

learn latex

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Chapter 1

body of .tex file

1.1 latex simple body

Preliminaries headers are `\documentclass`[characteristics in a comma separated form]{book}. followed by packages in form `\usepackage`{package_name}.

To generate indices with chapters names, and sections, `documentclass`, and `usepackage` are followed by `\makeindex`, and it's available in package `index`.

Document starts with code `\begin{document}` and ends with `\end{document}`, followed by title `\title{title}`, author `\author{author name}`, date `\date{date}` ... title `\maketitle`, table of contents `\tableofcontents`, number pages is set with `\pagenumbering`{number type such as roman}.

First of all latex command is distinguished with backslash, commands are expressed in the form `\command_name`.

The document is divided into chapters, and expressed as `\chapter{chapter_title}`.

Inside every chapter there are descriptions `\begin{description}`, and ends with `\end{description}`, and has little indentation under the section.

Items are expressed as `\item`.

Sections are numerated subtitles under each chapter and coded as `\section{section title}`.

1.2 mathematical notations

mathematical representation is available in package `amsmath`.

every mathematical formula is bounded by \$, or under equation begin-end.

single line equation is coded under `\begin{equation}` and ends with `\end{equation}`.

hat: \hat{i} is coded as `\hat{i}`

ket-bra: quantum symbols ket and bra are represented by `\ket{symbol}`, and `\bra{symbol}`, for example ket $|A\rangle$, bra $\langle B|$.

ket-bra pair: exist in braket package, and coded as `\braket{ket symbol, bra symbol}`, as follows: $\langle a, b \rangle$

subscript: $symbol_{subscript_name}$ is coded as `symbol_{subscript}`.

vector: $vector_{\vec{name}}$ coded as `\vec{vector name}`.

division: $\frac{a}{b}$ coded as `\frac{a}{b}`.

nth-root: $\sqrt[n]{4}$ coded as `\sqrt[n]{4}`.

greek_letters: α coded as `\alpha`

matrix: $\begin{vmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{vmatrix}$ is bounded by `\begin{vmatrix}` elements `\end{vmatrix}`, and elements are expressed as rows separated by double backslash, and each row is expressed as elements separated by ampersand as follows `1&0&0 \\ 0&1&0 \\ 0&0&1`.

1.3 forming

bold: *bold text is coded as follows:* `\textbf{\emph{text}}`, or `\mathbf{text}`.