

# The Fundamental of L<sup>A</sup>T<sub>E</sub>X

Jianqi Huang

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## 1 Introduction

LaTeX is a program that writes document using programming. It is What you see is what you mean (WYSIWYM). Hence, you should not need to bother with formatting when you create the content. You write a document by focusing on the content instead of how it looks. The appearance would be taken care by the software.

from [Chiu Yu Ko](#)

The frame of the L<sup>A</sup>T<sub>E</sub>X document environment.

```
1 \begin{env}[option]
2   context
3 \end{env}
```

So the introduction of the L<sup>A</sup>T<sub>E</sub>X will import like this:

```
1 \documentclass{article}
2   \begin{document}
3     Hello World!
4   \end{document}
```

### 1.1 Front Matter

we create a title by using `\title{}`. Also we could have the author information by `\author{}` and using the `\date{}` to create the date information. It's a flexible usage that `\today` can create the date of today.

### 1.2 Section

Dividing your text into nice, separate sections for readability. You could include sections by using `\section{}`. And L<sup>A</sup>T<sub>E</sub>X will automatically arrange the number for you. For example, `\section{}` arrange the number x and consequential `\subsection{}` will be arranged the x.1.

If you'd not get the number for a section like the appendix you could use the `\section*{title}`, which adding a \* behind section and before the `{}`.

### 1.3 Theorem

To write a formal statement, it is convenient to use amsthm package by

```
1 \usepackage{amsthm}
2 \newtheorem{theorem}{Theorem}
3 \begin{theorem}\label{NiceThm}
4 One plus one is two! $$1+1=2.$$
5 \end{theorem}
6 I like Theorem \ref{NiceThm} very much.
```

**Theorem 1.** *One plus one is two!*

$$1 + 1 = 2.$$

I like Theorem ?? very much.

### 1.4 Page layout

The geometry package could arrange the arrangement of all document.

```
1 \usepackage{geometry}
using like this:
1 \geometry{margin=1.1in}
```

### 1.5 Font emphasis

Font emphasis involves underline, italic and upper case:

Command	Emphasis
<code>\underline{}</code>	underline
<code>\emph{}</code>	Italic
<code>\uppercase{}</code>	all capital letters

```
1 \hl{I am highlighted}
I am highlighted
This is a underline
That is emph
UPPERCASE WILL MAKE UPPER FOR EVERY LETTERS
```

### 1.6 Basic font transformation

```
1 \textit{ italic }
2 \textbf{boldface}
3 \textsc{small cap}
4 \textsl{slant font}
```

```
5 \textsf{Sans Serif}
6 \texttt{typewriter}
```

*italic*

**boldface**

SMALL CAP

*slant font*

Sans Serif

typewriter

## 1.7 Font Family

# 2 Beamer

Beamer is great

```
1 \documentclass{beamer}
2 \begin{document}
3 \begin{frame}
4   \frametitle{Happy}
5   Hello World!
6 \end{frame}
7 \end{document}
```

```
1 \begin{frame}
2   \frametitle{Conclusion}
3   \begin{itemize}
4     \item lalala
5     \item hahaha
6   \end{itemize}
7 \end{frame}
```

There has various specific beamer theme for universities on [Overleaf](#) Like the [CUFE Beamer theme](#)

If you want to make slides in Chinese, the package used is ctextbeamer.

## 2.1 Adding a outline

```
1 \begin{frame}
2   %Table of contents
3   % The section is automatically collected and drawn as a directory page
4   \frametitle{Table of Contents}
5   \tableofcontents
6 \end{frame}
```

## 2.2 content

```
1 \begin{document}
2   \frame{\titlepage}
3 \end{document}
```

In the content of beamer, the slides was presented by frame. frame could add with title. One way is adding `{title}` behind the frame another way is adding `\frametitle{title}`. They are same to visual result. It is available to add a subtitle using `framesubtitle{}`

We also add the section and subsection before the frame.

## Resources

- <https://kochiuyu.github.io/programming/latex/beamer/>
- <https://texdoc.org/serve/beameruserguide.pdf/0>