

Schreibwerkstatt

in English

Writing a Thesis

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Abstract

This seminar, called the “Schreibwerkstatt” should give students a brief introduction into useful application software programs for doing research, like writing a diploma thesis, bachelor thesis or any other kind of research papers.

Therefore we recommend the \LaTeX framework as a writing tool and \R for statistical calculations and graphics. Important advantages of both programs are the properties that both are open source programs and can easily interact with each other through the Sweave framework.

For citation \LaTeX uses a special tool, called \BIBTeX , for formatting lists of references.

Keywords: Research papers, \LaTeX , \BIBTeX , \R , Sweave

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1 L^AT_EX

1.1 Description

L^AT_EX (pronounced /'leɪtɛk/ or /'la:tɛk/) is a document markup language and document preparation system for high-quality typesetting. It is most often used for medium-to-large technical or scientific documents but it can be used for almost any form of publishing.

L^AT_EX is like HTML not a word processor! That means, that Instead, L^AT_EX encourages authors not to worry too much about the appearance of their documents but to concentrate on getting the right content.

L^AT_EX is based on Donald E. Knuth's TeX typesetting language (Knuth, 1984). L^AT_EX was first developed by Leslie Lamport, and is now being maintained and developed by the L^AT_EX3 Project: <http://www.latex-project.org/latex3.html> (Lamport, 1994). L^AT_EX is available for free (see Wikipedia, 2008a, for further explanation).

1.2 First Steps

All necessary software programs are freely available from the web for windows, Linux and Mac users as well. For a smooth installation follow an installation guide (e.g., <http://statmath.wu-wien.ac.at/courses/>).

For writing the L^AT_EX code you can use a variety of editors. As a windows user you can use for example T_EXnic Center.

1.3 Simple text

This is a simple text. It could be written in **bold**, *italic* or **many other styles**.

1.3.1 A Subsection

This is a subsection of 1.3.

1.3.2 Another Subsection

This is another subsection of 1.3.

1.4 Citations

For citations we recommend to use the Harvard citation style. Harvard referencing, also known as the author-date system, or parenthetical system, is a citation system developed by Harvard University and used by many publishers internationally (see Wikipedia, 2008b, for further information).

According to Chernin (1988) the author-date citation was first used in 1881 by Edward Laurens Mark who wrote a paper on the embryogenesis of the garden slug, in which he included an in parentheses on page 194, the first known instance of such a reference (Mark, 1881).

The document preparation system L^AT_EX uses a special tool, called B_IB_T_EX for formatting lists of references.

1.5 Equations

A big advantage of \LaTeX is the simple way of including mathematical formulas. They could be included into the text, like $c^2 = a^2 + b^2$ or as a numbered equation:

$$K(t) = e^{cT} K(0) + \int_0^T e^{T-t} a(t) dt \quad (1)$$

The equations could be referenced in the text, e.g., with Equation 1 the final value of a continuous compounding cash flow could be computed.

The formulas can also be contain Greek symbols, like Equation 2 which shows the Cobb-Douglas production function.

$$Y = AL^\alpha K^\beta \quad (2)$$

1.6 Tables and Figures

Table 1 shows a first simple table.

Student	Age	Weight
Mayer	25	75
Müller	23	80

Table 1: A table.

Figure 1 shows the Daily Closing Prices of Major European Stock Indices (1991-1998).

1.7 Links

- http://wwwai.wu-wien.ac.at/manuals/hahsler/Latex_Kurzbeschreibung/lkurz/
- Short \LaTeX Introduction
- \LaTeX Introduction – Slides

2 R

R is a freely available language and environment for statistical computing and graphics which provides a wide variety of statistical and graphical techniques: linear and nonlinear modelling, statistical tests, time series analysis, classification, clustering, etc (R Development Core Team, 2007).

2.1 Sweave

Sweave provides a flexible framework for mixing text and R code for automatic document generation (Leisch, 2002).

EuStockMarkets

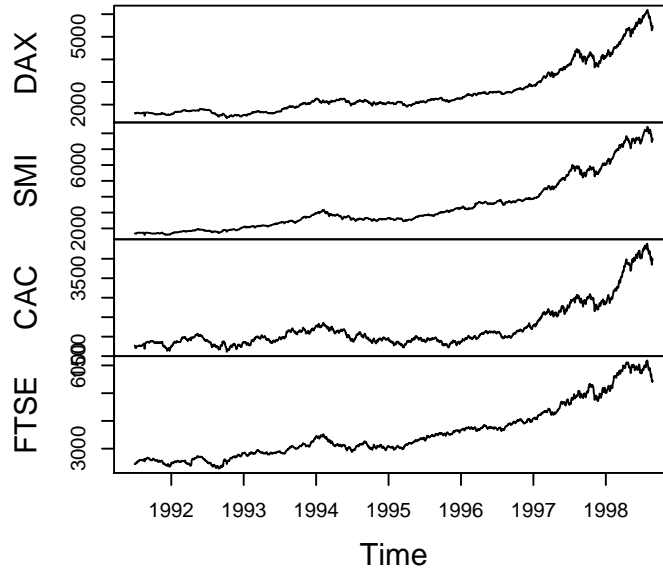


Figure 1: Daily Closing Prices of four Major European Stock Indices (DAX, SMI, CAC, FTSE) from 1991 to 1998.

2.2 Additional Information

1. <http://CRAN.R-project.org/>
2. <http://www.R-project.org/>
3. Sweave Manual

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