# Introduction to LaTeX (2)

Based on the Latex for Beginners workbook (University of Edinburgh).

# Font effects

```
\documentclass{article}

\begin{document}
  \section{Section}

  \textbf{Hello World!}

  \subsection{Subsection}
  Structuring a document is
  \underline{easy}!

  \texttt{More text.}

  \emph{Some more text.}

  Even more text.

  \section{Another section}

\end{document}
```

There are several different LaTeX commands for a variety of font effects.

| | |
|---|---|
| `\textit{words in italics}` | *words in italics* |
| `\textsl{words slanted}` | *words slanted* |
| `\textsc{words in smallcaps}` | WORDS IN SMALLCAPS |
| `\textbf{words in bold}` | **words in bold** |
| `\texttt{words in teletype}` | `words in teletype` |
| `\textsf{sans serif words}` | sans serif words |
| `\textrm{roman words}` | roman words |
| `\underline{underlined words}` | underlined words |

# Coloured text

```
\documentclass{article}
\usepackage{color}

\begin{document}

 This is some text in black.
 If I want to include some
 other colour, I can use the
 command {\color{magenta} and
 the text is going to be in
 new colour}.

 What happens if I don't put
 braces \color{cyan}before the
 command?

\end{document}
```

To put coloured text in a document, we have to set a *package* ***color*** in the preamble:

```
\usepackage{color}
```

The basic colour names that can be used using the ***color*** package are:
Red, green, blue, cyan, magenta, yellow and white.

To produce the coloured text, use the command:

```
{\color{red}Dummy text}
```
This will set the color of the text to the text in the braces.

You can also define any other color you would like to use.
For more information on how to do that, go to:
https://en.wikibooks.org/wiki/LaTeX/Colors

# Font sizes

```
\documentclass{article}

\begin{document}

 This is some text in normal
 font size. I can also get
 different sizes using special
 commands like {\small for
 small words}, {\large for
 large words} and even {\huge
 for huge words}.

\end{document}
```

You can change font size using the variety of commands:

```
{\tiny tiny words}
{\scriptsize scriptsize words}
{\footnotesize footnotesize words}
{\small small words}
{\normalsize normalsize words}
{\large large words}
{\Large Large words}
{\LARGE LARGE words}
{\huge huge words}
```

tiny words
scriptsize words
footnotesize words
small words
normalsize words
large words
Large words
LARGE words
huge words

# Lists - Nested

```
\documentclass{article}

\begin{document}

\begin{enumerate}
  \item First thing
  \item Second thing
  \begin{itemize}
    \item A sub-thing
    \item Another sub-thing
  \end{itemize}
  \item Third thing
\end{enumerate}

\end{document}
```

LaTeX offers two types of lists:
**enumerate** produces numbered lists and
**itemize** produces a bulleted list.
Each item in the list is defined by `\item` command.

To produce a numbered list, use:

```
\begin{enumerate}
\item First item
\item Second item
\end{enumerate}
```

For a bulleted list, use:

```
\begin{itemize}
\item Item for the first bullet
\item Item for the second bullet
\end{itemize}
```

List can be nested to produce sub-lists.

# Lists – bullet symbol

```
\documentclass{article}

\begin{document}

\begin{itemize}
  \item[-] First thing
  \item[+] Second thing
  \begin{itemize}
    \item[Fish] A sub-thing
    \item[Sea] Another sub-thing
  \end{itemize}
  \item[Q] Third thing
\end{enumerate}

\end{document}
```

We can even change a bullet symbol with any other symbol or with even a word. To achieve that, use square brackets after the `\item` command and put whatever you want between them:

```
\begin{itemize}
\item[-] Minus instead of the bullet or
\item[bla] text instead of the bullet
\end{itemize}
```

List can be nested to produce sub-lists.

# Spacing

```
\documentclass{article}

\begin{document}

Let us try writing %some more
text in our editor. If I insert
multiple      spaces, and use \\
\\
\\
I can format my text as I~~~~am

want it to. 3\,m

\end{document}
```

**Multiple consecutive spaces** in LaTeX are treated as a **single space**.
**Several empty lines** are treated as **one empty line**.

The main function of an empty line in LaTeX is to start a **new paragraph**.

In general, LaTeX ignores blank lines and other empty spaces in the *.tex* file.

Two backslashes (\\) can be used to start a new line.

Tilde ~ and backslash comma \, are nonbreaking spaces. Tilde is a normal interword unbreakable space, what TeX denotes \fontdimen2, while \, is 1/6em.

# Comments and spacing

```
\documentclass{article}

\begin{document}

Let us try writing %some more
text in our editor. If I insert
multiple      spaces, and use
\vspace{24pt}
I can format my text as I

want it to.

\end{document}
```

If you want to add blank space into your document use the `\vspace` command. This will add blank vertical space of a height specified in typographical points (pt).

`\vspace{12pt}` will add space equivalent to the height of a 12pt font.

# Special characters

```
\documentclass{article}

\begin{document}

% enter the commands to produce
the following text:
Item #1A\642 costs $8 & is
sold at a ~10% profit.

``Double quotation marks'' \\
`Single quotation marks'

\end{document}
```

The following symbols are reserved characters which have a special meaning in LaTeX:

**# $ % ^ & _ { } ~ **

All of these apart from the backslash \ can be inserted as characters in your document by adding a prefix backslash:

**\# \$ \% \^{} \& _ \{ \} \~{}**

Note that you need to type a pair of curly brackets {} after the hat **^** and tilde **~**, otherwise these will appear as accents over the following character. For example, "`\^ e`" produces "ê".

The backslash character **** can not be entered by adding a prefix backslash, ****, as this is used for line breaking.
Use the `\textbackslash` command instead.

`` ` `` creates the opening and `'` the closing quotation mark.

# BibTeX references

```
@article{
GROZNIK2013,
  author = "Vida Groznik and Matej Guid
    and Aleksander Sadikov and Martin
    Mo\v{z}ina and Dejan Georgiev and
    Veronika Kragelj and Samo Ribari\v{c}
    and Zvezdan Pirto\v{s}ek and Ivan
    Bratko",
  title = "{E}licitation of {N}eurological
    {K}nowledge with {A}rgument-based
    {M}achine {L}earning",
  journal = "{A}rtificial {I}ntelligence
    in {M}edicine",
  volume = "57",
  number = "2",
  pages = "133 -- 144",
  year = "2013",
  issn = "0933-3657",
  doi = "https://doi.org/10.1016/j.
    artmed.2012.08.003"
}
```

LaTeX includes features that allow you to easily cite references and create bibliographies in your document. We will use a separate **BibTeX file** to store the details of our references.

BibTeX has the file extension *.bib* and you should name it and kept in the same folder as your *.tex* file.
The *.bib* file is plain text - it can be edited using Notepad or your LaTeX editor (e.g. TeXMaker).

Each reference in the BibTeX file should have the format as shown on the left.

# Type of references-required fields

```
@article{knuth:1984,
  title={Literate Programming},
  author={Donald E. Knuth},
  journal={The Computer Journal},
  volume={27},
  number={2},
  pages={97--111},
  year={1984},
  publisher={Oxford University Press}
}

@inproceedings{FosterEtAl:2003,
  author = {Doe, Jane and Goodenough, John
            and Bar, Foo},
  title = {Statistical Machine Translation},
  booktitle = {Proceedings of {MT Summit IX}},
  year = {2003},
  pages = {110--119},
  address = {New Orleans, USA}
}

@phdthesis{Alsolami:2012,
    title    = {An examination of keystroke},
    school   = {University of Technology},
    author   = {Eesa Alsolami},
    year     = {2012}
}
```

@inbook – the same authors
@incollection – each chapter different authors

```
@inbook{peyret2012:ch7,
  title={Computational Methods for Fluid Flow},
  edition={2},
  author={Peyret, Roger and Taylor, Thomas D},
  year={1983},
  publisher={Springer-Verlag},
  address={New York},
  chapter={7, 14}
}

@incollection{Mihalcea:2006,
  author = {Rada Mihalcea},
  title = {Knowledge-Based Methods for {WSD}},
  booktitle = {Word Sense Disambiguation},
  publisher = {Springer},
  year = {2006},
  editor = {Eneko Agirre and Philip Edmonds},
  pages = {107--132},
  address = {Dordrecht, the Netherlands}
}
```

@misc – anything else like web pages

```
@misc{web:lang:stats,
  author = {W3Techs},
  title = {Usage Statistics of Content Languages},
  year = {2017},
  note = {Last accessed 16 September 2017},
  url = {http://w3techs.com/content_language}
}
```

# References - formatting

```
@article{
GROZNIK2013,
  author = "Vida Groznik and Matej Guid
    and Aleksander Sadikov and Martin
    Mo\v{z}ina and Dejan Georgiev and
    Veronika Kragelj and Samo Ribari\v{c}
    and Zvezdan Pirto\v{s}ek and Ivan
    Bratko",
  title = "{E}licitation of {N}eurological
    {K}nowledge with {A}rgument-based
    {M}achine {L}earning",
  journal = "{A}rtificial {I}ntelligence
    in {M}edicine",
  volume = "57",
  number = "2",
  pages = "133 -- 144",
  year = "2013",
  issn = "0933-3657",
  doi = "https://doi.org/10.1016/j.
    artmed.2012.08.003"
}
```

You need to include LaTeX commands in your BibTeX file for Any special text formatting - e.g. italics (`\emph{Rattus norvegicus}`), quotation marks (‘‘...’’), ampersand (`\&`). Surround any letters in a journal article title that need to be capitalised with curly brackets `{...}`. BibTeX automatically uncapitalises any capital letters within the journal article title.

You can type the BibTeX file yourself, or you can use reference management software such as Zotero, Mendeley, EndNote to create it or just use Google Scholar.

# Inserting references

```
\documentclass{article}

\begin{document}

 This is some text which will be used as
 an example for the citation purpose.
 This method was introduced in our paper
 from 2013~\cite{GROZNIK2013}.


 \bibliographystyle{plain}
 \bibliography{doc1}
\end{document}
```

If you want to use your *.bib* file in the actual document to cite the reference stored in the *.bib* file, you have to use the following command at the end of the *.tex* file just before the `\end{document}`:

```
\bibliographystyle{plain}
\bibliography{Reference}
```

Where `Reference` is the name of your *.bib* file.

For citing a reference use the following command in your *.tex* file: `\cite{citationkey}`

If you don't want an in text citation, but still want the reference to appear in the bibliography, use `\nocite{citationkey}.`

To include a page number in the citation put it in square brackets before the citation key: `\cite[p. 215]{citationkey}`.

To cite multiple references include all the citation keys within the curly brackets separated by commas: `\cite{citation01,citation02,citation03}`.

# Inserting references - styles

## Numerical citations

**Plain** The citation is a number in square brackets (e.g. [1]). The bibliography is ordered alphabetically by first author surname. All of the authors' names are written in full.

**Abbrv** The same as plain except the authors' first names are abbreviated to an initial.

**Unsrt** The same as plain except the references in the bibliography appear in the order that the citations appear in the document.

**Alpha** The same as plain except the citation is an alphanumeric abbreviation based on the author(s) surname(s) and year of publication, surrounded by square brackets (e.g. [Kop10]).

## Author-date citations

Use the **natbib package** if you want to include author-date citations.
Natbib uses the command `\citep{...}` command for a citation in brackets (e.g. [Koppe, 29 2010]) and `\citet{...}` for a citation where only the year is in brackets (e.g. Koppe [2010]).

Natbib comes with three bibliography styles:
**plainnat**, formats the bibliography in the same way as the plain style,
**abbrvnat** formats the bibliography in the same way as the abbrv style,
**unsrtnat** formats the bibliography in the same way as the unsrt style, respectively.

There are lots of other ways that you can modify citations when using the natbib package - see the package's reference sheet for full details.

# Exercise with references

- Create a new file in Texmaker.
- Type your references in the correct format.
- Save the file with the same name as your *.tex* document (for example, Doc1) and save it as a BibTeX database in the same folder as your *.tex* file.
- Switch to your *.tex* document and insert `\cite`, `\bibliographystyle` and `\bibliography` commands in the relevant places.
- Typeset your *.tex* file.
- Switch to your *.bib* file, choose BibTeX from the typeset menu and click the Typeset button.
- Switch to your *.tex* file and typeset it twice. The in-text citations and reference list should be inserted.