

Instructions to use DIKU style files

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Abstract. Each report must include an abstract that summarizes the results. Recommended length is at most 150 words. The abstract should not contain any references or displayed equations. \LaTeX -environment is `abstract`.

CR Classification. A report can provide the CR Classification (see the appropriate issue of *Computing Reviews*), but this is not obligatory. \LaTeX -environment is `subject`.

Keywords. List of keywords (4–6) can be useful but not obligatory. \LaTeX -environment is `keywords`.

1. Introduction

We encourage the students to use \LaTeX when preparing their manuscripts. For this purpose we have provided the \LaTeX style file `DIKU-article.cls`, and the \BibTeX style files `DIKU.bst` and `DIKU-alternative.bst`. This document describes how these style files are to be used.

2. General

The \LaTeX style file `DIKU-article.cls` does not accept any options. In `\documentstyle`-command all options given in brackets are simply omitted. The page layout should not be changed in any way.

Redundant spaces ought to be minimized by careful arrangement of tables and figures. Read your `.log` file carefully. There should be no `Overfull \hbox` (as here) and certainly no visible one (more than `1pt`). If necessary, reword the text. The preamble command `\draft` can be used to produce a visible `overfullrulebox` in the margin.

The style file provides macros to create running heads. The `\authorhead` contains the authors' names as "Firstname Surname", "F. Surname1, F. Surname2", and "F. Surname1, F. Surname2, F. Surname3" for up to three

authors, and “Surname1 et al.” for four or more authors. The `titlehead` should contain a short form of the title, not more than 30 characters.

The argument of `\title`-command must be written in sentence case (capitalize only the first word, proper nouns, and as dictated by other specific rules). When the paper has more than one author, the authors in the argument of `\author`-command are separated by usual `\and`-command or by `\AND`-command that inserts vertical glue between the blocks of authors’ names. Affiliations should be given using `\institute`-command. Also here `\and`-command can be used as in `\author`-command. In a multi-author paper, to link the authors and their affiliations `\inst`-command can be used, e.g. `\inst{1}` produces the superscript ¹.

The use of footnotes and appendices should be avoided. However, if appendices are necessary, their place is after **Acknowledgements** and before **References**.

3. Sectioning, numbering, etc.

3.1 Sectioning

The following three L^AT_EX-sectioning commands are available: `\section`, `\subsection`, and `\subsubsection`. Use also sentence case in all headings.

3.2 Numbering

The numbering of displayed equations, theorems, figures, tables, and other “numbered” environments follows one of two styles: either consecutive in each section, or consecutive through the whole paper (default). If you prefer the first style, the style file provides `\twolevelnumbering`-command. The argument of the command is a list of environments that are numbered consecutively in each section, e.g.

```
\twolevelnumbering{figure,equation,theorem}
```

Tables should be referred to “Table I”. Equations and figures should be referred to in abbreviated forms: “Eq. (1)” and “Figure 1”. Use macros `\eqnref{eqn-label}`, `\figref{fig-label}`, and `\tableref{tab-label}` to generate the references.

3.3 Lists of items

The depths of L^AT_EX-environments `itemize` and `enumerate` are restricted to two.

3.4 Tabbing environment

The style file defines `\tabbingstretch` to specify the strut to be used in the `tabbing` environment. The functionality of `\tabbingstretch` is the same as that of `\arraystretch` in `array` and `tabular` environments.

4. Theorem-like environments

The style file defines the following theorem-like environments:

| | | | |
|------------------------|--------------------------|----------------------|--------------------------|
| <code>theorem</code> | <code>proposition</code> | <code>claim</code> | <code>fact</code> |
| <code>lemma</code> | <code>definition</code> | <code>problem</code> | <code>remark</code> |
| <code>corollary</code> | <code>conjecture</code> | <code>example</code> | <code>observation</code> |

These are “numbered” environments. The style file also defines the corresponding “unnumbered” environments: `theorem*`, ..., `observation*`. The proofs can be typed within the environment `proof`.

For example, the \LaTeX source

```
\begin{theorem}[Chebychev's Inequality]
If  $X$  is any random variable, then
\begin{equation}
\Pr[|X| \geq a] \leq E(X^2)/a^2; .
\label{eqn:example}
\end{equation}
\end{theorem}
```

produces

Theorem 1. (Chebychev's Inequality) *If X is any random variable, then*

$$\Pr[|X| \geq a] \leq E(X^2)/a^2 . \quad (1)$$

Proof. If $F(x)$ denotes the distribution function of the random variable X , then

$$\Pr[|X| \geq a] = \int_{|x| \geq a} dF(x) .$$

Since in the region of integration $|x|/a \geq 1$, it follows that

$$\int_{|x| \geq a} dF(x) \leq \frac{1}{a^2} \int_{|x| \geq a} x^2 dF(x) .$$

By extending the integration to all values of x , we merely strengthen the inequality:

$$\int_{|x| \geq a} dF(x) \leq \frac{1}{a^2} \int_{|x| \geq a} x^2 dF(x) \leq \frac{1}{a^2} \int x^2 dF(x) = E(X^2)/a^2 . \quad \square$$

When a proof ends with a displayed equation as above, the box “ \square ” should be at the right end of the formula rather than at the beginning of the next line. In this case, the box must be inserted through `\qed` at the end of the equation, and a blank line must be left between the closing of the equation and the `\end{proof}` (as in the source of these instructions).

4.1 Spacing before and after environments

Extra space is added at the top of a list if the input file has a blank line before any list-making environment. The vertical space after the environment is the same as the one preceding it. The list-making environments are: `quote`, `quotation`, `verse`, `itemize`, `enumerate`, `description`, `center`, `flushleft`, and `flushright`, as well as all the theorem-like environments.

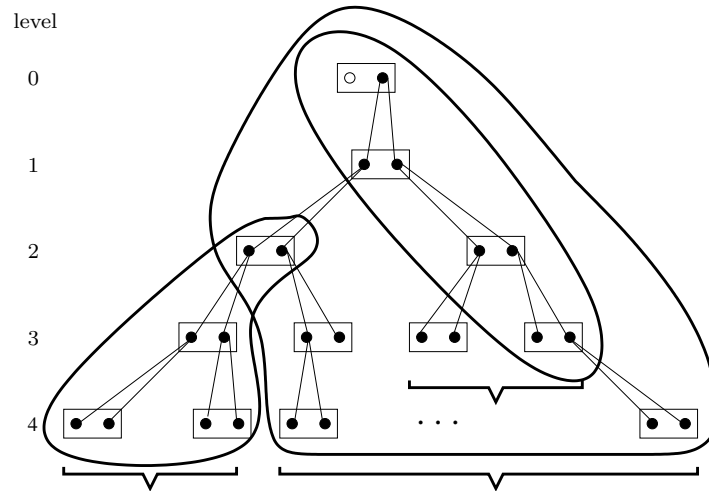


Figure 1. This drawing was created with `xfig` and converted to PDF/ \LaTeX format. Then the \LaTeX part was inputted which further included the PDF part.

5. Figures and tables

Figures and tables are to be inserted in the text nearest their first reference. They should be arranged so as not to cause an excessive amount of blank space on the remainder of the page.

The captions are centered below the figures and above the tables. If a table needs to extend over to a second page, the continuation of the table should have a caption: “Table II (*cont.*)”. Macro `\continued` generates this caption. Example:

```
\begin{table}
\continued % Instead of \caption
...
\end{table}
```

The figures could be produced using the `tikz` package, `xfig` vector-graphics editor, any other drawing tool, or cell-phone camera. The created pictures can be converted to, e.g. GIF, JPEG, PNG, or PDF format, and included using any of the graphics packages available in the \LaTeX bundle. In a high-quality report it may be necessary to use the same font in the text inside the figure as that used in the main body of the report. An example of this is given in Figure 1. The picture was drawn with `xfig`; all text was written using the special flag and the default \LaTeX fonts. The picture was exported to two files: a \LaTeX file contained the text and a PDF file contained the graphics. The \LaTeX part is inputted into this file; the \LaTeX part further includes the PDF part.

When including your own pictures, you can use, for example, the `graphicx` package, in which case

```
\usepackage{graphicx}
```

must be added to the preamble, after which a new figure can be inserted by using the command:

`\includegraphics{filename}`.

For possible options, e.g. how to scale the picture, consult your L^AT_EX documentation.

Remember that **previously published material must be accompanied by written permission from the author and publisher!**

6. References

The preferred style of referring to the bibliography is to use numbered references: “Raatikainen [4] proposed to use the Bonferroni inequality (see [1, pp. 41–43] or [3, § 9.4]).” This is obtained by using the standard L^AT_EX-environment `thebibliography` or BibT_EX with the style file `DIKU.bst` which generates the bibliography items in the preferred format.

Another possibility is to use the author-date citation style: “Raatikainen [1993] proposed to use the Bonferroni inequality (see [Kleijnen 1987, pp. 41–43] or [Law and Kelton 1991, § 9.4]).” Note that the years are in brackets in running text, but without brackets if the reference itself is in brackets. For three or more authors, use “et al.” Several papers in the same year are distinguished as “Raatikainen 1994a, Raatikainen 1994b”. When an article has more than two authors, the citation should be given in the form “[Kojó et al. 1996]”.

The style file provides the command `\alternativecitationstyle` to support the alternative citation style. The following macros are defined to simplify the use of the alternative style:

| macro | produces |
|--|-----------------------|
| <code>\cite{bibreflabel}</code> | “[Author Year]” |
| <code>\cite[note]{bibreflabel}</code> | “[Author Year, note]” |
| <code>\citet{bibreflabel}</code> | “Author [Year]” |
| <code>\citet[note]{bibreflabel}</code> | “Author [Year, note]” |
| <code>\citealt{bibreflabel}</code> | “Author Year” |
| <code>\citealt[note]{bibreflabel}</code> | “Author Year, note” |
| <code>\citeauthor{bibreflabel}</code> | “Author” |
| <code>\citeyear{bibreflabel}</code> | “Year” |

The macros above assume that your bibliography items are written as

```
\bibitem[{Author}{Year}]{bibreflabel}
\bibitem[{Author}{Year1}]{bibreflabel1}
\bibitem[{Author}{Year2}]{bibreflabel2}
```

The BibT_EX style file `DIKU-alternative.bst` generates the bibliography items in the format above.

7. Use of the style files

We provide the following files:

1. `DIKU-article.cls` contains the \LaTeX code for producing the camera-ready output of your report.
2. `DIKU-report.cls` is designed for longer reports. It is used in the same way as `DIKU-article.cls`, but it provides some additional features like the `titlepage` environment, commands `\frontmatter`, `\mainmatter`, `\backmatter`, `\tableofcontents`, `\chapter`, `\part`, and some undocumented features (for these you have to look at the \LaTeX source).
3. `DIKU.bst` contains the \BibTeX code which produces a reference list in the form preferred by us.
4. `DIKU-alternative.bst` contains the \BibTeX code which produces a reference list in the form suitable for the author-year citation style.
5. `article-sample.tex` contains the \LaTeX source of these instructions.
6. `article-sample.bib` contains the \BibTeX source to produce the reference list.
7. `article-sample.dict` is created by `ispell`. It contains correctly spelled words that are not in the standard dictionary.
8. `example.fig` contains the example figure in `xfig` format.
9. `thesis-sample.tex` contains a brief introduction (in Danish) how to use the style file `ku-forside.sty` when writing a thesis using `DIKU-report.cls`.
10. `makefile` is provided to make your life easier.
11. `article-sample.www` contains data used by our crawler. When this file exists, the report will be made visible via our web pages at `cphst1.dk`.

To prepare your report, type:

```
shell> pdflatex article-sample.tex
shell> bibtex article-sample
shell> pdflatex article-sample.tex
shell> pdflatex article-sample.tex
```

or

```
shell> make
```

8. Disclaimer

The style files are not guaranteed to be free of errors. Any bugs, inconsistencies, suggestions, and other comments should be reported by email to `jyrki@di.ku.dk`.

Acknowledgements

This section comes before the references and is unnumbered. \LaTeX -environment is `acknowledgements`.

This style file was created by modifying the style file `njcarticle.cls` provided by the *Nordic Journal of Computing* (NJC) and copyrighted by Kimmo Raatikainen. He gave us the permission to use the style on 29 April 1996. His instructions for the NJC authors were used as the first draft of this document.

References

- [1] J. P. C. Kleijnen, *Statistical Tools for Simulation Practitioners*, Marcel Dekker, Inc., New York (1987).
- [2] M. Kojo, K. Raatikainen, and T. Alanko, Connecting mobile workstations to the internet over a digital cellular telephone network, *Mobile Computing*, Kluwer, Boston (1996), 201–255.
- [3] A. M. Law and W. D. Kelton, *Simulation Modeling & Analysis*, 2nd Edition, McGraw-Hill, New York (1991).
- [4] K. E. E. Raatikainen, Sequential procedure for simultaneous estimation of several means, *ACM Transactions on Modeling and Computer Simulation* **3** (1993), 108–133.
- [5] K. E. E. Raatikainen, Database access in intelligent networks, *Proceedings of IFIP TC6 Workshop on Intelligent Networks*, Lappeenranta University of Technology, Lappeenranta (1994), 163–183.
- [6] K. E. E. Raatikainen, Information aspects of services and service features in intelligent network capability set 1, Report **C-1994-45**, Department of Computer Science, University of Helsinki, Helsinki (1994).