

Introduction to \LaTeX

for MST–Students

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17.11.2011

1 Outline

2 Start

- programmes
- Example
- spacing
- lists
- tables
- math

- Basic
- Scientific Writing
- Usepackages, Presentation etc.

Where to get \LaTeX ?

Linux / UNIX

already exists per default, if not, use texlive

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MikTeX

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Windows

MikTeX

other OS

Dante

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Computer lab

available on every linux computer

Editors

Xemacs, vim, wordpad ...

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Linux IDEs

Kile

Lyx

Texlipse a plugin for eclipse

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Windows

LEd

TeXnicCenter

Excel2 \LaTeX

converter for tables

Excel2 \LaTeX

converter for tables

IrfanView

image processing

Excel2 \LaTeX

converter for tables

IrfanView

image processing

Detexify²

\LaTeX symbol classifier

\	Escape character: masks special character and introduces commands
{ }	if arguments enclose, text blocks form etc.
%	Comment symbol: The remainder of the line is ignored
\$	enclose mathematical formula in pairs inside of text
^ _	exponent and index in math mode
&	depending on context - tabulator
~	Protected blank

Input

```
\documentclass{article}  
\begin{document}  
a small \LaTeX{} document  
\end{document}
```

A small \LaTeX document

Input

```
\documentclass{article}  
\begin{document}  
a small \LaTeX{} document  
\end{document}
```

Output

a small \LaTeX document

classes

article, book, report and letter are standard

classes

article, book, report and letter are standard

KoMa-Script

scrartcl, scrreprt, scrbook

classes

article, book, report and letter are standard

KoMa-Script

scrartcl, scrreprt, scrbook

options

paper and font size ...

classes

article, book, report and letter are standard

KoMa-Script

scrartcl, scrreprt, scrbook

options

paper and font size ...

here

we use the Imtek template

no influential by spaces and simple line break

no influential by spaces and simple line break

Input

```
Leerzeichen und  
ein einfacher  
Zeilenumbruch \"ändern nichts  
daran  
dass es  
als  
zusammen\"angender Satz dargestellt wird.
```

no influential by spaces and simple line break

Input

```
Leerzeichen und  
ein einfacher  
Zeilenumbruch \"ändern nichts  
daran  
dass es  
als  
zusammenh\"angender Satz dargestellt wird.
```

Output

Leerzeichen und ein einfacher Zeilenumbruch ändern nichts daran dass es als zusammenhängender Satz dargestellt wird.

spaces

```
word 1 \nobreakspace\nobreakspace\nobreakspace word 2
```


enforce spacing

spaces

```
word 1 \nobreakspace\nobreakspace\nobreakspace word 2
```

Output

word 1 word 2

spaces

```
word 1 \nobreakspace\nobreakspace\nobreakspace word 2
```

Output

word 1 word 2

(q)quad

\quad and \qquad

enforce spacing

spaces

```
word 1 \nobreakspace\nobreakspace\nobreakspace word 2
```

Output

word 1 word 2

(q)quad

`\quad` and `\qqquad`

hspace

```
\hspace{size}
```

enforce spacing

spaces

```
word 1 \nobreakspace\nobreakspace\nobreakspace word 2
```

Output

word 1 word 2

(q)quad

`\quad` and `\qquad`

hspace

`\hspace{size}` would be ignored at the beginning of a line

enforce spacing

spaces

```
word 1 \nobreakspace\nobreakspace\nobreakspace word 2
```

Output

word 1 word 2

(q)quad

`\quad` and `\qquad`

hspace

`\hspace{size}` would be ignored at the beginning of a line
`\hspace*{size}`

line break

enforced with `\\`

line break

enforced with `\`

line break

`\linebreak`

line break

enforced with `\`

line break

`\linebreak`

`\nolinebreak`

line break

enforced with `\`

line break

`\linebreak`

`\nolinebreak`

paragraphs

two or more empty lines

spacing

`\smallskip 1/4 line (3pt)`

`\medskip 1/2 line (6pt)`

`\bigskip 1 line (12pt)`

spacing

`\smallskip` 1/4 line (3pt)

`\medskip` 1/2 line (6pt)

`\bigskip` 1 line (12pt)

own skip

`\parskip\addtolength{\parskip}{size}`

spacing

`\smallskip` 1/4 line (3pt)

`\medskip` 1/2 line (6pt)

`\bigskip` 1 line (12pt)

own skip

`\parskip\addtolength{\parskip}{size}`

vspace

`\vspace{size}`

spacing

`\smallskip` 1/4 line (3pt)

`\medskip` 1/2 line (6pt)

`\bigskip` 1 line (12pt)

own skip

`\parskip\addtolength{\parskip}{size}`

vspace

`\vspace{size}` would be ignored at the beginning of a line

spacing

`\smallskip` 1/4 line (3pt)

`\medskip` 1/2 line (6pt)

`\bigskip` 1 line (12pt)

own skip

`\parskip\addtolength{\parskip}{size}`

vspace

`\vspace{size}` would be ignored at the beginning of a line

`\vspace*{size}`

commands

`\textbf{Bold}` **Bold**

commands

`\textbf{Bold}` **Bold**

`\textit{italic}` *italic*

commands

`\textbf{Bold}` **Bold**

`\textit{italic}` *italic*

`\textrm{Text}` Text

commands

`\textbf{Bold}` **Bold**

`\textit{italic}` *italic*

`\textrm{Text}` Text

or `\text{Text}` Text

commands

`\textbf{Bold}` **Bold**

`\textit{italic}` *italic*

`\textrm{Text}` Text

or `\text{Text}` Text

`\emph{emphasized}` *emphasized*

Input

```
\begin{itemize}  
\item keyword  
\item still another keyword  
\end{itemize}
```

Input

```
\begin{itemize}
\item keyword
\item still another keyword
\end{itemize}
```

Output

- keyword
- still another keyword

Input

```
\begin{enumerate}  
\item keyword  
\item still another keyword  
\end{enumerate}
```

Input

```
\begin{enumerate}  
\item keyword  
\item still another keyword  
\end{enumerate}
```

Output

- 1 keyword
- 2 still another keyword

Input

```
\begin{tabular}{|l|c|r|p{1.5 cm }|}  
\hline  
left & centers & right & width \\  
l & C & r & p \\  
\hline  
\end{tabular}
```


Input

```
\begin{tabular}{|l|c|r|p{1.5 cm }|}  
\hline  
left & centers & right & width \\  
l & C & r & p \\  
\hline  
\end{tabular}
```

Output

left	centers	right	width
l	C	r	p

Input

```
 $\lim $ \\  
$
```

```
 \frac{1}{a } = \frac{\frac{1}{2 } + \frac{1}{2}}{a}$ \\  
$
```

```
 x_{n}$ \\  
$
```

```
 x^{a}$ \\  
$
```

```
 a \cdot b $ \\  
$
```

Input

```
 $\lim $ \\  
$
```

```
 \frac{1}{a } = \frac{\frac{1}{2 } + \frac{1}{2}}{a}$ \\  
$
```

```
 x_{n}$ \\  
$
```

```
 x^{a}$ \\  
$
```

```
 a \cdot b $ \\  
$
```

Output

lim

$$\frac{1}{a} = \frac{\frac{1}{2} + \frac{1}{2}}{a}$$

x_n

x^a

$a \cdot b$