

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

## Introduction

- What is LaTeX (pronounced “Lay-Tech”)? LaTeX is a high-quality typesetting system, with features designed for the production of technical and scientific documentation. LaTeX is the de facto standard for the communication and publication of scientific documents.
  - From: <http://www.latex-project.org/>
- Based on TeX (developed by Donald Knuth)
- used for medium-to-large technical or scientific documents
- it can be used for almost any form of publishing
- not a word processor
- encourages authors not to worry too much about the appearance of their documents, but to concentrate on getting the right content
- has features for making journal articles, technical articles, books, presentation slides. we can have: tables, images, complex mathematical expressions

# Why LaTeX

Why not another Word Processing Program (esp. MS Word)?

- Journal and Scientific papers are almost always in LaTeX.
- Separation of Content and Presentation.
- Portability: LaTeX file is ascii text - most portable format. LaTeX System is implemented on most mainstream platforms.
- Flexibility: can do almost anything related to creating content for publishing.  
Check CTAN: <http://ctan.tug.org/>
- Control. (total control over presentation of the document if desired)
- Extremely good quality output. (esp. Mathematical content)
- Scalability: Entire books are easily handled with cross referencing, index generation and automated handling of bibliography.
- Stability: Use your favourite text editor. Content is safe. LaTeX is very mature. Negligible bugs whereas in MS Word, document recovery is a “feature”.

# Let us see how we use LaTeX

Please see slide3\_helloworld.tex

- The file says:
  - This document is an article.
  - The title for the document is: LaTeX says “hello”
  - The author is: Arthur Dent
  - It was written in November 1978 (we can use `\today`)
  - The document contains a title followed by some text.
- How do we get a PDF/PS/DVI output from this?
  - DVI (DeVice Independent): Run LaTeX on the tex file we have created:

```
bash$ latex slide3_helloworld.tex
```

This creates a file called slide3\_helloworld.dvi (This can be viewed using xdvi) If there are no errors, you will see these as the last two lines:

```
Output written on slide3_helloworld.dvi (1 page, 564 bytes).
Transcript written on slide3_helloworld.log.
```

Only if you see these does it mean that the file has been successfully processed.

- PS (PostScript): Convert the DVI file to a PS file using dvips:

```
bash$ dvips slide3_helloworld.dvi -o slide3_helloworld.ps
```

Notice that we have to explicitly specify the output file using the `-o` flag.
- PDF (Portable Document Format):
  - Two ways: Convert DVI to PDF *or* Convert PS to PDF
  - DVI to PDF: Run dvi2pdf on the dvi file:

```
bash$ dvi2pdf slide3_helloworld.dvi
```
  - PS to PDF: Run ps2pdf on the ps file:

```
bash$ ps2pdf slide3_helloworld.ps
```

(We also have ps2pdf12, ps2pdf13, ps2pdf14 etc. for converting to different versions of the PDF format)

The output is now ready.

- Notice that we did not need to specify the presentation. All we needed to focus on was the content.
- Also notice the impeccable quality of the output. Zoom in and see that the output does not degrade.

# Simple Formatting

- `\flushleft`, `flushright`, `\center`
- `\textbf`, `\textit`, `\underline`, `\emph`
- `\tiny`, `\Small`, `\large`, `\huge`, `\normalsize`
- `\begin{itemize}`, `\item`, `\end{itemize}`
- `\footnote`
- `\begin{verbatim}`, `\end{verbatim}`
- lots more...

# References

- The Not So Short Introduction to LaTeX (lshort.pdf).

**On the Web:**

- <http://www.latex-project.org/>
- <http://www.latex-project.org/guides/>
- <http://www.comp.leeds.ac.uk/andyr/misc/> (see LaTeX section)
- <http://www.comp.leeds.ac.uk/andyr/misc/latex/>
- <http://www.comp.leeds.ac.uk/andyr/misc/latex/latextutorial1.html>
- <http://www.comp.leeds.ac.uk/andyr/misc/latex/latexvsword.html>