

LaTeX Basics

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Document structure

□ A simple document

```
\documentclass{article}
```

```
\begin{document}
```

```
This is my \textit{first} document  
prepared in \LaTeX.
```

```
\end{document}
```

This is my *first* document prepared in L^AT_EX.

□ Tex command structure:

- `\command[options]{options}`

Parts of document

□ Title

```
\title{\LaTeX tutorial}  
\author{Abtin \ Wutao}  
\date{\today}
```

```
\begin{document}  
\maketitle  
\end{document}
```

L^AT_EXtutorial

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Wutao

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Parts of document

□ Sectioning

```
\chapter{Typesetting}
\section{Parts of document}
\subsection{sectioning}
\subsubsection{example}
\paragraph{notes}
Here is my example.
```

Chapter 1

Typesetting

1.1 Parts of document

1.1.1 sectioning

example

notes Here is my example.

Typesetting

- New line: `\\`
- Text positioning
 - `\begin{center} ... \end{center}`
 - `\begin{flushright} ... \end{flushright}`
 - `\begin{flushleft} ... \end{flushleft}`

Typesetting

| | Style | Command |
|---------------|---------------------------|--|
| Family | roman sans serif | <code>\textrm{...}</code> <code>\textsf{...}</code> |
| Series | medium boldface | <code>\textmd{...}</code> <code>\textbf{...}</code> |
| Shape | upright <i>italic</i> | <code>\textup{...}</code> <code>\textit{...}</code> |

`\textsf{\textbf{sans serif family, boldface}}`

sans serif family, boldface

`\textrm{\textit{roman family, italic}}`

roman family, italic

Typesetting mathematics

The equation representing a straight line in the Cartesian plane is of the form $ax+by+c=0$, where a , b , c are constants.

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Typesetting mathematics

It is easily seen that $(x^m)^n = x^{mn}$. It is easily seen that $(x^m)^n = x^{mn}$.

The following sequence

\$\$

$x_i, \quad i=1 \dots n$

\$\$

is converging

`\begin{equation}`

$E(\theta, \sigma) = - \sum_{m=1}^M$

$p(y_m)p(x|y_m)$

`\label{probability}`

`\end{equation}`

The following sequence

$x_i, \quad i = 1 \dots n$

is converging

$$E(\theta, \sigma) = - \sum_{m=1}^M p(y_m)p(x|y_m) \quad (1)$$

Referencing

- Labeling
 - `\label{key}`
- Referencing
 - `\ref{key}`
- Example
 - Equation `\ref{probability}` can be reformulated into ...

Packages

- Run MikTeX / Browse Packages to install new packages
- Using packages
 - `\usepackage{...}`
 - Example: `\usepackage{graphicx}`

Lists

□ Without order

```
\begin{itemize}
```

```
\item \TeX is a typesetting language  
and not a word processor
```

```
\item \TeX is a program and not an  
application
```

```
\end{itemize}
```

- \TeX is a typesetting language and not a word processor
- \TeX is a program and not an application

□ With order

```
\begin{enumerate}
```

```
\item prepare a source file with  
the extension "tex"
```

```
\item Compile it with  $\text{\LaTeX}$  to  
produce a "dvi" file
```

```
\end{enumerate}
```

1. prepare a source file with the extension "tex"
2. Compile it with \LaTeX to produce a "dvi" file

Tables

```
\begin{table}
\begin{tabular}{cr}
\hline
Planet & Diameter(km) \\
\hline
Mercury & 4878 \\
Venus & 12104 \\
Earth & 12756 \\
\hline
\end{tabular}
\caption{Planets Diameter}
\label{tab:planetDiameter}
\end{table}
```

| Planet | Diameter(km) |
|---------|--------------|
| Mercury | 4878 |
| Venus | 12104 |
| Earth | 12756 |

Table 1: Planets Diameter

Figures

```
\begin{figure}
```

```
\includegraphics[width=\columnwidth]{filename}
```

```
\caption{fig:test}
```

```
\label{This is a test.}
```

```
\end{figure}
```