



Auriza Akbar

Ilmu Komputer IPB

2017

TEX

# Pendahuluan

- ▶  $\text{T}_{\text{E}}\text{X}$  = “technical text”
- ▶ bahasa untuk menyiapkan dokumen teks
- ▶ dibuat oleh Knuth (1978) untuk mencetak bukunya
- ▶ dikembangkan oleh Lamport (1985) menjadi  $\text{\LaTeX}$

# Mengapa $\text{\LaTeX}$ ?

- ▶ *free* dan *open format*
- ▶ hasil profesional berkualitas tinggi
- ▶ mudah mengatur struktur yang kompleks
  - ▶ daftar isi, catatan kaki, bibliografi, indeks, ...
- ▶ banyak buku dan jurnal memakai  $\text{\LaTeX}$

# Instalasi L<sup>A</sup>T<sub>E</sub>X

Windows MikTeX

Linux `apt install texlive`

Online [sharelatex.com](https://sharelatex.com)

# Kerangka Dasar

```
\documentclass{article}           % preamble
```

```
\begin{document}                 % document
```

```
    Hello world!
```

```
\end{document}
```

## Kompilasi

Simpan dalam *file* .tex, lalu *compile* dengan pdf<sub>l</sub>atex. Hasil kompilasi berupa *file* PDF.

```
$ pdflatex file.tex
```

## Preamble

# Kelas Dokumen

```
\documentclass[options]{class}
```

- ▶ class

- ▶ book
- ▶ article
- ▶ report
- ▶ letter
- ▶ beamer

- ▶ options

- ▶ 10pt, 11pt, 12pt
- ▶ a4paper, letterpaper
- ▶ twoside, twocolumn



# Paket Tambahan

`\usepackage[options]{package}`

- ▶ fungsi tambahan untuk dokumen
- ▶ contoh:
  - ▶ `\usepackage{graphicx}`
  - ▶ `\usepackage{booktabs}`
  - ▶ `\usepackage{amsmath}`

# Metadata

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

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

```
\date{...}
```

Document

# Judul dan Abstrak

```
\maketitle
```

```
\begin{abstract}           % khusus report dan article
```

```
    ...
```

```
\end{abstract}
```

# Bagian

`\part{...}` *% khusus book*

`\chapter{...}` *% khusus book dan report*

`\section{...}`

`\subsection{...}`

`\subsubsection{...}`

`\paragraph{...}`

`\subparagraph{...}`

# Paragraf

- ▶ paragraf ditulis langsung tanpa perintah khusus
- ▶ satu baris kosong memisahkan antar-paragraf

# Contoh

```
\documentclass[a4paper]{article}  
\usepackage{graphicx}
```

```
\title{Pengenalalan \LaTeX}  
\author{Auriza Akbar}  
\date{2017}
```

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

```
  \section{Pendahuluan}
```

\LaTeX adalah bahasa untuk menyiapkan dokumen teks.

```
\end{document}
```

# Daftar Isi, Gambar, dan Tabel

`\tableofcontents`

`\listoffigures`

`\listoftables`



## Format Teks

Perintah	Keluaran
<code>\textnormal{...}</code>	Normal
<code>\emph{...}</code>	<i>Emphasis</i>
<code>\textrm{...}</code>	Roman family
<code>\textsf{...}</code>	Sans-serif family
<code>\texttt{...}</code>	Teletype family
<code>\textbf{...}</code>	<b>Bold face</b>
<code>\textit{...}</code>	<i>Italic</i>
<code>\textsc{...}</code>	SMALLCAPS
<code>\underline{...}</code>	<u>Underline</u>
<code>\tiny{...}</code>	Tiny
<code>\small{...}</code>	Small
<code>\large{...}</code>	Large

List

# List Tanpa Nomor

```
\begin{itemize}  
  \item The first item  
  \item The second item  
  \item The third  
\end{itemize}
```

- ▶ The first item
- ▶ The second item
- ▶ The third

# List Bernomor

```
\begin{enumerate}  
  \item The first item  
  \item The second item  
  \item The third  
\end{enumerate}
```

1. The first item
2. The second item
3. The third

# List Deskripsi

```
\begin{description}  
  \item[First] The first item  
  \item[Second] The second item  
  \item[Third] The third  
\end{description}
```

First The first item

Second The second item

Third The third

# List Bersarang

```
\begin{enumerate}
  \item The first item
    \begin{enumerate}
      \item Nested item 1
      \item Nested item 2
    \end{enumerate}
  \item The second item
  \item The third item
\end{enumerate}
```

1. The first item
  - 1.1 Nested item 1
  - 1.2 Nested item 2
2. The second item
3. The third item

## Persamaan Matematika

# Cara Penulisan

- ▶ *inline*: diletakkan di dalam tubuh teks
  - ▶  $\dots$
- ▶ *displayed*: diletakkan pada baris tersendiri
  - ▶ 
$$\dots$$
- ▶ *numbered*: diletakkan pada baris tersendiri dan bernomor
  - ▶  $\begin{equation} \dots \end{equation}$
- ▶ contoh:

```
\begin{equation}
  \forall x \in X, \quad \exists y \leq \epsilon
\end{equation}
```

$$\forall x \in X, \quad \exists y \leq \epsilon \tag{1}$$



# Huruf Yunani

Perintah	Keluaran
<code>\alpha</code>	$\alpha$
<code>\beta</code>	$\beta$
<code>\delta</code>	$\delta$
<code>\Delta</code>	$\Delta$
<code>\gamma</code>	$\gamma$
<code>\kappa</code>	$\kappa$
<code>\lambda</code>	$\lambda$
<code>\mu</code>	$\mu$
<code>\phi</code>	$\phi$
<code>\pi</code>	$\pi$
<code>\rho</code>	$\rho$
<code>\sigma</code>	$\sigma$
<code>\theta</code>	$\theta$
<code>\Theta</code>	$\Theta$

# Himpunan

Perintah	Keluaran
<code>\in</code>	$\in$
<code>\not\in</code>	$\notin$
<code>\subset</code>	$\subset$
<code>\subseteq</code>	$\subseteq$
<code>\not\subset</code>	$\not\subset$
<code>\supset</code>	$\supset$
<code>\cup</code>	$\cup$
<code>\cap</code>	$\cap$
<code>\emptyset</code>	$\emptyset$

# Indeks dan Pangkat

$$k_{n+1} = n^2 + k_n^2 - k_{n-1}$$

$$k_{n+1} = n^2 + k_n^2 - k_{n-1}$$

$$n^{22}$$

$$n^{22}$$

# Fungsi

$$\cos(2\theta) = \cos^2 \theta - \sin^2 \theta$$

$$\cos(2\theta) = \cos^2 \theta - \sin^2 \theta$$

$$\lim_{x \rightarrow \infty} \exp(-x) = 0$$

$$\lim_{x \rightarrow \infty} \exp(-x) = 0$$

# Pecahan

$$\frac{n!}{k!(n-k)!} = \binom{n}{k}$$

$$\frac{n!}{k!(n-k)!} = \binom{n}{k}$$

$$\frac{\frac{1}{x} + \frac{1}{y}}{y-z}$$

$$\frac{\frac{1}{x} + \frac{1}{y}}{y-z}$$

# Akar

`$$ \sqrt{\frac{a}{b}} $$`

$$\sqrt{\frac{a}{b}}$$

`$$ \sqrt[n]{1 + x + x^2 + x^3 + \cdots} $$`

$$\sqrt[n]{1 + x + x^2 + x^3 + \cdots}$$

# Sum, Product, dan Integral

$$\sum_{i=1}^{10} t_i$$

$$\sum_{i=1}^{10} t_i$$

$$\prod_{n=1}^{\infty} a_n$$

$$\prod_{n=1}^{\infty} a_n$$

$$\int_a^b e^{-x} dx$$

$$\int_a^b e^{-x} dx$$

## Cases

```
%\usepackage{amsmath}

\begin{equation}
  u(x) =
    \begin{cases}
      \exp{x} & \text{if } x \geq 0 \\
      1 & \text{if } x < 0
    \end{cases}
\end{equation}
```

$$u(x) = \begin{cases} \exp x & \text{if } x \geq 0 \\ 1 & \text{if } x < 0 \end{cases} \quad (2)$$



## Multiline Split

```
%\usepackage{amsmath}

\begin{equation}
  \begin{split}
    A &= \frac{\pi r^2}{2} \\
    &= \frac{1}{2} \pi r^2
  \end{split}
\end{equation}
```

$$\begin{aligned} A &= \frac{\pi r^2}{2} \\ &= \frac{1}{2} \pi r^2 \end{aligned} \tag{3}$$

# Matriks

```
$$ M = \left[ \begin{array}{ccc} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{array} \right] $$
```

$$M = \begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{bmatrix}$$

## Tabel dan Gambar

# Elemen *Float*

- ▶ tabel dan gambar: elemen *float*
  - ▶ tidak boleh terpotong beda halaman
- ▶ posisi dapat diberikan pilihan:
  - ▶ h: *here*
  - ▶ b: *bottom*
  - ▶ t: *top*
  - ▶ p: *page*
- ▶ dapat diberi *caption* bernomor
- ▶ dapat diberi label untuk referensi

# Tabel

```
%\usepackage{booktabs}
```

Nilai mahasiswa dapat dilihat pada Tabel `\ref{tbl.nilai}`.

```
\begin{table}[tb]
  \caption{Nilai AJK.}
  \label{tbl.nilai}
  \begin{tabular}{llc}
    NIM      & Nama & Nilai \\
    G65114071 & Auriza & 75 \\
    G65114081 & Auzi & 80
  \end{tabular}
\end{table}
```

Nilai mahasiswa dapat dilihat pada Tabel 4.

Tabel 4: Nilai AJK.

NIM	Nama	Nilai
G65114071	Auriza	75
G65114081	Auzi	80

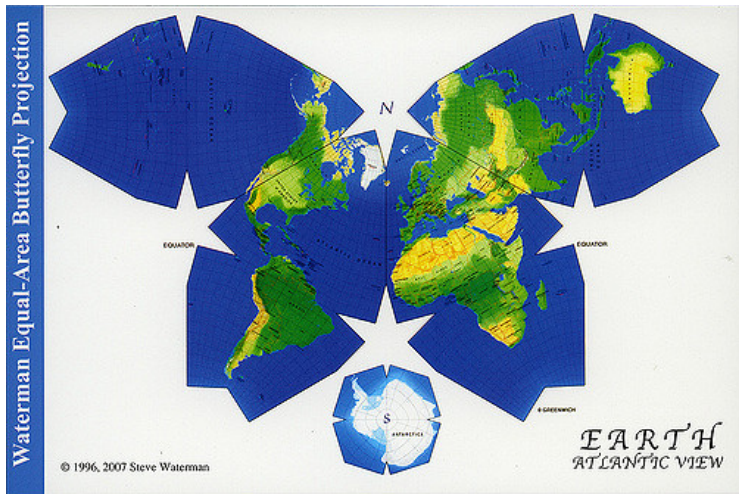
# Gambar

```
%\usepackage{graphicx}
```

Peta dengan proyeksi `\textit{butterfly}` dapat dilihat pada Gambar `\ref{fig.peta}`.

```
\begin{figure}[tb]  
  \centering  
  \includegraphics[width=0.9\textwidth]{earth}  
  \caption{Proyeksi \textit{butterfly}.}  
  \label{fig.peta}  
\end{figure}
```

Peta dengan proyeksi *butterfly* dapat dilihat pada Gambar 1.



Gambar 1: Proyeksi *butterfly*.



FIN