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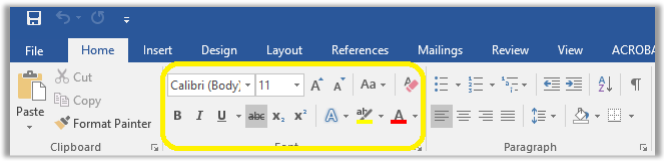
Introduction to LaTeX

Text formatting

Contents

- Emphasizing text
- Fonts etc.
- Punctuation
- Symbols etc.
- Verbatim



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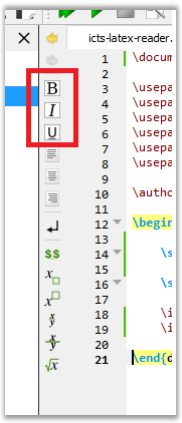
Highlighting text concepts

- Highlight important concepts in your text:
  - Italics
  - Bold
  - Underlined
  - Emphasis

Emphasizing text

- Use the Menu bar from your editor
- Use command:
  - Italic: `\textit`
  - Bold: `\textbf`
  - Underlining: `\underline`
- Emphasis
  - Emphasized: `\emph`
  - By default *emph* command behaves like *textit*, but is context dependent (nesting)
- *File:demo_emphasize_text.tex*



Highlighting text

- Package: soul (+ color)

```
\hl{this is highlighted text}. More text. Can I change the color?
```

- *File: demo_highlight_text_soul.tex*

This is some text
this is highlighted text. More text. Can I change the color?

- Package: ulem
- Allows for various types of underlining
- *File: demo_ulem.tex*

~~Diesel~~, solar power to the top
~~Diesel~~, solar power to the top
Diesel, solar power to the top
Diesel, solar power to the top

Hands-on

- `\emph{text}`: emphasized text
- `\underline{text}`: underlined text
- Change the font style:
  - `\textbf{text}`: bold:
  - `\textit{text}`: italic:
- *File: demo_fontstyle.tex*

document font family
emphasis
roman font family
sans serif font family
`typewriter font family`
upright shape
italic shape
slanted shape
SMALL CAPITALS
bold

Font size

- The default text size is controlled by the document class. The standard font size is 10pt.
- Can be adjusted by passing additional arguments
  - `\Huge`
  - `\huge`
  - `\LARGE`
  - `\large`
  - `\normalsize`
  - `\small`
  - `\footnotesize`
  - `\scriptsize`
  - `\tiny`

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Font size

- Font size commands can be used as:
  - Switch
  - Environment
- *File: demo_fontsize.tex*

Font size

	10pt	11pt	12pt
\tiny	5	6	6
\scriptsize	7	8	8
\footnotesize	8	9	10
\small	9	10	11
\normalsize	10	11	12
\large	12	12	14
\Large	14	14	18
\LARGE	18	18	20
\huge	20	20	25
\Huge	25	25	25

https://tex.stackexchange.com/questions/24599/what-point-pt-font-size-are-large-etc

Font size

```
\begin{document}
This is in normal text, while these words are in
    {\small small text}.

Or, if you wanted to put a larger region in a
    different size, you'd use
something like:

    \begin{small}
    this will all be in small text
    this too.
    etc..
    \end{small}

    \begin{Huge}
    this will all be in Huge text
    this too.
    etc..
    \end{Huge}

    \begin{huge}
    this will all be in huge text
    this too.
    etc..
    \end{huge}
\end{document}
```

This is in normal text, while these words are in small text.
Or, if you wanted to put a larger region in a different size, you'd use something like:
this will all be in small text this too. etc..
this will all be in Huge text this too. etc..
this will all be in huge text this too. etc..

Fonts

- LaTeX's default font is Computer Modern
- Fonts for text have five main attributes: encoding, family, series, shape, size
- Several *variations* of a font can be used in a document
  - Family
    - Serif (roman) (default)
    - Sans serif
    - Typewriter (monospaced)
  - Series
    - Medium (default)
    - Boldface
  - Shape
    - Upright (default)
    - *Italic*
    - Slanted
    - Caps & small caps
- *File: demo_font_variations*

Fonts

- Types of fonts in LATEX are classified into four categories: *family*, *series*, *shape* and *size*.

		Command	Declaration

Family	Serif (roman) (default)
	Sans serif
	Typewriter (monospaced)
		`\textrm{}`
		`\textsf{}`
		`\texttt{}`
			`\rmfamily`
			`\sffamily`
			`\ttfamily`

Series	Medium series (default) Boldface	`\textmd{}` `\textbf{}`	`\mdseries` `\bfseries`
		Command	**Environment**

Shape	Upright shape (default)
	Italic shape
	Slanted shape
	Caps & small caps shape
		`\textup{}`
		`\textit{}`
		`\textsl{}`
		`\textsc{}`
			`\upshape`
			`\itshape`
			`\slshape`
			`\scshape`

Size	Tiny Script …	`\tiny` `\scriptsize`	

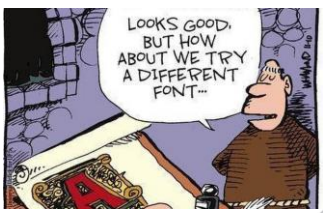
Fonts

- Font formatting can be obtained in different ways

1. **Commands**: A command marks exactly the text that is in between the curly brackets. A new paragraph cannot be started within a command.
   ```
   \textbf{ text }
   ```
2. **Environments**: Use the declaration command in an environment. An environment marks the text inside the environment.
   ```
   \begin{bfseries}
      text
   \end{bfseries}
   ```
3. **Switch**: declaration can also be used as a switch. The following text appears in the respective font formatting (probably until the end of the environment, unless other font formatting commands/environments/switches are used. The scope of a switch can be restricted by { }
   ```
   {\bfseries   text}
   ```


Fonts

- The default font for LaTeX is Computer Modern
- You can't just use any font you have installed on your computer, you need special LaTeX fonts.
- The easy way to use other fonts is to use an existing package,
  - `\usepackage{avant}`
  - the whole document will be in that font
  - Check https://tug.org/FontCatalogue/
- *File: demo_changefont.tex*



Fonts

- Change the font for part of the text (not advisable)
- To select a font, use:
  - `\fontfamily{<familyname>}\selectfont`
  - restrict the scope of font changing commands by enclosing the text in braces:
  - `{\fontfamily{<familyname>}\selectfont ...}`
  - It is important to know the font familyname!
- *File: demo_font_partly_changed.tex*
- https://tex.stackexchange.com/questions/25249/how-do-i-use-a-particular-font-for-a-small-section-of-text-in-my-document

Fonts

- Another approach in setting the default font
- `\renewcommand{\sfdefault}{phv}`
- This sets the default sans font (`\sfdefault`) to the phv family, so phv is the internal name of the font (Helvetica)
- *File: demo_renewcommand_default*

Font	fontpackagename	fontcode
Computer Modern Roman		cmr
Latin Modern Roman	lmodern	lmr
Latin Modern Dunhill	lmodern	lmdh
TEX Gyre Termes	tgtermes	qtm
TEX Gyre Pagella	tgpagella	qpl
TEX Gyre Bonum	tgbonum	qbk
TEX Gyre Schola	tgschola	qcs
Times	mathptmx	ptm
Utopia / Fourier	utopia / fourier	put
Palatino	palatino	ppl
Bookman	bookman	pbk
Charter	charter	bch
Computer Modern Sans Serif		cmss
Latin Modern Sans Serif	lmodern	lmss
TEX Gyre Adventor	tgadventor	qag
TEX Gyre Heros	tgheros	qhv
Helvetica	helvet	phv
Computer Modern Typewriter		cmtt
Latin Modern Sans Typewriter	lmodern	lmtt
TEX Gyre Cursor	tgcursor	qcr
Courier	courier	pcr

Fonts

- https://www.overleaf.com/learn/latex/Font_sizes,_families,_and_styles
- https://www.overleaf.com/learn/latex/Font_typefaces
- https://en.wikibooks.org/wiki/LaTeX/Fonts

Accents and symbols

- There are 5 common accents:
  ÒÓÔÕÖ

```
\`O
\'O
\^O
\~O
\"O
```

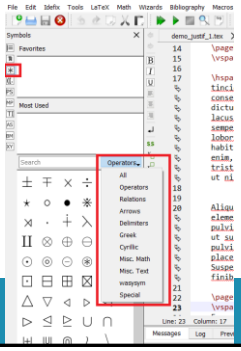
- Some symbols have a special meaning within LaTeX, put a **** in front of $ % { _ # & } \

```
\$
\%
\{
\_
\#
\&
\}
\textbackslash
```

- Check also the *Comprehensive LaTeX Symbol List*

Symbol?

- Looking for a symbol?
- Have a look at *The Comprehensive LaTeX Symbol List*
  http://tug.ctan.org/info/symbols/comprehensive/symbols-a4.pdf
- This document lists >14000 symbols and the corresponding LaTeX commands that produce them.
- Detexify: http://detexify.kirelabs.org/classify.html
- Check your LaTeX editor (i.e. TeXstudio)
  - Wizard > Math Assistant



International language support: problems

- LaTeX has its roots in USA
- Input of é, è, ë, …?
- Typing ‘macro-accents’:
  - it can become cumbersome if you type a lot of accented characters.
  - the spell checker will not work on such words,
- https://www.overleaf.com/learn/latex/International_language_support
- https://tex.stackexchange.com/questions/44694/fontenc-vs-inputenc
- https://en.wikibooks.org/wiki/LaTeX/Internationalization

International language support

- By default, LaTeX works with simple ASCII characters
- Input letters of national alphabets directly from the keyboard.
- Use `inputenc` package to set up input encoding.
  - `\usepackage[encoding]{inputenc}`
  - recommended input encoding is `utf8`
  - enables direct entering of accented characters and symbols from code tables other than ASCII, and of Unicode.

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International language support

- When TeX and LaTeX were introduced, fonts did not contain glyphs for accented characters. They were printed as two characters, one being the actual accent. It also interfered with hyphenation.
- For proper document generation, choose a font which has to support specific characters for a given language by using fontenc package:
  - `\usepackage[encoding]{fontenc}`
  - recommended input encoding is `T1`
- *File: demo_inputenc.tex*

babel

- translates some elements within the document,
- activates the appropriate hyphenation rules for the language you choose.
- Activate the package by adding the next command to the preamble:
  - `\usepackage[language]{babel}`
  - `\usepackage[dutch]{babel}`
- *File: demo_babel.tex*
- https://en.wikibooks.org/wiki/LaTeX/Internationalization

Hands-on

- Type some text and use the commonly used accents in some of the words
- *demo_accentsymbol.tex*
  demo_accents.tex

Preformatted text

- Use the `verbatim` environment to typeset exactly as given in a monospaced font, with no command interpretation.
- To include a non-interpreted string within your text, use `\verb|the text|` command.
  You may use |, +,=, etc. to start and end the text (the same symbol must be used to start and end the text).
- *File: demo_verbatim.tex*
- The verbatim environment can be extended to use normal commands: alltt package.

Hands-on

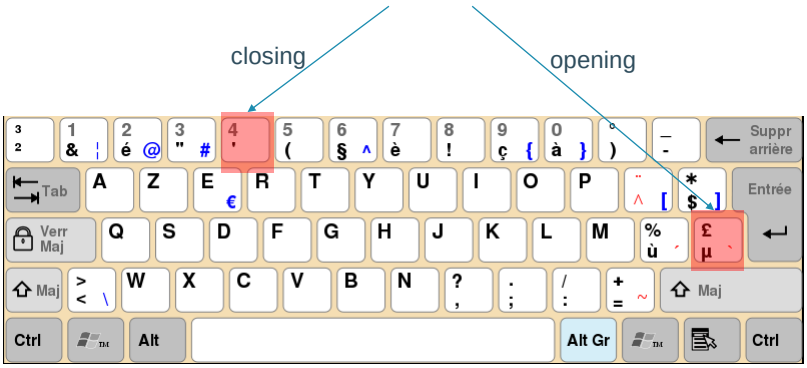
- Generate some text, and try to explicitely print some LaTeX commands
- Use the `\verb` command
- Use the `verbatim` environment
- *handson_verbatim.tex*

Quotation marks

- LaTeX does not automatically convert "straight" quotes into correctly-facing “curly” quotes
- do *not* use the "
  - Opening: use two ` (accent grave)
  - Closing: use two ' (vertical quote) for closing quotation marks.
  - For single quotes you use just one of each.
- *File: demo_quote_marks.tex*
- https://tex.stackexchange.com/questions/113363/smart-quote-in-texstudio
- https://www.overleaf.com/learn/latex/Typesetting_quotations

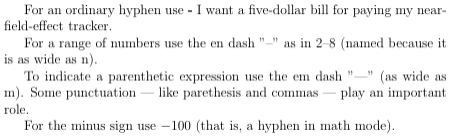
Quotation marks

- Options->Configure TexStudio -> Editor ->Replace Double Quotes



Hyphens and dashes etc.

- hyphens (-), en dashes (–), em dashes (—), minus signs (-) serve different purposes
- *File: demo_hyphen_dash.tex*



For an ordinary hyphen use - I want a five-dollar bill for paying my near-field-effect tracker.

For a range of numbers use the en dash "–" as in 2–8 (named because it is as wide as n).

To indicate a parenthetic expression use the em dash "—" (as wide as m). Some punctuation — like parethesis and commas — play an important role.

For the minus sign use −100 (that is, a hyphen in math mode).

- Ellipsis
  - Spacing might go wrong when typing …
  - Use `\ldots`

Overfull / Underfull box

- **overfull hbox**: LaTeX always tries to produce the best line breaks possible. If it cannot find a way to break the lines in a manner that meets its high standards, it lets one line stick out on the right of the paragraph.
- This happens most often when:
  - a suitable place to hyphenate a word is not found.
  - Verbatim
- Tip: use option draft in documentclass (black square explicitly shown)
- Instruct LaTeX to lower its standards
  - `\sloppy` command.
    increasing the inter-word spacing, most of the time a warning (“underfull hbox”) will appear
  - `\fussy` brings LaTeX back to its default behavior.
  - *File: demo_sloppyfussy.tex*

Microtype package

- `\usepackage{microtype}` to improve the typesetting (usually saves some space too)
- font size might be scaled a little bit in favor of better full justification.
- adjusts punctuation at the margin for better optical alignment

hyphenation

- Direct the hyphenation yourself
  - `\hyphenation{FORTRAN Hy-phen-a-tion}`
  - each hyphenation point is indicated
  - in the preamble
- Inline words: `\-` indicates hyphenation points allowed in the word.
  - is especially useful for words containing special characters
  - `su\-per\-cal\-i\-frag\-i\-lis\-tic\-ex\-pi\-al\-i\-do\-cious`
- *File: demo_hyphenate.tex*

Keeping words together

- The command `\mbox{`*`text`*`}` causes its argument to be kept together: an invisible box is drawn a just wide enough to hold the text created by its argument.
- The command `\fbox` is similar to `\mbox`, but in addition there will be a visible box drawn around the content.
- `\makebox, \framebox` are extensions of these commands

```
\makebox[width][pos]{text}
```

- *File: demo_mbox.tex*
- Non-breaking space: use the character ~.
  For example to stop LaTeX from splitting P. Harwin after the P., type `P.~Harwin`.

White space

- Space after a period
  - a period ends a sentence unless it follows an uppercase letter
  - Extra space is put after a period
  - Not necessary for etc.
- LaTeX ignores whitespace after commands. If you want to get a space after a command, you have to put {}. The {} stops LaTeX from eating up all the space after the command name.
- \ (backslash + space): the backslash-space command creates a fixed amount of horizontal space.
- *File: demo_space_2.tex*