LaTeX: More Than Just Academic Papers and Theses

Lim Lian Tze

liantze@gmail.com
http://liantze.penguinattack.org/

©(i)(\$)(o)

Malaysian Open Source Conference 2011

Contents

Contents

What are TEX and LATEX, and Friends?

TEX
- ASCII TeX, /tɛx/, /tɛk/
- A computer typesetting system created by Donald Knuth
- for 'the creation of beautiful books'

What are TEX and LATEX, and Friends?

LATEX
- ASCII LaTeX, /ˈleɪtɛx/, /ˈleɪtɛk/, /ˈlɑːtɛx/, /ˈlɑːtɛk/
- A document preparation system by Leslie Lamport

What are TEX and LATEX, and Friends?

Binaries
- ε-TEX: additional primitives to TEX
- pdfTEX: additional PDF-related primitives
- XƎTEX: native UTF-8 input; can access system fonts
- LuaTEX: includes the Lua scripting engine

What are TEX and LATEX, and Friends?

Binaries
- ε-TEX: additional primitives to TEX
- pdfTEX: additional PDF-related primitives
- X∃TEX: native UTF-8 input; can access system fonts
- LuaTEX: includes the Lua scripting engine

What are TEX and LATEX, and Friends?

Friends
- BIBTEX, *MakeIndex*, METAFONT, METAPOST, …
- http://www.ctan.org/what_is_tex.html

Why?
From http://www.ctan.org/what_is_tex.html

Output Quality
- It has the best output.
- It knows typesetting.

Freedom
- It's free.
- It runs anywhere.

Superior Engineering
- It's fast.
- It's stable.
- It's not rigid (extensible).
- Plain text input.
- Many output types.

Popularity
- It's the standard (in academia and science).

Where Would I Want to Use LaTeX?

- Documents with complex structures
- Lots of mathematics

Where Would I Want to Use LATEX?

- Documents with complex structures
- Lots of mathematics (or other specific needs)

Where Would I Want to Use LATEX?

- Documents with complex structures
- Lots of mathematics (or other specific needs)
- When publishers require them

Where Would I Want to Use LATEX?

- Documents with complex structures
- Lots of mathematics (or other specific needs)
- When publishers require them
- Batch processing

Where Would I Want to Use LATEX?

- Documents with complex structures
- Lots of mathematics (or other specific needs)
- When publishers require them
- Batch processing
- Back-end of other applications

How Do I Use It?

1. Write a plain text LATEX file (.tex)

How Do I Use It?

1. Write a plain text LaTeX file (.tex)
2. Run it through pdflatex or xelatex → PDF output
   (or latex + dvips + ps2pdf for DVI + PS + PDF)

How Do I Use It?

1. Write a plain text LATEX file (.tex)
2. Run it through pdflatex or xelatex → PDF output
   (or latex + dvips + ps2pdf for DVI + PS + PDF)
3. Run bibtex and/or makeindex to process bibliographies, indices

How Do I Use It?

1. Write a plain text LaTeX file (.tex)
2. Run it through pdflatex or xelatex → PDF output
   (or latex + dvips + ps2pdf for DVI + PS + PDF)
3. Run bibtex and/or makeindex to process bibliographies, indices
4. Re-run pdflatex to resolve references and pointers

Example .tex File

```latex
\documentclass[a4paper,11pt]{article}
\author{Lim Lian Tze}
\title{An Introductory Paper}
\date{\today}
\usepackage[english]{babel}

\begin{document}
\maketitle
\tableofcontents

\begin{abstract}
This paper introduces\ldots
\end{abstract}

\section{Introduction}
We consider\ldots

\section{State of the Art}
We look at\ldots

\subsection{Document Formats}
There are many\ldots
\end{document}
```

Example .tex File

```
\documentclass[a4paper,11pt]{article}
\author{Lim Lian Tze}
\title{An Introductory Paper}
\date{\today}
\usepackage[english]{babel}

\begin{document}
\maketitle
\tableofcontents

\begin{abstract}
This paper introduces\ldots
\end{abstract}

\section{Introduction}
We consider\ldots

\section{State of the Art}
We look at\ldots

\subsection{Document Formats}
There are many\ldots
\end{document}
```

pdflatex

Example .tex File

```latex
\documentclass[a4paper,11pt]{article}
\author{Lim Lian Tze}
\title{An Introductory Paper}
\date{\today}
\usepackage[english]{babel}

\begin{document}
\maketitle
\tableofcontents

\begin{abstract}
This paper introduces\ldots
\end{abstract}

\section{Introduction}
We consider\ldots

\section{State of the Art}
We look at\ldots

\subsection{Document Formats}
There are many\ldots
\end{document}
```

pdflatex

An Introductory Paper

Lim Lian Tze

June 7, 2011

Contents

1 Introduction 1

2 State of the Art 1
  2.1 Document Formats 1

Abstract

This paper introduces...

1 Introduction

We consider...

2 State of the Art

We look at...

2.1 Document Formats

There are many...

1

Example .tex File

```latex
\documentclass[a4paper,11pt]{article}
\author{Lim Lian Tze}
\title{An Introductory Paper}
\date{\today}
\usepackage[ngerman]{babel}

\begin{document}
\maketitle
\tableofcontents

\begin{abstract}
This paper introduces\ldots
\end{abstract}

\section{Introduction}
We consider\ldots

\section{State of the Art}
We look at\ldots

\subsection{Document Formats}
There are many\ldots
\end{document}
```

pdflatex

An Introductory Paper

Lim Lian Tze

7. Juni 2011

Inhaltsverzeichnis

1 Introduction 1

2 State of the Art 1
  2.1 Document Formats 1

Zusammenfassung

This paper introduces...

1 Introduction

We consider...

2 State of the Art

We look at...

2.1 Document Formats

There are many...

1

Example .tex File

```latex
\documentclass[a4paper,11pt]{article}
\author{Lim Lian Tze}
\title{An Introductory Paper}
\date{\today}
\usepackage[bahasam]{babel}

\begin{document}
\maketitle
\tableofcontents

\begin{abstract}
This paper introduces\ldots
\end{abstract}

\section{Introduction}
We consider\ldots

\section{State of the Art}
We look at\ldots

\subsection{Document Formats}
There are many\ldots
\end{document}
```

pdflatex

An Introductory Paper

Lim Lian Tze

7 Jun 2011

Kandungan

1 Introduction 1

2 State of the Art 1
   2.1 Document Formats 1

Abstrak

This paper introduces…

1 Introduction

We consider…

2 State of the Art

We look at…

2.1 Document Formats

There are many…

1

Where Do I Get It?

Windows   MiKTEX, TEXLive

Un*x, GNU/Linux   TEXLive

Mac OS X   MacTEX (based on TEXLive)

Installation   Use your OS' package manager
(or download manually)

Where Do I Get It?

Windows MiKTEX, TEXLive

Un*x, GNU/Linux TEXLive

Mac OS X MacTEX (based on TEXLive)

Installation Use your OS' package manager
(or download manually)

Editors vi, emacs, Texmaker, TeXworks, …

Where Do I Get It?

Windows MiKTEX, TEXLive

Un*x, GNU/Linux TEXLive

Mac OS X MacTEX (based on TEXLive)

Installation Use your OS' package manager
(or download manually)

Editors vi, emacs, Texmaker, TeXworks, …

LATEX Packages Use MiKTEX or TEXLive's package manager

Where Do I Get It?

Windows	MiKTEX, TEXLive
Un*x, GNU/Linux	TEXLive
Mac OS X	MacTEX (based on TEXLive)
Installation	Use your OS' package manager
	(or download manually)
Editors	vi, emacs, Texmaker, TeXworks, . . .
LATEX Packages	Use MiKTEX or TEXLive's package manager
Documentation	(TEXLive) $ texdoc <package name>
	(MiKTEX) $ mthelp <package name>

Easy to Learn, Hard to Master

- Customising may not be straightforward (vs word processors)

Easy to Learn, Hard to Master

- Customising may not be straightforward (vs word processors)
- Intentionally so: Style guidelines should be followed strictly
    - Publisher/organisation provides document class or style files
    - Use these to take care of formatting and styling, focus on the content

Easy to Learn, Hard to Master

- Customising may not be straightforward (vs word processors)
- Intentionally so: Style guidelines should be followed strictly
  - Publisher/organisation provides document class or style files
  - Use these to take care of formatting and styling, focus on the content
- Fair enough.
  But where do I learn all the stuff the TEXnicians and TEXperts do?

Easy to Learn, Hard to Master

- Customising may not be straightforward (vs word processors)
- Intentionally so: Style guidelines should be followed strictly
    - Publisher/organisation provides `document class` or `style` files
    - Use these to take care of formatting and styling, focus on the content
- Fair enough.
  But where do I learn all the stuff the TEXnicians and TEXperts do?
- (There *is* a learning curve)

Getting Help

- Many free tutorials and e-books on the Web (beware of obsolete ones!)
    - Getting to Grips with LATEX. Andy Roberts.
      http://www.andy-roberts.net/misc/latex/
    - LATEX: Beautiful Typesetting. Lim Lian Tze.
      http://liantze.penguinattack.org/latextypesetting.html
    - LATEX and Friends. M.R.C. van Dongen.
      http://csweb.ucc.ie/~dongen/LaTeX-and-Friends.pdf
    - The LATEX WikiBook. http://en.wikibooks.org/wiki/LaTeX

Getting Help

- Many free tutorials and e-books on the Web (beware of obsolete ones!)
    - Getting to Grips with LATEX. Andy Roberts.
      http://www.andy-roberts.net/misc/latex/
    - LATEX: Beautiful Typesetting. Lim Lian Tze.
      http://liantze.penguinattack.org/latextypesetting.html
    - LATEX and Friends. M.R.C. van Dongen.
      http://csweb.ucc.ie/~dongen/LaTeX-and-Friends.pdf
    - The LATEX WikiBook. http://en.wikibooks.org/wiki/LaTeX
- Questions?
    - TeX FAQ. http://www.tex.ac.uk/cgi-bin/texfaq2html
    - TeX.SX. http://tex.stackexchange.com/
    - comp.text.tex usenet group
    - Malaysian LATEX User Group. http://latex-my.blogspot.com/

Getting Help

- Many free tutorials and e-books on the Web (beware of obsolete ones!)
    - Getting to Grips with LATEX. Andy Roberts.
      http://www.andy-roberts.net/misc/latex/
    - LATEX: Beautiful Typesetting. Lim Lian Tze.
      http://liantze.penguinattack.org/latextypesetting.html
    - LATEX and Friends. M.R.C. van Dongen.
      http://csweb.ucc.ie/~dongen/LaTeX-and-Friends.pdf
    - The LATEX WikiBook. http://en.wikibooks.org/wiki/LaTeX
- Questions?
    - TEX FAQ. http://www.tex.ac.uk/cgi-bin/texfaq2html
    - TEX.SX. http://tex.stackexchange.com/
    - comp.text.tex usenet group
    - Malaysian LATEX User Group. http://latex-my.blogspot.com/
- Arrange for training

So, What Can LATEX Do?

Contents

Basic Types

Books

```latex
\documentclass{book}
\author{...}
\title{...}

\begin{document}
\maketitle
\chapter{...}
\section{...}
...
\subsection{...}
\end{document}
```

Basic Types (cont'd)

Articles

```latex
\documentclass{article}
\author{...}
\title{...}


\begin{document}
\maketitle
\section{...}

...

\subsection{...}
\end{document}
```

Journal and Conference Proceedings Articles

IEEE

\documentclass{IEEEtran}

ACM

\documentclass{sig-alternate}

LLNCS

\documentclass{llncs}

Some Goodies

- Quick language-switching with babel

Some Goodies

- Automatic generation of cross-referencing labels:
  `\section{Introduction}\label{sec:intro}`
  `... We saw in section \ref{sec:intro}...`

Some Goodies

- Automatic generation of lists:
  \tableofcontents, **\listoffigures**, **\listoftables**

Some Goodies

- Automatic generation of bibliographies and indices:
  `\cite`{Knuth:1976}...`\bibliography`{references.bib}
  ...the Linux kernel`\index`{Linux!kernel}... `\printindex`

Some Goodies

- Fully hyperlinked PDF with bookmarks: **\usepackage**{hyperref}

Some Goodies

- Inclusion of selected pages from other PDFs
  (while inserting new page headers/footers!)
  \usepackage{pdfpages}

  \includepdf[pages={1,3-5,8},pagecommand=**\thispagestyle**{plain}]{file.pdf}

University Theses

Universiti Sains Malaysia `\documentclass`{usmthesis}

University Theses (cont'd)

Multimedia University `\documentclass{mmuthesis}`

University Theses (cont'd)

Universiti Malaya **\documentclass**{umalayathesis}

Highly Configurable Documents
`memoir` and KOMA-Script Classes

- Sectional headings
- Running headers and footers
- Good font, colour and illustration choices
- http://latex-my.blogspot.com/search/label/bookdesign

Highly Configurable Documents

`memoir` and KOMA-Script Classes

- Sectional headings
- Running headers and footers
- Good font, colour and illustration choices
- `http://latex-my.blogspot.com/search/label/bookdesign`

Presentation Slides

- This presentation was made with LATEX!
- Many possible classes: powerdot, beamer

Presentation Slides

- This presentation was made with LATEX!
- Many possible classes: powerdot, beamer

```latex
\documentclass{beamer}
\usetheme{Warsaw}

\author ...

\begin{document}
\titleframe

\section{Intro}

\begin{frame}
\frametitle{Some Background}
...
\end{frame}
\end{document}
```
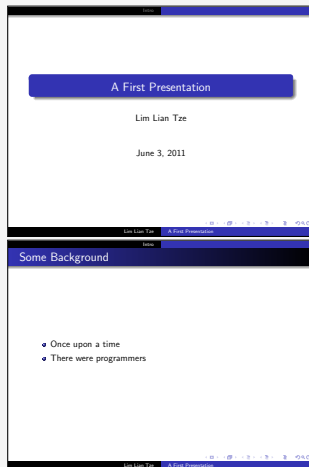
Presentation Slides

- This presentation was made with LaTeX!
- Many possible classes: powerdot, beamer

```
\documentclass{beamer}
\usetheme{Szeged}

\author ...

\begin{document}
\titleframe

\section{Intro}

\begin{frame}
\frametitle{Some Background}
...
\end{frame}
\end{document}
```
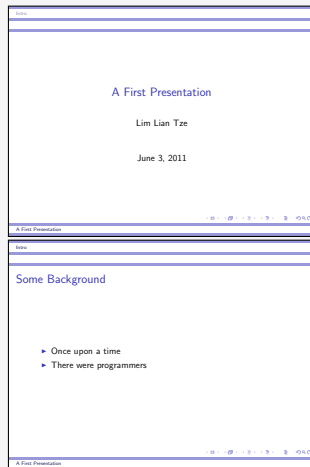
Presentation Slides

- This presentation was made with LᴬTEX!
- Many possible classes: `powerdot`, `beamer`

```
\documentclass{beamer}
\usetheme{Bergen}

\author ...

\begin{document}
\titleframe

\section{Intro}

\begin{frame}
\frametitle{Some Background}
...
\end{frame}
\end{document}
```

Presentation Slides

- This presentation was made with LATEX!
- Many possible classes: `powerdot`, `beamer`

```latex
\documentclass{beamer}
\usetheme{oxygen}

\author ...

\begin{document}
\titleframe

\section{Intro}

\begin{frame}
\frametitle{Some Background}
...
\end{frame}
\end{document}
```
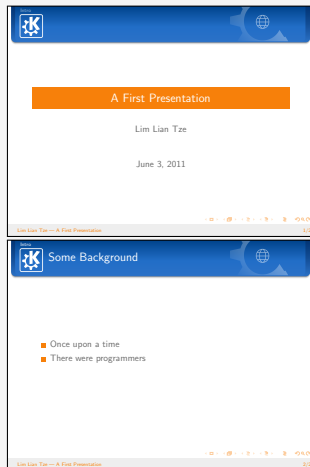
Oversized Posters

- Many possible solutions: `sciposter`, `flowfram`, `beamerposter`

Oversized Posters

- Many possible solutions: `sciposter`, `flowfram`, `beamerposter`


```latex
\documentclass{beamer}
\usepackage[orientation=portrait,
↪ size=a0]{beamerposter}
\usetheme{...}
\author ... % Meta—information

\begin{document}
\begin{frame}
... % Poster contents goes here
\end{frame}
\end{document}
```

Oversized Posters

- Many possible solutions: `sciposter`, `flowfram`, `beamerposter`


```latex
\documentclass{beamer}
\usepackage[orientation=portrait,
  size=a0]{beamerposter}
\usetheme{...}
\author ... % Meta—information

\begin{document}
\begin{frame}
... % Poster contents goes here
\end{frame}
\end{document}
```

Leaflets

- `leaflet`: arrange contents into 6 pages on a foldable double-sided sheet


```latex
\documentclass[foldmark,a4paper]
{leaflet}
\author ... % Meta—information

\begin{document}
\maketitle
\section ...
... % Leaflet contents
\end{document}
```

Fillable PDF Forms

```latex
\usepackage{hyperref}
... % various settings skipped
\TextField{Name:}\\
\TextField{Affiliation:}\\
\ChoiceMenu[radio=true]
{Are you a:}{Student, Academic}\\
Interest:
\CheckBox{Security}
\CheckBox{Systems}
\CheckBox{User space}\\
\TextField[multiline=true]
{Comments:}\\
```

Fillable PDF Forms (cont'd)

Use with caution!

- `poppler`-based viewers (`evince`, `xpdf`, `okular`)
    - Problem displaying and saving radio/check boxes correctly
    - Saved forms can't be opened by other viewers
- Adobe Reader
    - Cannot save filled form as PDF unless Acrobat is installed
    - Only as field-and-value text file
    - Can provide "Submit" button for submission to a URL
    - Or print hard copy of filled form!
- PDF XChange Viewer
    - Best freeware for filling and saving LATEX-created forms
    - Windows only
    - Not OSS

Flash Cards

```
\documentclass[avery5388,frame]
{flashcards}
\cardfrontstyle{headings}
\cardfrontfoot{Linux}

\begin{document}
\begin{flashcard}[Security]
{Certificate}
...
\end{flashcard}

\begin{flashcard}[Security]
{MAC ...}
...
\end{flashcard}
\end{document}
```

Certificate	A digital representation of information that identifies you and is issued by Cas, which are often a trusted third party (TTP).
MAC (Mandatory Access Control)	Access to an object is restricted based on the sensitivity of the object (defined by the label that is assigned), and granted through authorization (Clearance) to access that level of data.
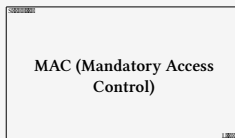
Examination Questions

```
\documentclass{exam}
...
\begin{questions}
\question[5]
What is Paul McCartney's middle name?
\begin{oneparchoices}
\choice John \CorrectChoice Paul
\choice Ringo \choice James
\end{oneparchoices}

\question[10] What was the Beatles' first
↪single in 1962?
\begin{solution}Love Me Do\end{solution}

\question
\begin{parts}
\part[5] What was George's inspiration for
↪`While My Guitar Gently Weeps'?
\begin{solution}
He opened a random book and saw the words
↪``gently weep''.
\end{solution}
...
\end{questions}
```

1. What is Paul McCartney's middle name? (5)
   A. John   B. Paul   C. Ringo   D. James

2. What was the Beatles first single in 1962? (10)

3. (a) What was George's inspiration for While
      My Guitar Gently Weeps? (5)

   (b) Who guest-performed for the song and why? (5)

Examination Questions

```
\documentclass{exam}
...
\begin{questions}\printanswers
\question[5]
What is Paul McCartney's middle name?
\begin{oneparchoices}
\choice John \CorrectChoice Paul
\choice Ringo \choice James
\end{oneparchoices}

\question[10] What was the Beatles' first
↪single in 1962?
\begin{solution}Love Me Do\end{solution}

\question
\begin{parts}
\part[5] What was George's inspiration for
↪`While My Guitar Gently Weeps'?
\begin{solution}
He opened a random book and saw the words
↪``gently weep''.
\end{solution}
...
\end{questions}
```

1. What is Paul McCartney's middle name? (5)
   A. John **B. Paul** C. Ringo D. James

2. What was the Beatles' first single in 1962? (10)

   | **Solution**: Love Me Do |

3. (a) What was George's inspiration for "While (5)
   My Guitar Gently Weeps"?

   | **Solution**: He opened a random book
   and saw the words "gently weep" |

   (b) Who guest-performed for the song and why? (5)

   | **Solution**: Eric Clapton; he wanted a
   spicy guitar solo. |

Contents

Mathematics

(1) relates the golden ratio and the Fibonacci series. Recall that the golden ratio, $\phi = \frac{1}{2}(1 + \sqrt{5})$.

$$\phi = 1 + \sum_{n=1}^{\infty} \frac{(-1)^{n+1}}{F_n F_{n+1}} \tag{1}$$

```
\eqref{eq:gratio} relates the golden ratio and the Fibonacci series.
Recall that the golden ratio, $\phi = \frac{1}{2} (1 + \sqrt{5})$.

\begin{equation}\label{eq:gratio}
\phi = 1 + \sum^{\infty} _{n=1}
              \frac{ (-1)^{n+1} }{ F_n F_{n+1} }
\end{equation}
```

Chemical Equations and Molecules

$$Zn^{2+} \underset{+2\,H^+}{\overset{+2\,OH^-}{\rightleftharpoons}} \underset{\text{amphoteres Hydroxid}}{Zn(OH)_2 \downarrow} \underset{+2\,H^+}{\overset{+2\,OH^-}{\rightleftharpoons}} \underset{\text{Hydroxozikat}}{[Zn(OH)_4]^{2-}}$$
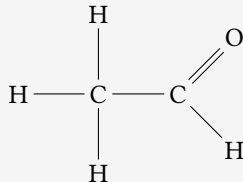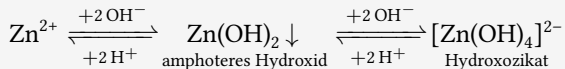
```
\usepackage[version=3]{mhchem}    % sufficient for chemical equations
\usepackage{chemfig}    % for 2—D molecule drawings
...
\ce{Zn^2+ <=>[\ce{+ 2OH-}][\ce{+ 2H+}]
$\underset{\text{amphoteres Hydroxid}}{\ce{Zn(OH)2 v}}$
<=> C[+2OH-][{+ 2H+}]
$\underset{\text{Hydroxozikat}}{\cf{[Zn(OH)4]^2-}}$ }

\chemfig{H-C(-[2]H)(-[6]H)-C(-[7]H)=[1]O}
```

Linguistics

(1) %*Wen liebt seine Mutter?
   Whom loves his mother
   'Who does his mother love?'

(2) [[NP He] [VP kicked [NP the ball]]]S
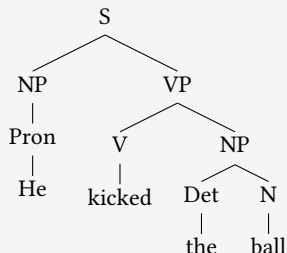

```
\usepackage{linguex,qtree}
...
\exg. \%*Wen liebt seine Mutter?\\
Whom loves his mother\\
`Who does his mother love?'

\exi. [[NP He ] [VP kicked [NP the ball ]]]S

\Tree [ .S [.NP [.Pron He ] ] [.VP [.V kicked ] [.NP [.Det the ] [.N ball ]
↪ ] ] ]
```

Program Listings

```
\usepackage{listings,xcolor}
...
\begin{lstlisting}
[language=C,columns=fullflexible,
basicstyle=\ttfamily,
keywordstyle=\bfseries\color{red},
commentstyle=\sffamily\color{green},
stringstyle=\rmfamily\color{orange}]
#include <stdio.h>
/*
 | Prints "hello world"
 */
int main(void)
{
    printf("hello, world\n");
    return 0;
}
\end{lstlisting}
```

```
#include <stdio.h>

/*
| Prints "hello world"
*/
int main(void)
{
    printf("hello, world\n");
    return 0;
}
```

Network Protocols

```
\usepackage{bytefield}
...
\begin{bytefield}{16}
\bitheader{0,7,8,15} \\
\wordgroupr{Header}
\bitbox{4}{Tag} & \bitbox{12}{Mask} \\
\bitbox{8}{Source} &
\bitbox{8}{Destination}
\endwordgroupr \\
\wordbox{3}{Data}
\end{bytefield}
```
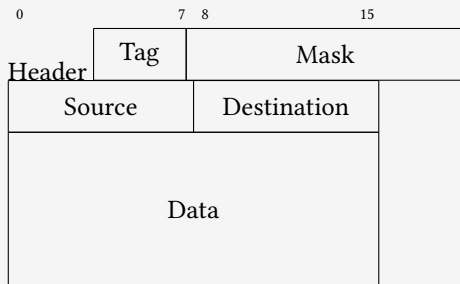
Life Sciences

first case (see text)
↓

```
AQP1.PRO  TLGLLLSCQISILRAVMYIIAQCVGAIVASAIL  112
AQP2.PRO  TVACLVGCHVSFLRAAFYVAAQLLGAVAGAAIL  104
AQP3.PRO  TFAMCFLAREPWIKLPIYTLAQTLGAFLGAGIV  112
AQP4.PRO  TVAMVCTRKISIAKSVFYITAQCLGAIIGAGIL  133
AQP5.PRO  TLALLIGNQISLLRAVFYVAAQLVGAIAGAGIL  105
```

second case (see text)
↑

```latex
\usepackage{texshade}   % for nucleotide and peptide alignments
...
\begin{texshade}{AQPpro.MSF}
\shadingmode{similar}
\threshold[80]{50}
\setends{1}{80..112}
\hideconsensus
\feature{top}{1}{93..93}{fill:$\downarrow$}{first case (see text)}
\feature{bottom}{1}{98..98}{fill:$\uparrow$}{second case (see text)}
\end{texshade}
```

Circuits and SI Units
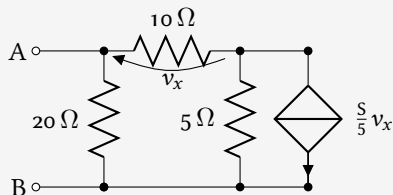
- 3.45×10^4 V² lm³ F⁻¹
- 40 km/h, 85 km/h and 103 km/h

```
\usepackage{siunitx}
\usepackage[siunitx]{circuitikz}
...
\begin{circuitikz}
\draw (0,0) node[anchor=east] {B}
  to[short, o-*] (1,0)    to[R=20<\ohm>, *-*] (1,2)
  to[R=10<\ohm>, v=$v_x$] (3,2) -- (4,2)
  to[ cI=$\frac{\si{\siemens}}{5} v_x$, *-*] (4,0) -- (3,0)
  to[R=5<\ohm>, *-*] (3,2)
  (3,0) -- (1,0)    (1,2) to[short, -o] (0,2) node[anchor=east]{A}
;\end{circuitikz}

\SI{3.45d4}{\square\volt\cubic\lumen\per\farad}
\SIlist[per-mode=symbol]{40;85;103}{\kilo\metre\per\hour}
```

Meh, What Good is That? Can't Use it Anywhere Else.

Actually, you can.

Meh, What Good is That? Can't Use it Anywhere Else.

Actually, you can.

```
\usepackage[active,tightpage]{preview}
\PreviewEnvironment{texshade}
...
\begin{texshade}
...
\end{texshade}
```

- Run pdflatex → cropped PDF containing *only* contents of texshade

Meh, What Good is That? Can't Use it Anywhere Else.

Actually, you can.

```
\usepackage[active,tightpage]{preview}
\PreviewEnvironment{texshade}
...
\begin{texshade}
...
\end{texshade}
```

- Run pdflatex → cropped PDF containing *only* contents of texshade
- gs -otexshade.png -sDEVICE=png16m -r200 -dTextAlphaBits=4
  -dGraphicAlphaBits=4 texshade.pdf

Meh, What Good is That? Can't Use it Anywhere Else.

Actually, you can.

```
\usepackage[active,tightpage]{preview}
\PreviewEnvironment{texshade}
...
\begin{texshade}
...
\end{texshade}
```

- Run pdflatex → cropped PDF containing *only* contents of texshade
- gs -otexshade.png -sDEVICE=png16m -r200 -dTextAlphaBits=4
  -dGraphicAlphaBits=4 texshade.pdf
- Multiple environments → multi-page PDF
  Use -otexshade%02d.png to get texshade01.png, texshade02.png, ...

Bar Codes

```latex
\usepackage{auto-pst-pdf}   % Needed if running pdflatex; must use option −shell−escape
\usepackage{pstricks,pst-barcode}
...
\begin{pspicture}
\psbarcode{MECARD:N:Malaysia Open Source Conference...}{eclevel=L}{qrcode}
\psbarcode{9781860742712}{includetext guardwhitespace}{ean13}
\psbarcode{978-3-86541-114}{includetext guardwhitespace}{isbn}
\psbarcode{LE28HS9Z}{includetext}{royalmail}
\psbarcode{^453^178^121^239}{columns=2 rows=10}{pdf417}
\end{pspicture}
```

Graph Plots
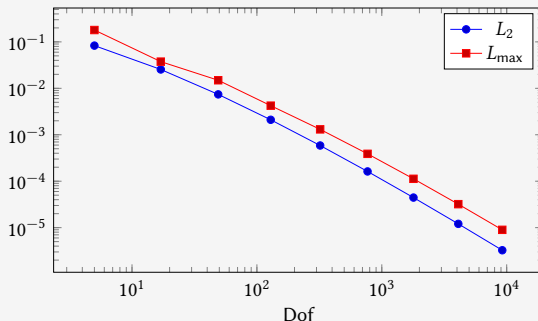

```
\usepackage{pgfplots}
...
\begin{tikzpicture}
\begin{loglogaxis}[xlabel=Dof]
\addplot table[x=dof,y=L2]{datafile.dat};  \addlegendentry{$L_2$};
\addplot table[x=dof,y=Lmax]{datafile.dat};  \addlegendentry{$L_\text{max}$};
\end{loglogaxis}
\end{tikzpicture}
```

Spreadsheets
(Seriously, use a proper spreadsheet application for complex stuff.)

Year ending Mar 31	2009	2008	2007
Revenue	14580.20	11900.40	8290.30
Cost of sales	6740.20	5650.10	4524.20
Gross profit	7840.00	6250.30	3766.10

```
\STautoround*{2}
\begin{spreadtab}{{tabular}{l rrr}}
@Year ending Mar 31 & @2009 & @2008 & @2007\\ \hline
@Revenue & 14580.2 & 11900.4 & 8290.3\\
@Cost of sales & 6740.2 & 5650.1 & 4524.2\\ \cline{2-4}
@\emph{Gross profit} & \STcopy{>}{b2-b3} & &\\ \cline{2-4}
\end{spreadtab}
```

Gantt Charts

00.0

100% complete   Preliminary Project

Task A

Task B

Task A

Task B
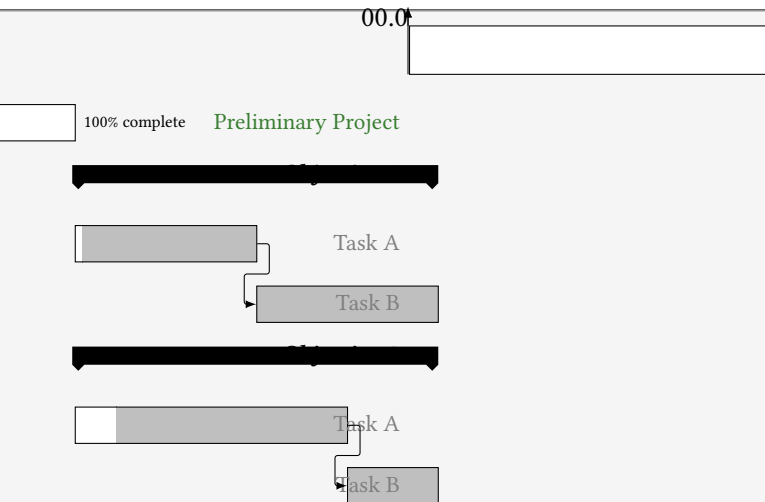
```latex
\usepackage{pgfgantt}
...
\begin{tikzpicture}
\begin{ganttchart}[...settings...]{16}
```

Chess games

1 e4 e5 2 ♘f3 ♘c6 3 ♗b5 a6

```
\usepackage[skaknew]%
{skak,chessboard}
...
\newgame
\mainline{1. e4 e5 2. Nf3 Nc6 3.
↪Bb5 a6}
\chessboard[smallboard]
```
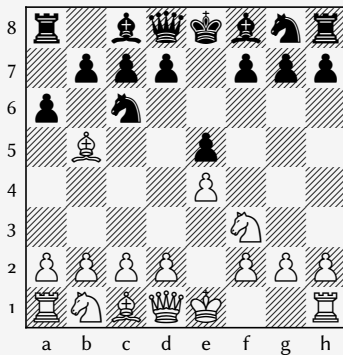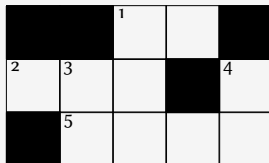
Crossword Puzzles

Across: 1 unit of measure 2 ∗ 5 sectioning unit

Down: 1 η 3 unit of measure 4 nonproportional font

```
\usepackage{cwpuzzle}
...
\begin{Puzzle}{5}{3}
|* |* |[1]E|X |* |.
|[2]A|[3]S|T |* |[4]T|.
|* |[5]P|A |R |T |.
\end{Puzzle}
\begin{PuzzleClues}{
\textbf{Across:} }
  \Clue{1}{EX}{unit of measure}
```

```
    \Clue{2}{AST}{\(\ast\)}
    \Clue{5}{PART}{sectioning unit}
\end{PuzzleClues}
\begin{PuzzleClues}{
\textbf{Down:} }
  \Clue{1}{ETA}{\(\eta\)}
  \Clue{3}{SP}{unit of measure}
  \Clue{4}{TT}{nonproportional font}
\end{PuzzleClues}
```

Song Books with Guitar Tabs

C   G   Am   F

Country road, take me home, to the place I belong.

C   G   F   C

West Virginia, mountain momma, take me home, country road.

```
\usepackage{gchords,guitar}
...
\begin{guitar}
\newcommand{\CMaj}{\chord{t}{n,p3,p2,n,p1,n}{C}}
\newcommand{\Amin}...
Country [\CMaj]road, take me [\GMaj]home, ...
\end{guitar}
```

Contents

Summary

- LaTeX
    - a document preparation system
    - professional quality typesetting output

Summary

- LaTeX
    - a document preparation system
    - professional quality typesetting output
- Output artefacts
    - Academic: papers, theses, books
    - Dedicated document types
    - Domain-specific material

Summary

- LaTeX
    - a document preparation system
    - professional quality typesetting output
- Output artefacts
    - Academic: papers, theses, books
    - Dedicated document types
    - Domain-specific material
- Usage scenario
    - Direct authoring
    - Automatic generation (via scripts etc)
    - As back-end of other applications

Getting Help

- Many free tutorials and e-books on the Web (beware of obsolete ones!)
    - Getting to Grips with LaTeX. Andy Roberts.
      http://www.andy-roberts.net/misc/latex/
    - LaTeX: Beautiful Typesetting. Lim Lian Tze.
      http://liantze.penguinattack.org/latextypesetting.html
    - LaTeX and Friends. M.R.C. van Dongen.
      http://csweb.ucc.ie/~dongen/LaTeX-and-Friends.pdf
    - The LaTeX WikiBook. http://en.wikibooks.org/wiki/LaTeX
- Questions?
    - TeX FAQ. http://www.tex.ac.uk/cgi-bin/texfaq2html
    - TeX.SX. http://tex.stackexchange.com/
    - comp.text.tex usenet group
    - Malaysian LaTeX User Group. http://latex-my.blogspot.com/
- Arrange for training

Thank You

Questions?

liantze@gmail.com
http://latex-my.blogspot.com