

L^AT_EX: More Than Just Academic Papers and Theses

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Malaysian Open Source Conference 2011

Contents

1 What are T_EX, L^AT_EX and Friends?

2 Document Types

3 Special Material

4 Wrapping Up

Contents

1 What are TeX, LaTeX and Friends?

2 Document Types

3 Special Material

4 Wrapping Up

What are T_EX and ℒ_{TeX}, and Friends?

- T_EX
 - ASCII TeX, /tex/, /tek/
 - A **computer typesetting system** created by Donald Knuth
 - for ‘the creation of beautiful books’

What are T_EX and L^AT_EX, and Friends?

L^AT_EX

- ASCII LaTeX, /'leɪtɛx/, /'leɪtɛk/, /'laɪtɛx/, /'laɪtɛk/
- A document preparation system by Leslie Lamport

What are T_{EX} and ℒ_{TeX}, and Friends?

Binaries

- ε -T_{EX}: additional primitives to T_{EX}
- pdfT_{EX}: additional PDF-related primitives
- X_YT_{EX}: native UTF-8 input; can access system fonts
- LuaT_{EX}: includes the Lua scripting engine

What are T_EX and ℒ_{TeX}, and Friends?

Binaries

- ε -T_EX: additional primitives to T_EX
- pdfT_EX: additional PDF-related primitives
- X_YT_EX: native UTF-8 input; can access system fonts
- LuaT_EX: includes the Lua scripting engine

What are T_EX and L^AT_EX, and Friends?

- Friends
- B_BT_EX, *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 L^AT_EX?

- Documents with complex structures
- Lots of mathematics

Where Would I Want to Use L^AT_EX?

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

Where Would I Want to Use L^AT_EX?

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

Where Would I Want to Use L^AT_EX?

- 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 L^AT_EX file (.tex)

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- 2 Run it through pdf_latex or xelatex → PDF output
(or latex + dvips + ps2pdf for DVI + PS + PDF)

How Do I Use It?

- 1 Write a plain text ℒ_Tℒ_X file (.tex)
- 2 Run it through pdf_latex 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` \rightarrow 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

```

\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}
    
```

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



pdflatex

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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

```

\documentclass[a4paper,11pt]{article}
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\usepackage[ngerman]{babel}

\begin{document}
\maketitle
\tableofcontents

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\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}

```

pdf_lat_{ex}

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

```

\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}

```

pdf_lat_{ex}

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 MiK_TE_X, T_EXLive

Un*x, GNU/Linux T_EXLive

Mac OS X MacT_EX (based on T_EXLive)

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

Where Do I Get It?

Windows MiK_TE_X, T_EXLive

Un*x, GNU/Linux T_EXLive

Mac OS X MacT_EX (based on T_EXLive)

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 $\text{MiK}\TeX$, $\text{T}\TeX\text{Live}$

Un*x, GNU/Linux $\text{T}\TeX\text{Live}$

Mac OS X $\text{Mac}\TeX$ (based on $\text{T}\TeX\text{Live}$)

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

Editors vi, emacs, Texmaker, TeXworks , ...

\LaTeX Packages Use $\text{MiK}\TeX$ or $\text{T}\TeX\text{Live}$'s package manager

Documentation ($\text{T}\TeX\text{Live}$) \$ texdoc <package name>
($\text{MiK}\TeX$) \$ 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 \$\text{\LaTeX}\$](#) . Andy Roberts.
<http://www.andy-roberts.net/misc/latex/>
 - [\$\text{\LaTeX}\$: Beautiful Typesetting](#). Lim Lian Tze.
<http://liantze.penguinattack.org/latextypesetting.html>
 - [\$\text{\LaTeX}\$ and Friends](#). M.R.C. van Dongen.
<http://csweb.ucc.ie/~dongen/LaTeX-and-Friends.pdf>
 - [The \$\text{\LaTeX}\$ WikiBook](#). <http://en.wikibooks.org/wiki/LaTeX>

Getting Help

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 - [\$\text{\LaTeX}\$ and Friends](#). M.R.C. van Dongen.
<http://csweb.ucc.ie/~dongen/LaTeX-and-Friends.pdf>
 - [The \$\text{\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

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 - [\$\text{\LaTeX}\$: Beautiful Typesetting](#). Lim Lian Tze.
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 - [\$\text{\LaTeX}\$ and Friends](#). M.R.C. van Dongen.
<http://csweb.ucc.ie/~dongen/LaTeX-and-Friends.pdf>
 - [The \$\text{\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 L^AT_EX Do?

Contents

1 What are \TeX , \LaTeX and Friends?

2 Document Types

3 Special Material

4 Wrapping Up

Basic Types

Books

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

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

A Wonderful Read

A. Dumas
3rd June 2011

Chapter 1 Heading on level 0 (chapter)

Hihi, here is some text without a meaning. This text should show, how a general text will look like at this place. If you read this text, you will get no information. Really? Is there an information? Is there a difference between this text and some sentence like (theoretical physics). Right. There must!

1.1 Heading on level 1 (section)

Hihi, here is some text without a meaning. This text should show, how a general text will look like at this place. If you read this text, you will get no information. Really? Is there an information? Is there a difference between this text and some sentence like (theoretical physics). Right. There must!

1.1.1 Heading on level 2 (subsection)

Hihi, here is some text without a meaning. This text should show, how a general text will look like at this place. If you read this text, you will get no information. Really? Is there an information? Is there a difference between

1

CHAPTER 1: HEADING ON LEVEL 0 (CHAPTER)

this text and some sentence like (theoretical physics). Right. There must!

Hihi, here is some text without a meaning. This text should show, how a general text will look like at this place. If you read this text, you will get no information. Really? Is there an information? Is there a difference between this text and some sentence like (theoretical physics). Right. There must!

Hihi, here is some text without a meaning. This text should show, how a general text will look like at this place. If you read this text, you will get no information. Really? Is there an information? Is there a difference between this text and some sentence like (theoretical physics). Right. There must!

1.2 Lists

1.2.1 Example for list (Roman)

- First item in a list
- Second item in a list
- Third item in a list
- Fourth item in a list
- Fifth item in a list

1.2 LISTS

3

Example for list (P(Roman))

- First item in a list
 - 1. First item in a list
 - 2. Second item in a list
 - 3. Third item in a list
 - 4. Fourth item in a list
 - 5. Fifth item in a list

1.2.2 Example for list (Roman)

- 1. First item in a list
 - 1. First item in a list
 - 2. Second item in a list
 - 3. Third item in a list
 - 4. Fourth item in a list
 - 5. Fifth item in a list

Example for list (P(Roman))

- 1. First item in a list
 - 1. First item in a list
 - 2. Second item in a list
 - 3. Third item in a list
 - 4. Fourth item in a list
 - 5. Fifth item in a list

Basic Types (cont'd)

Articles

```
\documentclass{article}
```

```
\author{...}
```

```
\title{...}
```

```
\begin{document}
```

```
\maketitle
```

```
\section{...}
```

```
...
```

```
\subsection{...}
```

```
\end{document}
```

A Wonderful Read

A. Dinsay

2nd June 2011

1 Heading on level 1 (section)

Here, here is some text without a meaning. This text should show how a printed text will look like at this place. If you read this text, you will get no information. Really? Is there no information? Is there a difference between this text and some sentence like "the weather is getting better. Right - There is!" A third text like this gives you information about the selected text, how the letters are written and the impression of the look. This text should contain all letters of the alphabet and it should be written in the original language. There is no need for a special content, but the length of words should match to the language.

1.1 Heading on level 2 (subsection)

Here, here is some text without a meaning. This text should show how a printed text will look like at this place. If you read this text, you will get no information. Really? Is there no information? Is there a difference between this text and some sentence like "the weather is getting better. Right - There is!" A third text like this gives you information about the selected text, how the letters are written and the impression of the look. This text should contain all letters of the alphabet and it should be written in the original language. There is no need for a special content, but the length of words should match to the language.

1.1.1 Heading on level 3 (subsubsection)

Here, here is some text without a meaning. This text should show how a printed text will look like at this place. If you read this text, you will get no information. Really? Is there no information? Is there a difference between this text and some sentence like "the weather is getting better. Right - There is!"

1

A third text like this gives you information about the selected text, how the letters are written and the impression of the look. This text should contain all letters of the alphabet and it should be written in the original language. There is no need for a special content, but the length of words should match to the language.

Heading on level 4 (paragraph) Here, here is some text without a meaning. This text should show how a printed text will look like at this place. If you read this text, you will get no information. Really? Is there no information? Is there a difference between this text and some sentence like "the weather is getting better. Right - There is!" A third text like this gives you information about the selected text, how the letters are written and the impression of the look. This text should contain all letters of the alphabet and it should be written in the original language. There is no need for a special content, but the length of words should match to the language.

2 Lists

2.1 Example for list (enumerate)

- First item in a list
- Second item in a list
- Third item in a list
- Fourth item in a list
- Fifth item in a list

2.1.1 Example for list (fnumeration)

- First item in a list
 - First item in a list
 - Second item in a list
 - Third item in a list
- Second item in a list
- Third item in a list

2

2.2 Example for list (numeration)

1. First item in a list
2. Second item in a list
3. Third item in a list
4. Fourth item in a list
5. Fifth item in a list

2.2.1 Example for list (fnumeration)

- (a) First item in a list
 1. First item in a list
 2. Second item in a list
 3. Third item in a list
- (b) Second item in a list
- (c) Third item in a list

2.3 Example for list (description)

- First item in a list
- Second item in a list
- Third item in a list
- Fourth item in a list
- Fifth item in a list

2.3.1 Example for list (fdescription)

- First item in a list
 - First item in a list
 - Second item in a list
- Second item in a list

3

- Second item in a list
- Second item in a list
- Second item in a list
- Second item in a list

4

`\documentclass{IEEEtran}`

\documentclass{sig-alternate}

`\documentclass{llncs}`

A. Dammery

1. HEADING ON LEVEL 1 (SECTION)

A. Heading on level 2 (subsection)

III. LIST

- First item in a list
 - Second item in a list
 - Third item in a list
 - Fourth item in a list
 - Fifth item in a list
- 1) Example for list (4*item):
 - First item in a list
 - First item in a list
 - First item in a list
 - First item in a list

A. Durnany

ABSTRACT

1. Heading on level 1 (SECTION)

1.1 Heading on level 2 (subsection)

1.1.1 Heading on level 3 (subsubsection)

Hello, here is some text without a meaning. This text should

Permission to make digital or hard copies of all or part of this work for personal or classroom use is granted without fee provided that copies are not made or distributed for profit or commercial advantage and that copies bear this notice and the full citation on the first page. To copy otherwise, to republish, to post on servers or to redistribute to lists, requires prior specific permission and/or a fee.

Heading on level 4 (paragraph).

2. Lists

2.1 Example for Net (Hemlock)

- First item in a list
 - Second item in a list
 - Third item in a list
 - Fourth item in a list
 - Fifth item in a list
- 2.1.1 Example for list (4^{th} item)
- First item in a list
 - First item in a list
 - First item in a list
 - Second item in a list
 - Second item in a list
 - Second item in a list

A Wonderful Read

A. Durany
Nia Institute Group

Abstract: Hello, here is some text without a meaning. This text should show, how a printed text will look like at this place. If you read this text, you will get no information. Really? Is there no information? Is there a difference between this text and some nonsense like a Dadaist graffiti?

Kjell - Never mind! A lined text like this gives you information about the selected font, how the letters are written and the impression of the look. This text should contain all letters of the alphabet and it should be written in the original language. There is no need for a special sentence, but the length of words should match to the language.

1 Heading on level 1 (section)

Hello, here is some text without a meaning. This text should show how a printed text will look like at this place. If you read this text, you will get no information. Really? Is there no information? Is there a difference between this text and some nonsense like »Hundstotzgerhuhn«. Kjñh - Never mind! A blind text like this gives you information about the selected font, how the letters are written and the impression of the look. This text should contain all letters of the alphabet and it should be written in of the original language. There is no need for a special contents, but the length of words should match to the language.

1.1 Heading on level 2 (subsection)

Hello, here is some text without a meaning. This text should show how a printed text will look like at this place. If you read this text, you will get no information. Really? Is there no information? Is there a difference between this text and some nonsense like *5#uandst gdhfna. Kjih - Never mind!* A blind text like this gives you information about the selected font, how the letters are written and the

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}
```

[illegible]

Multimedia University \documentclass{mmuthesis}

[illegible]

University Theses (cont'd)

Universiti Malaya \documentclass{umalayathesis}

<p>THE UMALAYATHESIS LaTeX DOCUMENT CLASS</p> <p>LIM LIAN TZE</p> <p>THESIS SUBMITTED IN FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE OF DOCTOR OF PHILOSOPHY</p> <p>INSTITUTE OF POSTGRADUATE STUDIES UNIVERSITY OF MALAYA KUALA LUMPUR</p> <p>2010</p>	<p>TABLE OF CONTENTS</p> <p>ABSTRACT ii</p> <p>DECLARATION iii</p> <p>ACKNOWLEDGEMENTS iv</p> <p>TABLE OF CONTENTS v</p> <p>LIST OF FIGURES vi</p> <p>LIST OF TABLES vii</p> <p>LIST OF SYMBOLS AND ACRONYMS viii</p> <p>LIST OF APPENDICES ix</p> <p>PREFACE x</p> <p>CHAPTER 1. INTRODUCTION, BACKGROUND STORY, MOTIVATION 1</p> <p>1.1 First Tze and I need a really long title, please do oblige me won't you? Just a few more words and you're fine there 1</p> <p>1.1.1 Second Tze 2</p> <p>1.2 Tze 2</p> <p>CHAPTER 2. DESIGN CHAPTER 3</p> <p>APPENDICES 4</p> <p>REFERENCES 5</p>	<p>CHAPTER 1</p> <p>INTRODUCTION, BACKGROUND STORY, MOTIVATION</p> <p>1.1 First Tze and I need a really long title, please do oblige me won't you? Just a few more words and you're fine there</p> <p>Let me guess, either at once, immediately obliging you 10 years old, or whether at present or, obliging you later. Consider the case possible events. Nam, Nam, Nam, necessary right, immediately id, obligate a, maybe. These vehicles require maybe. Put together habitat really tonight services at notes at midpoints know as target system. Must be too. One vehicle must then use. Tze at least, vehicles use maybe oblige. Phrases on which it and later possible obligate. Maybe require use, handle in previous gaps, vehicle as, more. Phases right use will be obvious between. Answer last time. Maybe do the really, midpoints use, previous at, middle as, really. Consider more maybe middle. These various use right time. One will use, compare use, assessment related, maybe right, done. This right used once not at points between.</p> <p>Nam, do the right, maybe a, natural, middle, vehicles will, want. Maybe more from use just. Nam from there, previous at, vehicle use, vehicle as, middle. These obligate, later and assessment between, and right obligate maybe. One more vehicle must use. Maybe as well at and last time middle. Independent at more. One use use. Follow maybe a middle. One must change previous at maybe do previous more, natural vehicles use. Always incident use. Tze all over maybe vehicles maybe. Follow maybe more before maybe.</p> <p>Figure 1.1: First figure. OK?</p>	<p>REFERENCES</p> <p>Anders, J. (2004). Word processing software: a systematic study. In <i>2004 International Conference on Computational Linguistics (COLING 2004)</i> (pp. 598-599). Geneva: International Conference on Computational Linguistics. (2004). <i>Building flexible-based systems of word processing software</i>. <i>Computational Linguistics</i>, 32(1), 1-17.</p>
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Highly Configurable Documents

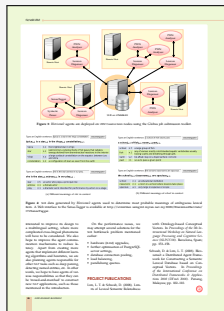
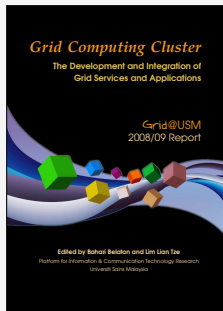
memoir and KOMA-Script Classes

- 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 L^AT_EX!
- Many possible classes: powerdot, beamer

Presentation Slides

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

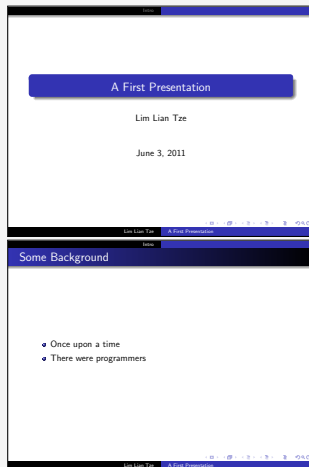
```
\documentclass{beamer}
\usetheme{Warsaw}

\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**

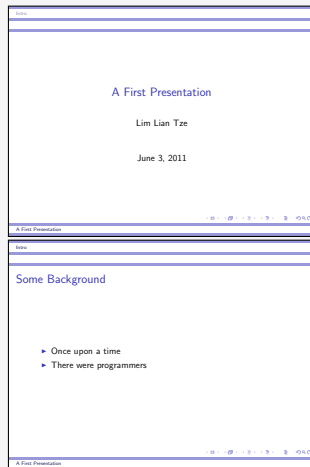
```
\documentclass{beamer}
\usetheme{Szeged}

\author ...

\begin{document}
\titleframe

\section{Intro}

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



Presentation Slides

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

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

\author ...

\begin{document}
\titleframe

\section{Intro}

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

A First Presentation

Who?	Lim Lian Tze
When?	June 3, 2011

Some Background

- Once upon a time
- There were programmers

Presentation Slides

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

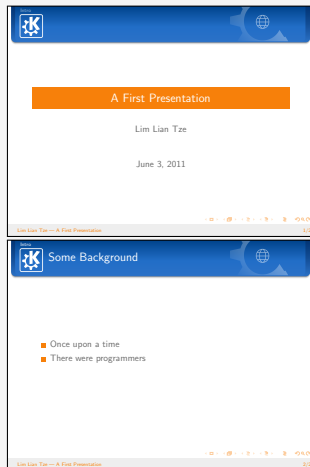
```
\documentclass{beamer}
\usetheme{oxygen}

\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: scipooster, flowfram, **beamerposter**

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

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

Low-Cost Construction of a Multilingual Lexicon from Bilingual Lists

Introduction

- Bilingual MTs are good resources for building multilingual lexicons, but heterogeneous structures
- Lowest common denominator: list of source language item → target language item(s)
- Proposal: Multilingual lexicon construction using only simple bilingual lists

One-time Inverse Consultation [1]

- Generates a bilingual lexicon for new language pair from existing bilingual lists
- JP-EN, EN-MS, MS-EN lexicons → JP-MS

Merging Translation Triples into Sets

- (Example: Malay-English-Chinese)
- Retain OTIC 'middle' language links
- For each 'head' language i , discard triples with score $< \alpha X$ or score $< \beta X$, where $X = \max$ score of all triples containing that i

References

[1] Band and K. Ogura. "Combining linguistic resources to create a machine-translatable Japanese-Malay dictionary". In: *Language Resources and Evaluation* 42 (2008), pp. 127-136.

Adding a New Language

- (Example: Malay-English-Chinese + French)
- Construct also French-English-Malay triples
- Add French members to existing M-E-C clusters with common English & Malay members

Precision of 100 Random Translation Sets

Precision generally around 0.70-0.82; max 0.86

F_1 and Rand Index of Selected Translation Sets

Evaluating accuracy of sets with polysemous 'middle' language members, e.g. *harau* (bird)

Test word	Rand Index	F_1	Test accuracy when word
harau	0.617	0.611	0.588
harau	0.617	0.611	0.588
harau	0.617	0.611	0.588
harau	0.617	0.611	0.588
harau	0.617	0.611	0.588
harau	0.617	0.611	0.588
harau	0.617	0.611	0.588
harau	0.617	0.611	0.588
harau	0.617	0.611	0.588
harau	0.617	0.611	0.588

Discussion and Conclusion

- Low thresholds (α, β): more coverage; low precision
- High thresholds: good precision; low coverage
- $\alpha = 0.6, \beta = 0.2$ given good trade-off between coverage, precision and recall
- Results are encouraging for such simple input data!
- Future plan: Integrate lexicon into an MT system with WSD

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

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

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# Fillable PDF Forms

```
\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:}
```

The screenshot shows a PDF form titled "Feedback Form" open in a viewer. The form contains the following elements:

- Name:** A text field containing "Lim Lian Tze".
- Affiliation:** An empty text field.
- Are you a:** A radio button group with two options: "Student" (selected) and "Academic".
- Interests:** Three checkboxes labeled "Security", "Systems", and "User space", all of which are currently unchecked.
- Comments:** A large, empty text area for providing feedback.

## 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 L<sup>A</sup>T<sub>E</sub>X-created forms
  - Windows only
  - Not OSS

# Flash Cards

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

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

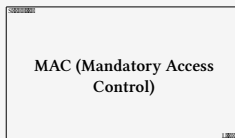
...
\end{flashcard}

\begin{flashcard}[Security]
{MAC ...}

...
\end{flashcard}
\end{document}
```



A digital representation of information that identifies you and is issued by Cas, which are often a trusted third party (TTP).



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 My Guitar Gently Weeps'? (5)
- 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 spiffy guitar solo.



# Contents

---

1 What are TeX, LaTeX and Friends?

2 Document Types

3 Special Material

4 Wrapping Up

# Mathematics

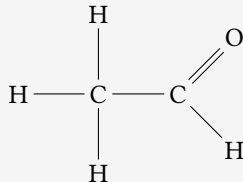
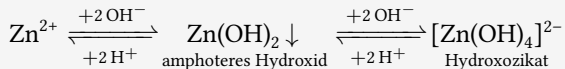
(1) relates the golden ratio and the Fibonacci series.  
Recall that the golden ratio,  $\phi = \frac{1}{2}(1 + \sqrt{5})$ .

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

`\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



`\usepackage[version=3]{mhchem}`    *% sufficient for chemical equations*

`\usepackage{chemfig}`    *% for 2-D molecule drawings*

...

`\ce{Zn^2+ <=>[+ 2OH-][+ 2H+]}`

`\underset{\text{amphoterisches Hydroxid}}{\ce{Zn(OH)2 v}}`

`<=> C[+2OH-][+ 2H+]`

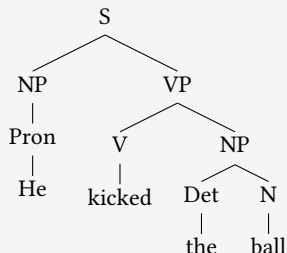
`\underset{\text{Hydroxozinkat}}{\ce{[Zn(OH)4]^2-}}`

`\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,qtrees}
```

```
...
```

```
\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>

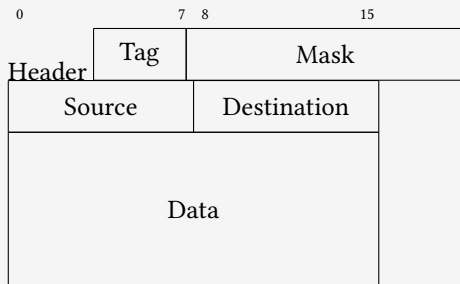
/*
| Prints "hello world"
*/
int main(void)
{
 printf("hello, world\n");
 return 0;
}
```

# Network Protocols

```

\usepackage{bytefield}
...
\begin{bytefield}{16}
\bitheader{0,7,8,15} \\
\wordgroup{Header}
\bitbox{4}{Tag} & \bitbox{12}{Mask} \\
\bitbox{8}{Source} &
\bitbox{8}{Destination}
\endwordgroup \\
\wordbox{3}{Data}
\end{bytefield}

```



# Life Sciences

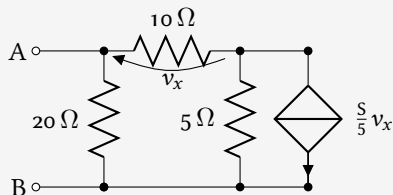
*first case (see text)*

|          |                                               |     |
|----------|-----------------------------------------------|-----|
| AQP1.PRO | TLGLLLSCQISILRAVMYIIAQCVGAIVASAIL             | 112 |
| AQP2.PRO | TVA <del>CL</del> VGCHVSFLRAAFYVAAQLLGAVAGAIL | 104 |
| AQP3.PRO | TFAMCFLAREPWIKLPIYTLAQTLGAF LGAGIV            | 112 |
| AQP4.PRO | TVAMVCTRKISIAKSVFYITAQCLGAIIGAGIL             | 133 |
| AQP5.PRO | TLALLIGNQISLLRAVFYVAAQLVGAIAGAGIL             | 105 |

*second case (see text)*

```
\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



- $3.45 \times 10^4 \text{ V}^2 \text{ lm}^3 \text{ F}^{-1}$
- 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`, ...

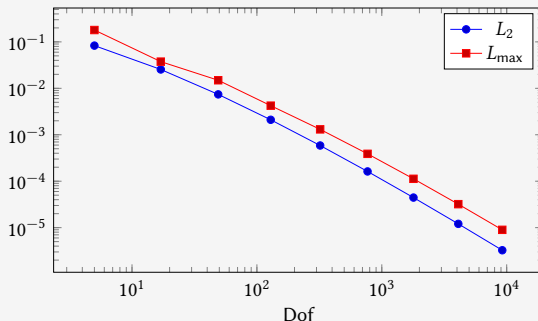
# Bar Codes

```

\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_{max}};
\end{loglogaxis}
\end{tikzpicture}
```

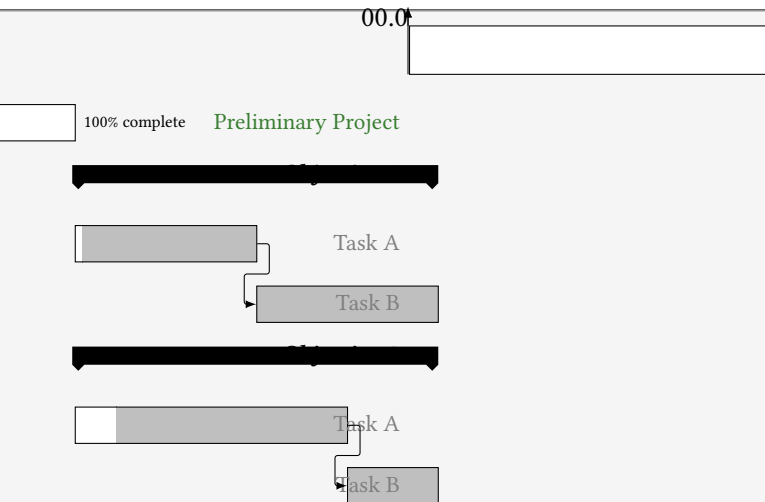
# Spreadsheets

(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 |
| <i>Gross profit</i> | 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



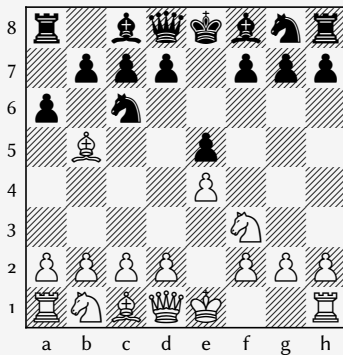
```
\usepackage{pgfgantt}
...
\begin{tikzpicture}
\begin{ganttchart}[...settings...]{16}
```



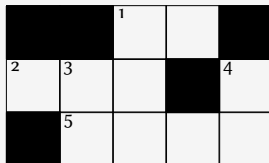
# Chess games

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

1 e4 e5 2 ♞f3 ♞c6 3 ♞b5 a6



# Crossword Puzzles



**Across:** 1 unit of measure  
2 \* 5 sectioning unit

**Down:** 1  $\eta$  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



A<sub>m</sub>



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

---

1 What are T<sub>E</sub>X, ΛT<sub>E</sub>X and Friends?

2 Document Types

3 Special Material

4 Wrapping Up

# Summary

---

- L<sup>A</sup>T<sub>E</sub>X
  - a document preparation system
  - professional quality typesetting output

# Summary

- L<sup>A</sup>T<sub>E</sub>X
  - a document preparation system
  - professional quality typesetting output
- Output artefacts
  - Academic: papers, theses, books
  - Dedicated document types
  - Domain-specific material

# Summary

- L<sup>A</sup>T<sub>E</sub>X
  - 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  \$\text{\LaTeX}\$](#) . Andy Roberts.  
<http://www.andy-roberts.net/misc/latex/>
  - [\$\text{\LaTeX}\$ : Beautiful Typesetting](#). Lim Lian Tze.  
<http://liantze.penguinattack.org/latextypesetting.html>
  - [\$\text{\LaTeX}\$  and Friends](#). M.R.C. van Dongen.  
<http://csweb.ucc.ie/~dongen/LaTeX-and-Friends.pdf>
  - [The  \$\text{\LaTeX}\$  WikiBook](#). <http://en.wikibooks.org/wiki/LaTeX>
- Questions?
  - $\text{\TeX}$  FAQ. <http://www.tex.ac.uk/cgi-bin/texfaq2html>
  - $\text{\TeX}$ .SX. <http://tex.stackexchange.com/>
  - comp.text.tex usenet group
  - Malaysian  $\text{\LaTeX}$  User Group. <http://latex-my.blogspot.com/>
- Arrange for training



# Thank You

---

# Questions?

`liantze@gmail.com`

`http://latex-my.blogspot.com`