

# HEC MONTRÉAL

Writing with  
`\title{LATEX}`

The Basics

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# Writing with `\title{LATEX}`

Part One : The Basics  
HEC Montréal Edition, revised and extended (english version)

© 2016 Vincent Goulet for the [original version](#). A list of sources that have been used for elaborating this training session can be found at the end of this document.

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# Training Session Summary

## A T<sub>E</sub>X and L<sup>A</sup>T<sub>E</sub>X Presentation

What is T<sub>E</sub>X and L<sup>A</sup>T<sub>E</sub>X?

L<sup>A</sup>T<sub>E</sub>X Document Creation Process

## The Basics

Document Structure

Writing

## Document Organization

Parts of a Document

Table of Contents and Referencing

## Text Appearance

Fonts

Displaying text

## hecthes Document Class

## Bibliography

# A $\text{T}_{\text{E}}\text{X}$ and $\text{\LaTeX}$ Presentation

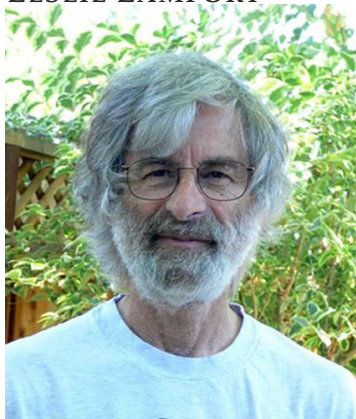






# What is $\text{\LaTeX}$ ?

## LESLIE LAMPORT



- A set of markup commands created by Leslie Lamport to facilitate  $\text{\TeX}$ 's use.
- Doesn't require any knowledge of typography in general and  $\text{\TeX}$  particularly.
- Typographic and logical markup language used to set the text layout (like HTML).
- Cross-platform language, identical from one operating system to the other and extensible with packages.
- “*author-level program*”





L<sup>A</sup>T<sub>E</sub>X Document Creation Process



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# Writing with a new perspective

- You write your document in plain text and you use commands to describe **what the text is** and **not what it should look like**.
- You focus on your **content**.
- You let  $\text{\LaTeX}$  do its work, that is taking care of the **container**.

# $\text{\LaTeX}$ Document Creation Process



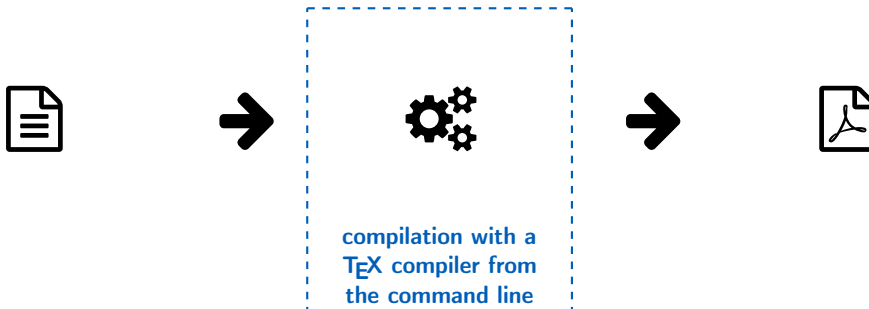
# L<sup>A</sup>T<sub>E</sub>X Document Creation Process



writing and markup  
with a text editor



# $\text{\LaTeX}$ Document Creation Process



# $\text{\LaTeX}$ Document Creation Process



visualization with an  
external reader

# Some Things Done Simply with $\text{\LaTeX}$ ...

... and not necessarily with a word processor

- Title page
- Table of contents
- Page numbering
- Figures and tables: display on a page, numbering, reference
- Equations: display, numbering and reference
- Citations and bibliographies
- Hyphenation
- Two-sided documents

# Tools you'll need

- A T<sub>E</sub>X distribution
  - T<sub>E</sub>X Live (Windows and Unix/Linux)
  - MacT<sub>E</sub>X, derived from T<sub>E</sub>X Live (Mac OS)
  - MiK<sub>T</sub>E<sub>X</sub> (Windows, Mac OS and Unix/Linux)
- An integrated writing environment
  - Too many to list them all...
  - The library uses and recommends T<sub>E</sub>XStudio
- A command line terminal



# The Basics





Document Structure



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# Document structure

A  $\text{\LaTeX}$  document always has two parts:

```
\documentclass[11pt,french]{article}
\usepackage[utf8]{inputenc}
\usepackage[T1]{fontenc}
\usepackage{babel}
\usepackage[autolanguage]{numprint}

\begin{document}

  \section{Primo}

  Ac class dis donec erat facilisis magna mattis
  placerat potenti praesent primis sed tellus turpis
  ut vehicula. Ad amet eleifend eros fames habitant
  imperdiet integer laoreet leo magna magnis neque
  netus senectus taciti torquent.

  \section{Deuxio}

  Cursus dui egestas eget eros et hac magna massa mollis
  natoque penatibus sagittis sed tellus urna velit
  vestibulum vitae vulputate.
\end{document}
```

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\usepackage[autolanguage]{numprint}
```

← Preamble

```
\begin{document}
```

```
\section{Primo}
```

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natoque penatibus sagittis sed tellus urna velit  
vestibulum vitae vulputate.

```
\end{document}
```

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```

```
\begin{document}
```

```
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Cursus dui egestas eget eros et hac magna massa mollis  
natoque penatibus sagittis sed tellus urna velit  
vestibulum vitae vulputate.

```
\end{document}
```

← Document body

# Preamble

## Document Class

The preamble's **first command** usually is the document class declaration.

```
\documentclass[options]{class}
```

# Preamble

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```
\documentclass[options]{class}
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## MAIN CLASSES

- article, book, letter, report
- memoir, **hecthese**
- slides, beamer, **hecppt**

# Preamble

## Document Class

The preamble's **first command** usually is the document class declaration.

```
\documentclass[options]{class}
```

### MAIN CLASSES

- article, book, letter, report
- memoir, **hecthes**
- slides, beamer, **hecppt**

### MAIN OPTIONS

- 10pt, 11pt, 12pt
- oneside, twoside
- openright, openany
- english, french



# Preamble

## Packages

Packages allow you to **modify existing commands** and to **add features** to the system. They are loaded in the preamble with the `\usepackage[options]{package}` command.

```
\documentclass[options]{class}  
  
\usepackage{package}  
\usepackage[options]{package}  
\usepackage{package1,package2,package3,...}
```

Each package's documentation can be found on the [Comprehensive T<sub>E</sub>X Archive Network Website](#).

# Commands

- Always begin with a \
- Three main forms:

```
\commandname[optional_args]{mandatory_args}  
\commandname*[optional_args]{mandatory_args}  
\commandname
```

- Mandatory arguments between { and }
- Optional arguments between [ and ]
- Commands without arguments: the command's name ends with any character that isn't a letter or with a blank space.
- A command's scope is limited between { and }.

# Environments

- Delimited by

```
\begin{environment}  
...  
\end{environment}
```

- An environment's content is treated differently from the remainder of the text.
- Changes apply only to the environment's content.



the 1990s, the number of people in the United States who are 65 years of age or older has increased by 50 percent, and the number of people 75 years of age or older has increased by 100 percent. The number of people 85 years of age or older has increased by 200 percent. The number of people 90 years of age or older has increased by 400 percent. The number of people 95 years of age or older has increased by 800 percent. The number of people 100 years of age or older has increased by 1,600 percent. The number of people 105 years of age or older has increased by 3,200 percent. The number of people 110 years of age or older has increased by 6,400 percent. The number of people 115 years of age or older has increased by 12,800 percent. The number of people 120 years of age or older has increased by 25,600 percent. The number of people 125 years of age or older has increased by 51,200 percent. The number of people 130 years of age or older has increased by 102,400 percent. The number of people 135 years of age or older has increased by 204,800 percent. The number of people 140 years of age or older has increased by 409,600 percent. The number of people 145 years of age or older has increased by 819,200 percent. The number of people 150 years of age or older has increased by 1,638,400 percent. The number of people 155 years of age or older has increased by 3,276,800 percent. The number of people 160 years of age or older has increased by 6,553,600 percent. The number of people 165 years of age or older has increased by 13,107,200 percent. The number of people 170 years of age or older has increased by 26,214,400 percent. The number of people 175 years of age or older has increased by 52,428,800 percent. The number of people 180 years of age or older has increased by 104,857,600 percent. The number of people 185 years of age or older has increased by 209,715,200 percent. The number of people 190 years of age or older has increased by 419,430,400 percent. The number of people 195 years of age or older has increased by 838,860,800 percent. The number of people 200 years of age or older has increased by 1,677,721,600 percent. The number of people 205 years of age or older has increased by 3,355,443,200 percent. The number of people 210 years of age or older has increased by 6,710,886,400 percent. The number of people 215 years of age or older has increased by 13,421,772,800 percent. The number of people 220 years of age or older has increased by 26,843,545,600 percent. The number of people 225 years of age or older has increased by 53,687,091,200 percent. The number of people 230 years of age or older has increased by 107,374,182,400 percent. The number of people 235 years of age or older has increased by 214,748,364,800 percent. The number of people 240 years of age or older has increased by 429,496,729,600 percent. The number of people 245 years of age or older has increased by 858,993,459,200 percent. The number of people 250 years of age or older has increased by 1,717,986,918,400 percent. The number of people 255 years of age or older has increased by 3,435,973,836,800 percent. The number of people 260 years of age or older has increased by 6,871,947,673,600 percent. The number of people 265 years of age or older has increased by 13,743,895,347,200 percent. The number of people 270 years of age or older has increased by 27,487,790,694,400 percent. The number of people 275 years of age or older has increased by 54,975,581,388,800 percent. The number of people 280 years of age or older has increased by 109,951,162,777,600 percent. The number of people 285 years of age or older has increased by 219,902,325,555,200 percent. The number of people 290 years of age or older has increased by 439,804,651,110,400 percent. The number of people 295 years of age or older has increased by 879,609,302,220,800 percent. The number of people 300 years of age or older has increased by 1,759,218,604,441,600 percent. The number of people 305 years of age or older has increased by 3,518,437,208,883,200 percent. The number of people 310 years of age or older has increased by 7,036,874,417,766,400 percent. The number of people 315 years of age or older has increased by 14,073,748,835,532,800 percent. The number of people 320 years of age or older has increased by 28,147,497,671,065,600 percent. The number of people 325 years of age or older has increased by 56,294,995,342,131,200 percent. The number of people 330 years of age or older has increased by 112,589,990,684,262,400 percent. The number of people 335 years of age or older has increased by 225,179,981,368,524,800 percent. The number of people 340 years of age or older has increased by 450,359,962,737,049,600 percent. The number of people 345 years of age or older has increased by 900,719,925,474,099,200 percent. The number of people 350 years of age or older has increased by 1,801,439,850,948,198,400 percent. The number of people 355 years of age or older has increased by 3,602,879,701,896,396,800 percent. The number of people 360 years of age or older has increased by 7,205,759,403,792,793,600 percent. The number of people 365 years of age or older has increased by 14,411,518,807,585,587,200 percent. The number of people 370 years of age or older has increased by 28,823,037,615,171,174,400 percent. The number of people 375 years of age or older has increased by 57,646,075,230,342,348,800 percent. The number of people 380 years of age or older has increased by 115,292,150,460,684,697,600 percent. The number of people 385 years of age or older has increased by 230,584,300,921,369,395,200 percent. The number of people 390 years of age or older has increased by 461,168,601,842,738,790,400 percent. The number of people 395 years of age or older has increased by 922,337,203,685,477,580,800 percent. The number of people 400 years of age or older has increased by 1,844,674,407,370,955,161,600 percent. The number of people 405 years of age or older has increased by 3,689,348,814,741,910,323,200 percent. The number of people 410 years of age or older has increased by 7,378,697,629,483,820,646,400 percent. The number of people 415 years of age or older has increased by 14,757,395,258,967,641,292,800 percent. The number of people 420 years of age or older has increased by 29,514,790,517,935,282,585,600 percent. The number of people 425 years of age or older has increased by 59,029,581,035,870,565,171,200 percent. The number of people 430 years of age or older has increased by 118,059,162,071,741,130,342,400 percent. The number of people 435 years of age or older has increased by 236,118,324,143,482,260,684,800 percent. The number of people 440 years of age or older has increased by 472,236,648,286,964,521,369,600 percent. The number of people 445 years of age or older has increased by 944,473,296,573,929,042,739,200 percent. The number of people 450 years of age or older has increased by 1,888,946,593,147,858,085,478,400 percent. The number of people 455 years of age or older has increased by 3,777,893,186,295,716,170,956,800 percent. The number of people 460 years of age or older has increased by 7,555,786,372,591,432,341,913,600 percent. The number of people 465 years of age or older has increased by 15,111,572,745,182,864,683,827,200 percent. The number of people 470 years of age or older has increased by 30,223,145,490,365,729,367,654,400 percent. The number of people 475 years of age or older has increased by 60,446,290,980,731,458,735,308,800 percent. The number of people 480 years of age or older has increased by 120,892,581,961,462,917,470,617,600 percent. The number of people 485 years of age or older has increased by 241,785,163,922,925,834,941,235,200 percent. The number of people 490 years of age or older has increased by 483,570,327,845,851,669,882,470,400 percent. The number of people 495 years of age or older has increased by 967,140,655,691,703,339,764,940,800 percent. The number of people 500 years of age or older has increased by 1,934,281,311,383,406,679,529,881,600 percent. The number of people 505 years of age or older has increased by 3,868,562,622,766,813,359,059,763,200 percent. The number of people 510 years of age or older has increased by 7,737,125,245,533,626,718,119,526,400 percent. The number of people 515 years of age or older has increased by 15,474,250,491,067,253,436,239,052,800 percent. The number of people 520 years of age or older has increased by 30,948,500,982,134,506,872,478,105,600 percent. The number of people 525 years of age or older has increased by 61,897,001,964,269,013,744,956,211,200 percent. The number of people 530 years of age or older has increased by 123,794,003,928,538,027,489,912,422,400 percent. The number of people 535 years of age or older has increased by 247,588,007,857,076,054,979,824,844,800 percent. The number of people 540 years of age or older has increased by 495,176,015,714,152,109,959,649,689,600 percent. The number of people 545 years of age or older has increased by 990,352,031,428,304,219,919,299,379,200 percent. The number of people 550 years of age or older has increased by 1,980,704,062,856,608,439,838,598,758,400 percent. The number of people 555 years of age or older has increased by 3,961,408,125,713,216,879,677,197,516,800 percent. The number of people 560 years of age or older has increased by 7,922,816,251,426,433,759,354,395,033,600 percent. The number of people 565 years of age or older has increased by 15,845,632,502,852,867,518,708,790,067,200 percent. The number of people 570



# Writing

- You write your text in the document environment:

```
\begin{document}  
  The content of your document goes here ...  
\end{document}
```

- You write your document in plain text and use commands and environments to structure your text;
- You write your text like anywhere else:
  - Words are separated by one or more blank spaces;
  - Paragraphs are separated by one or more empty lines;
  - All extra white space is deleted on compilation.

# Reserved Characters

## T<sub>E</sub>X's Reserved Characters

- # Argument number in commands
- \$ Math Mode delimiter
- & Table column delimiter
- % Starts a comment
- \_ Indices (math)
- ^ Exponents (math)
- ~ No-break space
- { Opens a command or an environment definition
- } Closes a command or an environment definition

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### TO USE THE CHARACTERS:

\#

\\$

\&

\%

\\_

\textasciicircum

\textasciitilde

\{

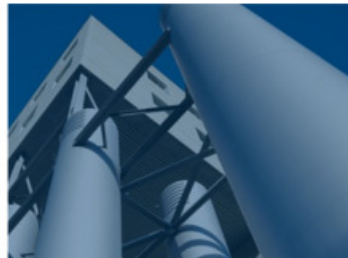
\}

# Reserved Characters

- Quotation marks
  - The quotation marks " found on a keyboard are not used in typesetting.
  - Single ( ' ) or double ( " ) beginning marks and single ( ' ) or double ( " ) end marks are used to surround quotes.
- We type hyphens once ( — ), twice ( — — ) or three times ( — — — ) to produce hyphens, *en dashes* and *em dashes*.



# Document Organization





## Parts of a Document



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# Class Choice

The first thing you need to do when writing a  $\text{\LaTeX}$  document is to choose a document class.

Class	Divisions	Organization	Header	Footer
article	parts, sections, ...	one-sided	empty	centered page number
report	parts, chapters, sections, ...	one-sided	empty	centered page number
book	parts, chapters, sections, ...	two-sided	page numbers, titles	empty
hectthese	chapters, sections, subsections	two-sided	empty	centered page number

# Titles and Title Page

Automatic layout:

```
% Preamble commands
\title[short title]{long title}
\author[short author name]{long author name}
\date[short date]{long date}
[...]

% Document body command
\maketitle
```

Manual layout:

## STANDARD CLASSES

```
\begin{titlepage}
...
\end{titlepage}
```

## MEMOIR AND HECTHESE CLASSES

```
\begin{titlingpage}
...
\end{titlingpage}
```

In the **hecthes** document class, title pages are automatically generated.

# Abstract

- **article**, **report** or **memoir** classes : abstract generated with the abstract environment

```
\begin{abstract}  
...  
\end{abstract}
```

- **hecthese** class: french and english abstracts treated as normal, unnumbered chapters

# Sections

- The document is subdivided with the following commands:

```
\part[short title]{long title}  
\chapter[short title]{long title}  
\section[short title]{long title}  
\subsection[short title]{long title}  
  
\subsubsection[short title]{long title}    % avoid using in books  
  
\paragraph[short title]{long title}        % evil! never use!  
\subparagraph[short title]{long title}    % EVIL! never EVER use!
```

- Automatic numbering
- Commands followed by an \* = unnumbered section
- Short title as an optional argument

# Appendices

- Appendices are sections and chapters with an alphanumeric numbering (A, A.1, ...).
- Sections following the `\appendix` command are all considered appendices.
- In the title, “Chapter” is changed into “Appendix”.

# A Book's Logical Structure

book, memoir, hecthese classes

## `\frontmatter`

- preface, table of contents, etc.
- roman page numbering (i, ii, ...)
- unnumbered chapters

## `\mainmatter`

- the book's content
- arabic page numbering, starting at 1
- numbered chapters



# A Book's Logical Structure

book, memoir, hecthesse classes

`\backmatter`

- everything else (bibliography, index, etc.)
- the page numbering continues
- unnumbered chapters



## Table of Contents and Referencing



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# Table of Contents

- The table of contents is automatically generated with `\tableofcontents` .
- Needs **more than one** compilation to be generated.
- Unnumbered sections are not included.
- With the **hyperref** package, `\tableofcontents` generates the .pdf file's table of contents.

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- `\tableofcontents*` , from the memoir document class, doesn't include the table of contents in the table of contents.
- `\listoffigures` generates the list of figures.
- `\listoftables` generates the list of tables.

# Labels and Automatic Referencing

Because your computer will do it better than you...

- **Never** refer manually to a section, an equation, a table, etc.
- “Name” an element with `\label`
- Refer to that label with `\ref`
- Needs 2 to 3 compilations to generate

```
\section{Definitions}
\label{sec:definitions}

Lorem ipsum dolor sit amet, consectetur adipiscing elit,
sed do eiusmod tempor incididunt ut labore et dolore magna aliqua.
Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris
nisi ut aliquip ex ea commodo consequat.

\section{History}
As seen in Section \ref{sec:definitions}...
```

# Labels and Automatic Referencing

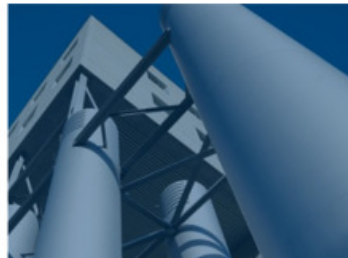
Because your computer will do it better than you...

- The **hyperref** package generates hyperlinks to the references in the .pdf files.
- The `\autoref{}` command...
  - ① automatically identifies the reference type (section, equation, table, etc.);
  - ② generates a hyperlink with the text **and** number of the reference.

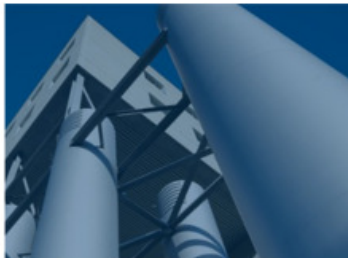
As seen in `\autoref{sec:definitions}`...

- The `\pageref{}` command refers to a page number.
- The **amsmath** package provides the `\eqref{}` command to refer to equations.

# Text Appearance







Fonts



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# Fonts

- By default, all  $\text{\LaTeX}$  documents use the same font, Computer Modern.
- You should choose high-quality and complete fonts (diacritics, great choice of symbols).
- Very few fonts are adapted to maths: Palatino, Times, Lucida (\$) are safe choices.
- In the **hecthesse** document class, mathptmx and mathpazo packages are preloaded so you can choose between Times and Palatino fonts.

# Font Attributes

## families

roman	<code>\rmfamily</code>	<code>\textrm{&lt;text&gt;}</code>
fixed width	<code>\ttfamily</code>	<code>\texttt{&lt;text&gt;}</code>
sans serif	<code>\sffamily</code>	<code>\textsf{&lt;text&gt;}</code>

## shapes

upright	<code>\upshape</code>	<code>\textup{&lt;text&gt;}</code>
<i>italic</i>	<code>\itshape</code>	<code>\textit{&lt;text&gt;}</code>
<i>slanted</i>	<code>\slshape</code>	<code>\textsl{&lt;text&gt;}</code>
SMALL CAPS	<code>\scshape</code>	<code>\textsc{&lt;text&gt;}</code>

## series

medium	<code>\mdseries</code>	<code>\textmd{&lt;text&gt;}</code>
<b>bold</b>	<code>\bfseries</code>	<code>\textbf{&lt;text&gt;}</code>

# Font Attributes

<b>families</b>		
roman	<code>\rmfamily</code>	<code>\textrm{&lt;text&gt;}</code>
fixed width	<code>\ttfamily</code>	<code>\texttt{&lt;text&gt;}</code>
sans serif	<code>\sffamily</code>	<code>\textsf{&lt;text&gt;}</code>
<b>shapes</b>		
upright	<code>\upshape</code>	<code>\textup{&lt;text&gt;}</code>
<i>italic</i>	<code>\itshape</code>	<code>\textit{&lt;text&gt;}</code>
<i>slanted</i>	<code>\slshape</code>	<code>\textsl{&lt;text&gt;}</code>
SMALL CAPS	<code>\scshape</code>	<code>\textsc{&lt;text&gt;}</code>
<b>series</b>		
medium	<code>\mdseries</code>	<code>\textmd{&lt;text&gt;}</code>
<b>bold</b>	<code>\bfseries</code>	<code>\textbf{&lt;text&gt;}</code>
applies to all the following text		

# Font Attributes

## families

roman	<code>\rmfamily</code>
fixed width	<code>\ttfamily</code>
sans serif	<code>\sffamily</code>

`\textrm{<text>}`  
`\texttt{<text>}`  
`\textsf{<text>}`

## shapes

upright	<code>\upshape</code>
<i>italic</i>	<code>\itshape</code>
<i>slanted</i>	<code>\slshape</code>
SMALL CAPS	<code>\scshape</code>

`\textup{<text>}`  
`\textit{<text>}`  
`\textsl{<text>}`  
`\textsc{<text>}`

## series

medium	<code>\mdseries</code>
<b>bold</b>	<code>\bfseries</code>

`\textmd{<text>}`  
`\textbf{<text>}`

applies to the text in  
the command

# Italics

When using italics to put *emphasis* on parts of a text, you should use the following semantic command instead:

```
\emph{text}
```

`\emph{<text>}` commands can be nested in one another. Text in italics becomes upright and vice versa.

```
This house lacks a certain  
\emph{je ne sais quoi}\ldots
```

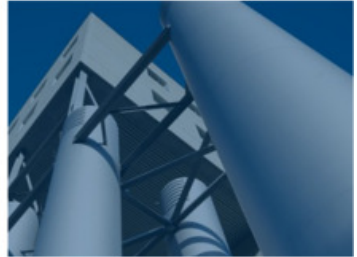
This house lacks a certain *je ne sais quoi*...

```
He said: " \emph{Enough  
\emph{poutine} for the week!}"
```

He said: « *Enough poutine for the week!* »

# Font size

Standard commands	Size
<code>\tiny</code>	tiny
<code>\scriptsize</code>	script size
<code>\footnotesize</code>	footnote size
<code>\small</code>	small
<code>\normalsize</code>	normal size
<code>\large</code>	large
<code>\Large</code>	larger
<code>\LARGE</code>	largest
<code>\huge</code>	huge
<code>\Huge</code>	humongous



## Displaying text



# Lists

- Two main types of lists:
  - ① **unordered** with the `\itemize` environment
  - ② **ordered** with the `\enumerate` environment
- Lists can be nested into one another
- Markers are adapted to up to four nesting levels

# Lists

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```
\begin{itemize}
  \item Two main types of lists :
  \begin{enumerate}
    \item \textbf{unordered} with the \verb=itemize= environment
    \item \textbf{ordered} with the \verb=enumerate= environment
  \end{enumerate}
  \item Lists can be nested into one another
  \item Markers are adapted to up to four nesting levels
\end{itemize}
```

# Lists

- Two main types of lists:
  - ① **unordered** with the `\itemize` environment
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\begin{itemize}
  \item Two main types of lists :
  \begin{enumerate}
    \item \textbf{unordered} with the \verb=itemize= environment
    \item \textbf{ordered} with the \verb=enumerate= environment
  \end{enumerate}
  \item Lists can be nested into one another
  \item Markers are adapted to up to four nesting levels
\end{itemize}
```

- A third list type is available: description

# Quotations

## Short Quotes

We use the quote environment to insert a short, one-paragraph quote in our text.

```
\begin{quote}  
  Life is what happens to you while  
  you're busy making other plans.  
  — John Lennon  
\end{quote}
```

*Life is what happens to you while  
you're busy making other plans. –  
John Lennon*

# Quotations

## Long Quotations

We use the quotation environment to insert long quotations.

```
\begin{quotation}  
  I've missed more than 9000 shots in my  
  career. I've lost almost 300 games. 26  
  times I've been trusted to take the game  
  winning shot and missed.  
  
  I've failed over and over and over again  
  in my life. And that is why I succeed.  
  — Michael Jordan  
\end{quotation}
```

*I've missed more than 9000 shots  
in my career. I've lost almost 300  
games. 26 times I've been trusted to  
take the game winning shot and  
missed.*

*I've failed over and over and over  
again in my life. And that is why I  
succeed. – Michael Jordan*

# Footnotes

- A footnote is inserted with the following command:

```
\footnote{text}
```

- The command must immediately follow the annotated text.
- Recommended method:

```
... fera remarquer que Pierre Lasou\footnote{%  
Spécialiste en ressources documentaires} %  
fut une grande aide dans la préparation de ...
```

- Footnote numbering and display are automatically generated.

# Source Code

- To write source code in our text, we use the `verbatim` environment.

```
\begin{verbatim}  
  Text displayed as is in a  
    fixed-width font.  
\end{verbatim}
```

- To write source code inline in our text, we use the `\verb` command. Its syntax is `\verbcsourcec` where *c* can be any character not found in *source*.
- For more thorough inclusions of source code, you should use the **listings** package.

---

<sup>1</sup>taken from the [r4stats.com](http://r4stats.com) Website.

# Source Code

## Example<sup>1</sup> :

```
# ---Writing Your Own Functions (Macros)---  
  
# A good function that just prints.  
mystats <- function(x) {  
  print( mean(x, na.rm = TRUE) )  
  print(   sd(x, na.rm = TRUE) )  
}  
mystats(myvar)  
  
# A function with vector output.  
mystats <- function(x) {  
  mymean <- mean(x, na.rm = TRUE)  
  mysd   <- sd(x, na.rm = TRUE)  
  c(mean = mymean, sd = mysd )  
}  
mystats(myvar)  
myVector <- mystats(myvar)  
myVector
```

---

<sup>1</sup>taken from the [r4stats.com](https://r4stats.com) Website.



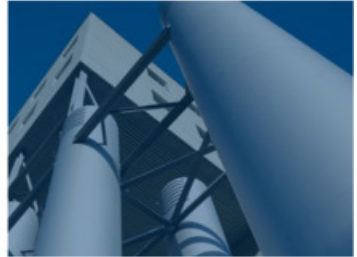
# hecthese Document Class



# hecthes Document Class

- Document class made specifically for HEC Montréal's M.Sc. and Ph.D. students;
- Available at <https://ctan.org/pkg/hecthes>;
- Document layout fully complies to the [Guidelines for Writing an Academic Work at a Graduate Level](#);
- Based on the **memoir** document class;
- Homemade commands for title creation and more. . . ;
- New homemade environments;
- You choose a template as a starting point (templates are available once the document class has been installed in a working directory);
- You use separate files for each chapter in your document.

# Bibliography



# Bibliography

For those who still prefer the scent of ink



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-  [ShareL<sup>A</sup>T<sub>E</sub>X Documentation](#)
-  [T<sub>E</sub>X - L<sup>A</sup>T<sub>E</sub>X Stack Exchange](#)
-  [L<sup>A</sup>T<sub>E</sub>X Community](#)
-  [Comprehensive T<sub>E</sub>X Archive Network](#)
-  [UK List of TEX Frequently Asked Questions](#)
-  [Google. . .](#)

## Questions and comments

### TRAINING SESSION DOCUMENTATION

<http://bit.ly/enltxhec1>

### TRAINING SESSION EVALUATION

<http://bit.ly/enltxsurvey1>

### T<sub>E</sub>XNICAL SUPPORT

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