

L^AT_EX and Friends

Basic Typesetting

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ucc

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Ten Special Characters

Token	Purpose	Command
#	parameter reference	<code>\#</code>
\$	math mode switch	<code>\\$</code>
%	start of comment	<code>\%</code>
&	alignment tab	<code>\&</code>
~	text tie token	<code>\textasciitilde</code>
_	math subscript	<code>_</code>
^	math superscript	<code>\textasciicircum</code>
{	start of group	<code>\{</code>
}	end of group	<code>\}</code>
\	start of command	<code>\textbackslash</code> or <code>\backslash</code>

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Tieing Text with the Tilde Operator

L^AT_EX Usage

```
... Figure%  
  ~\ref{fig:list@format}  
  depicts the format of a list.  
It is a reproduction of%  
  ~\cite[Figure~6.3]{Lamport:94}.
```

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When Tying Text is Needed

References to Named Parts of a Document

- `Theorem~1.5,`
- `Donald~E. Knuth,`
- `Bartel~Leendert van~der~Waarden,`
- `dimension~d,`
- `string~s of length~l,`
- `1,~2, or~3.`
- `from 0 to~1,`
- `increase z by~1,`
- `equals~n,`
- `less than~ϵ,`
- `for large~n,`
- `Show that function $f(x)$ is (1)~continuous;`
`(2)~bounded.`

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When Tying Text is Needed

Between Forenames and between Multiple Surnames

- Theorem~1.5,
- Donald~E. Knuth,
- Bartel~Leendert van~der~Waarden,
- dimension~\$d\$,
- string~\$s\$ of length~\$l\$,
- 1,~2, or~3.
- from 0 to~1,
- increase \$z\$ by~1,
- equals~\$n\$,
- less than~\$\epsilon\$,
- for large~\$n\$,
- Show that function \$f(x)\$ is (1)~continuous;
(2)~bounded.

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Between Math Symbols in Apposition with Nouns

- Theorem~1.5,
- Donald~E. Knuth,
- Bartel~Leendert van~der~Waarden,
- dimension~\$d\$,
- string~\$s\$ of length~\$l\$,
- 1,~2, or~3.
- from 0 to~1,
- increase \$z\$ by~1,
- equals~\$n\$,
- less than~\$\epsilon\$,
- for large~\$n\$,
- Show that function \$f(x)\$ is (1)~continuous;
(2)~bounded.

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Between Symbols in Series

- Theorem~1.5,
- Donald~E. Knuth,
- Bartel~Leendert van~der~Waarden,
- dimension~\$d\$,
- string~\$s\$ of length~\$l\$,
- 1,~2, or~3.
- from 0 to~1,
- increase \$z\$ by~1,
- equals~\$n\$,
- less than~\$\epsilon\$,
- for large~\$n\$,
- Show that function \$f(x)\$ is (1)~continuous;
(2)~bounded.

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When a Symbol is a Tightly Bound Object of Preposition

- Theorem~1.5,
- Donald~E. Knuth,
- Bartel~Leendert van~der~Waarden,
- dimension~\$d\$,
- string~\$s\$ of length~\$l\$,
- 1,~2, or~3.
- from 0 to~1,
- increase \$z\$ by~1,
- equals~\$n\$,
- less than~\$\epsilon\$,
- for large~\$n\$,
- Show that function \$f(x)\$ is (1)~continuous;
(2)~bounded.

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When Mathematical Phrases are Rendered in Words

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- Donald~E. Knuth,
- Bartel~Leendert van~der~Waarden,
- dimension~\$d\$,
- string~\$s\$ of length~\$l\$,
- 1,~2, or~3.
- from 0 to~1,
- increase \$z\$ by~1,
- equals~\$n\$,
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- for large~\$n\$,
- Show that function \$f(x)\$ is (1)~continuous;
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When Cases are Being Enumerated within a Paragraph

- Theorem~1.5,
- Donald~E. Knuth,
- Bartel~Leendert van~der~Waarden,
- dimension~\$d\$,
- string~\$s\$ of length~\$l\$,
- 1,~2, or~3.
- from 0 to~1,
- increase \$z\$ by~1,
- equals~\$n\$,
- less than~\$\epsilon\$,
- for large~\$n\$,
- Show that function \$f(x)\$ is (1)~continuous;
(2)~bounded.

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Grouping: First Application

Turn Several Things into one Compound Thing

L^AT_EX Usage

A bold `\textbf{word}` and
a bold `\textbf` letter.

L^AT_EX Output

A bold **word** and a bold **letter**.

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Grouping: Second Application

Make Local Changes

L^AT_EX Usage

```
Normal text here.  
{% Start a group.  
  \bfseries  
  % Now we have bold text.  
  Bold paragraphs in here.  
}% Close the group.  
Back to normal text again.
```

L^AT_EX Output

Normal text here. **Bold paragraphs in here.** Back to normal text again.

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Output	Command	Name
ò	<code>\`{o}</code>	Acute accent
ó	<code>\' {o}</code>	Grave accent
ô	<code>\~{o}</code>	Circumflex (hat)
õ	<code>\~{o}</code>	Tilde (squiggle)
ö	<code>\" {o}</code>	Umlaut or dieresis
č	<code>\. {c}</code>	Dot accent
š	<code>\v {s}</code>	Háček (caron or check)
ö	<code>\u {o}</code>	Breve accent
ō	<code>\={o}</code>	Macron (bar)
ő	<code>\H {o}</code>	Long Hungarian umlaut
õö	<code>\t {oo}</code>	Tie-after accent
ç	<code>\c {s}</code>	Cedilla accent
◌̣	<code>\d {o}</code>	Dot-under accent
◌̤	<code>\b {o}</code>	Bar-under accent

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Other special Characters

Output	Command	Name
å	<code>\aa</code>	Scandinavian a-with-circle
Å	<code>\AA</code>	Scandinavian A-with-circle
ł	<code>\l</code>	Polish suppressed-l
Ł	<code>\L</code>	Polish suppressed-L
ø	<code>\o</code>	Scandinavian o-with-slash
Ø	<code>\O</code>	Scandinavian O-with-slash
¿	<code>?‘</code>	Open question mark
¡	<code>!‘</code>	Open exclamation mark

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Ligatures (Example from *L^AT_EX and Friends*)

Top with Ligatures; Bottom without Ligatures

f i

fi

f i

ff

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Foreign Ligatures

Output	Command	Name
œ	<code>\oe</code>	French ligature œ
Œ	<code>\OE</code>	French ligature Œ
æ	<code>\ae</code>	Scandinavian ligature æ
Æ	<code>\AE</code>	Scandinavian ligature Æ
ß	<code>\ss</code>	German ‘Eszett’ or sharp S

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Avoiding Ligatures

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L^AT_EX Usage

Mr~Crabs is a self\makebox{}ish shellfish.

Quotation Marks

L^AT_EX Usage

```
'Convention' dictates that
punctuation go inside
quotes, like "this," but
some think it's better
to do "this".
```

L^AT_EX Output

'Convention' dictates that punctuation go inside quotes, like "this," but some think it's better to do "this".

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Nested Quotes

L^AT_EX Usage

```

“\, ‘Fi’ or ‘fum?’ \,,” he asked. \\
“‘Fi’ or ‘fum?’” he asked.      \\
“{} ‘Fi’ or ‘fum?’ {}” he asked.

```

L^AT_EX Output

“ ‘Fi’ or ‘fum?’ ” he asked.
 “‘Fi’ or ‘fum?’” he asked.
 “{} ‘Fi’ or ‘fum?’ {}” he asked.

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About this Document

Dashes

- Intra-word dash: a one-to-one relation. L^AT_EX `-`.
- En-dash: pages 12–15; a joint Anglo–Irish venture. L^AT_EX `--`.
- Em-dash: separates strong interruption — like this. L^AT_EX `---`.

L^AT_EX Usage

The intra-word dash is used to hyphenate compound modifiers such as light-green, X-ray, or one-to-one. ...

The en-dash is used in ranges: pages~12\,--\,15.

The em-dash is used to separate strong interruptions from the rest of the sentence~--- like this%

~\cite[Chapter~6]{Trask:1997}. ...

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- Intra-word dash: a one-to-one relation. L^AT_EX –.
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L^AT_EX Usage

The intra-word dash is used to hyphenate compound modifiers such as light-green, X-ray, or one-to-one. ...

The en-dash is used in ranges: pages~12\,--\,15.

The em-dash is used to separate strong interruptions from the rest of the sentence~--- like this%
~\cite[Chapter~6]{Trask:1997}. ...

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- Intra-word dash: a one-to-one relation. L^AT_EX `-`.
- En-dash: pages 12–15; a joint Anglo–Irish venture. L^AT_EX `--`.
- Em-dash: separates strong interruption — like this. L^AT_EX `---`.

L^AT_EX Usage

The intra-word dash is used to hyphenate compound modifiers such as light-green, X-ray, or one-to-one. ...

The en-dash is used in ranges: pages~12\,--\,15.

The em-dash is used to separate strong interruptions from the rest of the sentence~--- like this%
`~\cite[Chapter~6]{Trask:1997}`. ...

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About this Document

- L^AT_EX normally treats a full stop as and of sentence.
- If full stop is not end of sentence you have to help a bit.

L^AT_EX Usage

Meet me at 6~p.m. _at the Grand Parade.

- Exception: D. Knuth, L. Lamport,

L^AT_EX Usage

Donald~E. Knuth developed the {\TeX} system.

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Periods: Exceptions

L^AT_EX Usage

In Frank Herbert's `\emph{Dune}` saga,
the Mother School of the Bene Gesserit
is situated on the planet Wallach IX\@.

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L^AT_EX Input

Many stories start with

```
'Once upon a time\ldots.'
```

They usually end with

```
'\ldots\_and they all lived  
happily ever after.'
```

L^AT_EX Output

Many stories start with 'Once upon a time...' They usually end with '... and they all lived happily ever after.'

Emphasis Switch: `\emph`

L^AT_EX Usage

Emphasised `\emph{example}`.

L^AT_EX Output

Emphasised *example*.

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Good Borderline Punctuation

L^AT_EX Input

Robert Bringhurst, author of
`\emph{Elements of
 Typographic Style,}`
 recommends setting borderline
 punctuation symbols in
 the brighter type.
`\textbf{Do as he}`, or
 risk getting ugly type.

L^AT_EX Output

Robert Bringhurst, author of *Elements of Typographic Style*, recommends setting borderline punctuation symbols in the brighter type. **Do as he**, or risk getting ugly type.

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Poor borderline Punctuation

Don't Try This at Home

Robert Bringhurst, author of
`\emph{Elements of
 Typographic Style}`,
 recommends setting borderline
 punctuation symbols in
 the brighter type.
`\textbf{Do as he,}` or
 risk getting ugly type.

L^AT_EX Output

Robert Bringhurst, author of *Elements of Typographic Style*, recommends setting borderline punctuation symbols in the brighter type. **Do as he**, or risk getting ugly type.

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L^AT_EX Usage

```
Footnotes\footnote{A footnote is a note  
of reference, explanation, or comment that is  
usually placed below the text on a printed page.}  
can be a nuisance. This is especially true if  
there are many.\footnote{Like here.} The more you see  
them, the more annoying they get.\footnote{Got it?}
```

L^AT_EX Output

Footnotes¹ can be a nuisance. This is especially true if there are many.² The more you see them, the more annoying they get.³

¹A footnote is a note of reference, explanation, or comment that is usually placed below the text on a printed page.

²Like here.

³Got it?

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```
\marginpar{<text>}
```

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The quote Environment

L^AT_EX Usage

Blah blah blah blah blah blah blah blah blah blah.

```
\begin{quote}
```

Next to the originator of a good sentence
is the first quoter of it. \\

```
\emph{Ralph Waldo Emerson}
```

```
\end{quote}
```

Blah blah blah blah blah blah blah blah blah blah.

L^AT_EX Output

Blah blah blah blah blah blah blah blah blah.

Next to the originator of a good sentence is the first quoter of it.

Ralph Waldo Emerson

Blah blah blah blah blah blah blah blah blah.

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The `verse` Environment

L^AT_EX Usage

The following anti-limerick is attributed to W. S. Gilbert.

```
\begin{verse}
There was an old man of St.~Bees,
Who was stung in the arm by a wasp;
    \quad When they asked, "Does it hurt?"
    \quad He replied, "No, it does n't,
But I thought all the while 't was a Hornet."
\end{verse}
```

L^AT_EX Output

The following anti-limerick is attributed to W. S. Gilbert.

*There was an old man of St. Bees,
 Who was stung in the arm by a wasp;
 When they asked, "Does it hurt?"
 He replied, "No, it does n't,
 But I thought all the while 't was a Hornet."*

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Declaration	Environment	Example
<code>\tiny</code>	<code>tiny</code>	Example
<code>\scriptsize</code>	<code>scriptsize</code>	Example
<code>\footnotesize</code>	<code>footnotesize</code>	Example
<code>\small</code>	<code>small</code>	Example
<code>\normalsize</code>	<code>normalsize</code>	Example
<code>\large</code>	<code>large</code>	Example
<code>\Large</code>	<code>Large</code>	Example
<code>\LARGE</code>	<code>LARGE</code>	Example
<code>\huge</code>	<code>huge</code>	Example
<code>\Huge</code>	<code>Huge</code>	Example

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L^AT_EX Usage

```
{\tiny Mumble.    \\  
  \begin{normalsize}  
    What?  
  \end{normalsize} \\  
  \begin{Huge}  
    Mumble!  
  \end{Huge}}
```

L^AT_EX Output

Mumble.
What?

Mumble!

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Controlling the Type Style

Declaration	Command	Example
<code>\mdseries</code>	<code>\textmd</code>	Medium Series
<code>\normalfont</code>	<code>\textnormal</code>	Normal Style
<code>\rmfamily</code>	<code>\textrm</code>	Roman family
<code>\upshape</code>	<code>\textup</code>	Upright Shape
<code>\itshape</code>	<code>\textit</code>	<i>Italic Shape</i>
<code>\slshape</code>	<code>\textsl</code>	<i>Slanted Shape</i>
<code>\bfseries</code>	<code>\textbf</code>	Boldface Series
<code>\scshape</code>	<code>\textsc</code>	SMALL CAPS SHAPE
<code>\sffamily</code>	<code>\textsf</code>	Sans Serif Family
<code>\ttfamily</code>	<code>\texttt</code>	Typewriter Family

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Controlling the Type Style (Continued)

- Font encoding determines the order of the glyphs in the font.
- Font family:
 - `\rmfamily`;
 - `\sffamily`;
 - `\ttfamily`.
- Series (weight):
 - `\mdseries`;
 - `\bfseries`.
- Shape:
 - `\upshape`;
 - `\itshape`;
 - `\slshape`;
 - `\scshape`.
- The default font encoding, font family, series, and shape.
 - `\normalfont`.

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Small Caps Letters

- Used for acronyms and abbreviations: RTE, WISYWYG, CPU,
- Blends in nicely with main text.

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- *Tracking* adds space uniformly between characters in a passage of text.
- Tracking of small caps/uppercase text improves the legibility.
 - NON-SPACED SMALL CAPS;
 - SPACED SMALL CAPS.
- Use 5% extra space for the tracking.

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The microtype Package

L^AT_EX Usage

```
\usepackage[final,tracking=smallcaps,  
expansion=alltext,protrusion=true]{microtype}
```

L^AT_EX Usage

```
\SetTracking{encoding=*,shape=sc}{50}
```

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L^AT_EX Usage

```
Fill in the missing word. \\
Fill in the missing
\phantom{word}.
```

L^AT_EX Output

Fill in the missing word.
Fill in the missing .

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Fake a Length or Height

```
\hphantom{<stuff>}
```

Box with 0 height and width of `<stuff>`.

```
\vphantom{<stuff>}
```

Box with 0 width and height of `<stuff>`.

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Centering Text

L^AT_EX Usage

```
\begin{center}  
  Blah. \\  
  Blah blah blah.  
  
  Blah blah blah blah blah  
  blah blah blah blah blah  
  blah blah blah blah blah.  
\end{center}
```

L^AT_EX Output

Blah.
Blah blah blah.

Blah blah blah blah blah blah blah blah blah blah blah blah.

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Flush Text

L^AT_EX Usage

```
\begin{flushleft}
  Blah. \\
  Blah blah blah.

  Blah blah blah blah blah
  blah blah blah blah blah
  blah blah blah blah blah.
\end{flushleft}
```

L^AT_EX Output

Blah.
Blah blah blah.
Blah blah blah blah blah blah blah blah blah blah blah blah.

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The `tabular` Environment

- `tabular`, `tabular*`, and `array*` environments.
- For specifying rows consisting of vertically aligned columns.

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The `tabular` Environment (Continued)

L^AT_EX Usage

```
\begin{tabular}[\langle global alignment \rangle]
                {\langle column alignment \rangle}
  \langle text \rangle & \langle text \rangle & \dots & \langle text \rangle \\
  \dots
  \langle text \rangle & \langle text \rangle & \dots & \langle text \rangle \\
  \langle text \rangle & \langle text \rangle & \dots & \langle text \rangle \\
\end{tabular}
```

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Alignment Options

`<global alignment>`

Vertical alignment of environment: `t`, `c`, or `b`.

`<column alignment>`

Column alignment.

- `l` Column is left-aligned.
- `r` Column is right-aligned.
- `c` Column is centred.

`p{<width>}` A `<width>`-wide paragraph.
| Draws a vertical line. Discouraged!

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Example

L^AT_EX Input

```
\begin{tabular}{l|crp{3.1cm}}
  \hline 1 & 2 & 3 & Box me in,
                                     but not too
                                     tight, please.
\\ \hline 11 & 12 & 13 & Excellent.
\\       111 & 112 & 113 & Thank you!
\\ \hline
\end{tabular}
```

L^AT_EX Output

1	2	3	Box me in, but not too tight, please.
11	12	13	Excellent.
111	112	113	Thank you!

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The `\multicolumn` Command

```
\multicolumn{<number>}{<column alignment>}{<text>}
```

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Less is More: `booktabs`

- Adds extra facility to the `tabular` environment.
- Discourages using vertical grid lines.
 - Provides different commands for different rules.
 - Different rules have different widths.
 - Commands for temporarily/permanently changing width.
 - Provides command for adding extra line space.
 - Compatible-ish with `colortbl`.

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Less is More: booktabs (Example)

L^AT_EX Usage

```

\begin{tabular}[c]{lrrp{47mm}}
  \toprule \multicolumn{1}{r}{\textbf{Destination}}
           & \multicolumn{1}{r}{\textbf{Duration}}
           & \multicolumn{1}{r}{\textbf{Price}}
           & \multicolumn{1}{r}{\textbf{Description}}
\\ \midrule
  Cork City
  & 7 Days & \euro 300.00
  & Visit Langer Land. Price includes visits
    to Rory Gallagher Place and de Maarkit.
\\ Dingle
  & 8 Days & \euro 400.00
  & Have fun with Fungie.
\\ \bottomrule
\end{tabular}

```

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Less is More: `booktabs` (Example)

Destination	Duration	Price	Description
Cork City	7 Days	€300.00	Visit Langer Land. Price includes visits to Rory Gallagher Place and de Maarkit.
Dingle	8 Days	€400.00	Have fun with Fungie.

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Hyphenation: Two Solutions

- 1 Put `\-` in a word.
 - Tells L^AT_EX that hyphenation at this position is allowed.

L^AT_EX Usage

Er`\-`go`\-`no`\-`mic has three hyphenation positions.

- 2 Use `\hyphenation` in the preamble.

L^AT_EX Usage

```
\hyphenation{fortran,er-go-no-mic}
```

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L^AT_EX Usage

```
\usepackage[dutch,british]{babel}  
:  
\selectlanguage{dutch}  
% Dutch text here.  
  Nederlandse tekst hier.  
  
\selectlanguage{british}  
% Engelse tekst hier.  
  English text here.
```

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- L^AT_EX does not support automatic spell-checking.
 - “Difficult” anyway, lots of text is generated.
- Most IDEs have spell checker.
- The `ispell` program supports L^AT_EX.

Unix Session

```
$ ispell -l -t -S input.tex | sort -u
```

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AMS American Mathematical Society

API Application Programming Interface

APL A Programming Language

CTAN Comprehensive T_EX Archive Network

CD Compact Disk

FAQ Frequently Asked Question

GUI Graphical User Interface

IDE Integrated Development Environment

ISBN International Standard Book Number

SI Système International d'Unités/International System of Units

OS Operating System

TUG T_EX Users Group

URL Uniform Resource Locator

WYSIWYG What You See is What You Get

About this Document

- This document was created with `pdflatex`.
- The L^AT_EX document class is `beamer`.
- The main font is *T_EX Gyre Heros Condensed*.
 - You may obtain the font from <http://www.gust.org.pl>.