to three authors can be mentioned in the text in full. (An alternative would be: In 2007 Hagemann et al. [HLV07] conducted . . .)

4.5. Listings, Figures, and Tables

This section presents examples of listings (cf. Listing 3), figures (cf. Figure 4), tables (cf. Table 2), and also a list using the `itemize*` environment (cf. Figure 5).

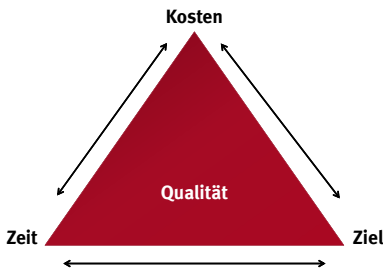

Figure 4: A project management figure.

5. Guide to Academic Writing

This last section describes first which parts an academic work consist of and what is important about them. Secondly, it will be elaborated on what good approaches to academic writing are.

Listing 2: Sample “body” for a seminar paper.

```
\begin{document}

  % Create title page
  \maketitle

  \frontmatter
  % Table of contents
  \tableofcontents
  \newpage

  \listofabbreviations
  \listofsymbols

  \mainmatter
  \include{dokumentation-body}

  % Include (1) literature and (2) Web references in separate
     BibTeX files
  \dbisbibliography{LiteratureSample}{WebReferencesSample}
\end{document}
```

Listing 3: Sample listing for a seminar.

```
\begin{lstlisting}[language=SQL,label=lst:sql-sample,caption={
   Sample listing of an SQL query}]
//One line of SQL
SELECT * FROM `table1` WHERE 1;
\end{lstlisting}
```

Example of an `itemize*` list:

- listings cf. Listing 3
- figures cf. Figure 4
- tables cf. Table 2

Note the smaller spacing compared to a regular list (right).

Example of an `itemize` list:

- listings cf. Listing 3
- figures cf. Figure 4
- tables cf. Table 2

Figure 5: Comparison of `itemize*` (left) and `itemize` (right).

5.1. Parts of an Academic Writing

Abstract The abstract is a short summary of the work at hand. Its purpose is to give a concise overview of the work's contents and enable potential readers to judge the relevance of the work. To achieve this, abstracts of academic writings should state the purpose and aims of the work (including some context information, if necessary), the methods applied, and the main findings in approximately 100–150 words.

Introduction The introduction should clearly outline the aims of the work and its relevant adjoining subject areas. The most important terms have to be defined exactly, which requires a precise wording. Furthermore, the research method can be briefly hinted at. By highlighting the process of the study conducted the structure of the work can be outlined and justified. In many case it has proven to be sensible having a figure at the end of the introduction showing the structure, line of argument, and key message of the work. This section does not necessarily have to be called introduction but may be titled in regard to the work.

For theses an introduction should be one to three pages. If basic definitions take up too much space, it may be opted to add another section in between the introduction and the main body (e. g. fundamentals) which elaborates on basic principles. For other types of writing the introduction should be shorter according to its overall page count.

From experience it can be stated that it makes sense to write the introduction last. It may be drafted at the beginning but during the course of writing it is likely that changes to the original plan occur (the sequence and relation of sections may change or new aspects appear). By writing the introduction last unnecessary work is avoided.

Main body The main body should be split into several chapters or sections and is concerned with the actual topic of the work. Typical sections (amongst others) are: literature review, methodology, and findings.

Conclusion To conclude the work a summary of the main findings should be given. Additionally, it should be elaborated on the limitations of the work at hand and how future research may address these as well as other open issues. Furthermore, possible future developments can be pointed out. Generally, in this last section no new information is given for which reason no quotes and citations are used.

5.2. Good Approaches to Academic Writing

First, carefully read the basic literature. Then clarify comprehension question (such as technical terms and abbreviations). It is also important to understand the context of articles and of the underlying theory. For example an article regarding cryptography can be either in the context of mathematical application or in that of Internet security. To analyze a certain paper, it is important to identify the core ideas of the authors: What do they highlight as being new discoveries? What are the most important points? What is good or bad about their work? Once this has been done, their central theme and the differences between their work and the work of others should be highlighted. Also, the work should be critically reflected: Has the article, for instance, been written for a particular vendor? Are there opposing opinions? Is the content applicable in the way the authors suggest? Very importantly, correct spelling and grammar should be applied. It is indifferent whether American or British rules are used but the writing style must be consistent. Also, correct citation as shown in this template has to be applied. Every reference (literature or Web) that is named in the according list of references has to be mentioned in the text but no particular ration of Web sources to text book or journal sources is required. Please note that in this guide we did not reference each work in the lists of references rather was it the aim to give an example what the lists should look like.

[BKVW10] [2] [VLK07]

Acknowledgements

This document builds on two preliminary works. For one thing it incorporates parts of the style guide of Prof. Jörg Becker's Chair, which can partially be found translated in this document. Additionally, it partially builds on Stephan Dlugosz' one-size-fits-all template for the Information Systems department[4].

[4] http://www.wi.uni-muenster.de/qm/studieren/LaTeXVorlage.html

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List of Web Pages

[1] *Line breaking with long URIs*. http://www.example.org/this-is-going-to-be-a-long-URL-that-should-besplit-in-order-to-have-an-appealing-visual-appearing.html. Version: August 2015. – Last accessed: Never

[2] *ISACA: "COBIT 4.1"*. http://www.isaca.org/Knowledge-Center/COBIT/Pages/Overview.aspx. – Last accessed: 2012-05-15

[3] *Noventum Consulting Website*. http://www.noventum.de/Service-Informationen.htm. – Last accessed: 2012-05-15

[4] GÜIJOSA, Alberto: *What is String Theory?* http://www.nuclecu.unam.mx/~alberto/physics/string.html. Version: September 2004. – Last accessed: 2012-05-15

Appendix

A. Test

No real text here, just a test appendix. For bachelor and master theses, you should use chapters in the appendix, not sections.

Consent Form

for the use of plagiarism detection software to check my thesis

Name: Florian Stahl <florian.stahl@wi.uni-muenster.de>
Student number: 123456
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Address: Meine Straße 42, 12345 Irgendwo
Title of thesis: How to write a paper at the DBIS Group Version 1.0.6

What is plagiarism? Plagiarism is defined as submitting someone else's work or ideas as your own without a complete indication of the source. It is hereby irrelevant whether the work of others is copied word by word without acknowledgment of the source, text structures (e.g., line of argumentation or outline) are borrowed, or texts are translated from a foreign language.

Use of plagiarism detection software The examination office uses plagiarism software to check each submitted bachelor and master thesis for plagiarism. For that purpose the thesis is electronically forwarded to a software service provider where the software checks for potential matches between the submitted work and work from other sources. For future comparisons with other theses, your thesis will be permanently stored in a database. Only the School of Business and Economics of the University of Münster is allowed to access your stored thesis. The student agrees that his or her thesis may be stored and reproduced only for the purpose of plagiarism assessment. The first examiner of the thesis will be advised on the outcome of the plagiarism assessment.

Sanctions Each case of plagiarism constitutes an attempt to deceive in terms of the examination regulations and will lead to the thesis being graded as "failed." This will be communicated to the examination office where your case will be documented. In the event of a serious case of deception the examinee can be generally excluded from any further examination. This can lead to the exmatriculation of the student. Even after completion of the examination procedure and graduation from university, plagiarism can result in a withdrawal of the awarded academic degree.

I confirm that I have read and understood the information in this document. I agree to the outlined procedure for plagiarism assessment and potential sanctioning.

Münster, on the January 26, 2017

Florian Stahl <florian.stahl@wi.uni-muenster.de>

Final declaration

I hereby declare that, to the best of my knowledge and belief, this seminar paper titled “How to write a paper at the DBIS Group Version 1.0.6” is my own work. I confirm that each significant contribution to, and quotation in this thesis from the work, or works of other people is indicated through the proper use of citations and references.

Münster, on the January 26, 2017

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