

L^AT_EX and Friends

Basic Text

<http://cswb.ucc.ie/~dongen/LAF/LAF.html>

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ucc

Ten Special Characters

Running Text

Special Characters

- Diacritics
- Ligatures
- Quotation Marks
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- Full Stops
- Ellipsis
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- Borderline Punctuation
- Footnotes and Marginal Notes
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- Controlling the Size
- Controlling the Type Style
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- Language Related Issues
- Acronyms & Abbreviations
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| 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> |

Tying Text with the Tilde Operator

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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}.
```

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~ϵ,`
- `for large~n,`
- Show that function `$f(x)$` is (1)~continuous;
(2)~bounded.

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When Tying Text is Needed

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~ϵ,`
- `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~ϵ,`
- `for large~n,`
- Show that function `$f(x)$` is (1)~continuous;
(2)~bounded.

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When Tying Text is Needed

When a Symbol is a Tightly Bound Object of a 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 Tying Text is Needed

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~ ϵ ,
- 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 |
| ċ | <code>\. {c}</code> | Dot accent |
| š | <code>\v {s}</code> | Háček (caron or check) |
| ǒ | <code>\u {o}</code> | Breve accent |
| ō | <code>\= {o}</code> | Macron (bar) |
| ő | <code>\H {o}</code> | Long Hungarian umlaut |
| ô̂ | <code>\t {oo}</code> | Tie-after accent |
| § | <code>\c {s}</code> | Cedilla accent |
| ̇ | <code>\d {o}</code> | Dot-under accent |
| ̄ | <code>\b {o}</code> | Bar-under accent |

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| 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 |

- *Ligature*: combines two or several characters as special glyph.
 - **ff** (ff), **fi** (fi), **ffi** (ffi), **ffl** (ffl).



- LaTeX recognises English ligatures.

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- *Ligature*: combines two or several characters as special glyph.
 - ff (ff), **fi** (fi), ffi (ffi), ffl (ffl).

A large, bold red ligature 'fi' is centered on the page. The 'f' is a simple, thick vertical stroke with a short horizontal bar at the top. The 'i' is a vertical stroke with a dot above it, positioned to the right of the 'f'.

- LaTeX recognises English ligatures.

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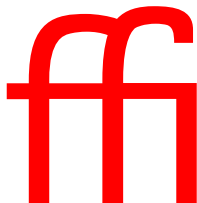
Alignment

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- *Ligature*: combines two or several characters as special glyph.
 - ff (ff), fi (fi), ffi (ffi), ffl (ffl).



- LaTeX recognises English ligatures.

- *Ligature*: combines two or several characters as special glyph.
 - ff (ff), fi (fi), ffi (ffi), ffi (ffi).



- LaTeX recognises English ligatures.

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| Output | Command | Name |
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| 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 |

Avoiding Ligatures

L^AT_EX Usage

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

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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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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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- 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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- 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.

- Exceptions: 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.

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.

```
\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.

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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| 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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About this Document

Small Caps Letters

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

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About this Document

- *Tracking* adds space uniformly between characters in 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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Phantom Text

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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About this Document

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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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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About this Document

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 & ... & \langle text \rangle \\
  \dots
  \langle text \rangle & \langle text \rangle & ... & \langle text \rangle \\
  \langle text \rangle & \langle text \rangle & ... & \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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About this Document

- 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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About this Document

Spell-Checking

- 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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LaTeX and Friends
Basic Text

Marc van Dongen

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| | |
|---------|--|
| AMS | American Mathematical Society |
| API | Application Programming Interface |
| APL | A Programming Language |
| CTAN | Comprehensive T _E X Archive Network |
| CD | Compact Disk |
| FAQ | Frequently Asked Question |
| GUI | Graphical User Interface |
| IDE | Integrated Development Environment |
| ISBN | International Standard Book Number |
| OS | Operating System |
| SI | Système International d'Unités/International System of Units |
| TUG | T _E X 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`.