LaTeX Document Preparation Guide

Notes

Abhishek Bohare

a_bohare@icloud.com

typeset with LaTeX

LaTeX

- Introduction
- Starting
- Paper Size & Margin
- Multicolumn document
- Formatting Content
- Color
- Spacing
- Bullet & Numbering
- Mathematics
- Table
- Image
- Referencing & Indexing
- Titlepage
- Hyperlinks
- Cross Referencing
- Creating Index
- Bibliography
- Presentation using Beamer
- Blocks and columns
- Overlays
- Customize basic information
- Customize theme
- Aspect Ratio

- Overview-

Donald Knuth, while publishing the second edition of "The art of computer programming" was not satisfied with the typesetting done by the publisher. So he released TeX in 1978.
In the early 1980s, Leslie Lemport starting using TeX for writing his book. To address other specific needs, he started writing more macros using TeX.
Lamport released versions of his LaTeX macros in 1984 and 1985.

- Installation-

- TeXstudio
- MiKteX

Ubuntu command

sudo apt-get install texlive-full

extension- *.tex
↑
Filename

- First document-

Article, book, report
↑

```
\documentclass{article}
\title{.}
\author{...}
\date{....}
\begin{document}
    content.....

\end{document}
```

\maketitle ← To show all this

content → content

\Chapter
\Section
\Subsection
\Subsubsection
\paragraph
\Subparagraph

\documentclass{..}

↓

Article, book, report

\title{....}
\author{...}
\date{...}
\begin{...}

\maketitle

\end{...}

Content

\Chapter
\Section
\Subsection
\Subsubsection
\paragraph

% ← comment

\\ ← Next line

\table of content command
\tableofcontent
\Section[alias]{....}

\begin{landscape}

.....

\end{landscape}

↑

Default
Setting

STARTING

\usepackage[a5paper]{geometry}
\usepackage[margin=1.5in]{geometry}



[top = 1 in, bottom= 1 in, left = 1 in, right = 1 in]



[inner= 1.5 in, outer = 0.5 in]
[inner= 2 in, outer = 1 in]

macros/latex/contib/geometry

- Styling Pages -
  - empty
  - plain ← Styles
  - heading

\pagestyling{<Style>}
\thispagestyle{<Style>}

- Page Numbering -

\Setcounter{Page}{<number>}

Arabic
roman
Roman
alph
Alph

\pagenumbering{<Style>}

PAPER SIZE & MARGINS

- Orientation-

\usepackage[landscape]{geometry}

\usepackage{lipsum}

↑

Auto text

\lipsum[<num>-<num>]

\usepackage{lscape}

↓

pdflscape

\begin{landscape}

.....

\end{landscape}

\pagebreak

\linebreak

\footnote{comment}

SIAKTING

\documentclass[twocolumn]{....}
\begin{multicols}{<No. of column>}
\end{mulicols}

\Setlength{\Columnsep}{<x>}
\Setlength{\columnsepruule}{<x>}
\columnbreak

- Reading Error-

! <Error message>
1 <line number>

MULTICOLUMN DOCUMENT

\textbf{....}	B
\emph{....}	*I*
\underline{...}	U
\textsc{...}	TEXT
^{...}	Text^{2}
\textsubscript{...}	Text$_{2}$

↓

Styles

- Aligning Text-

\flushleft	≡
\center	≡
\flushright	≡
\justify	≡

↑ default setting of LaTeX

\usepackage{ragged2e}

Package: xcolor
Parameter: dvipsname

```
\usepackage[Parameter]{Package}
```

```
\textcolor{blue}{....}
\textcolor{blue!70}{....}
\textcolor{blue!70!red}{....}
```



Textcolors

```
\Pagecolor{yellow}
\Pagecolor{goldenrod}
```



Page color

COLOR

\usepackage{setspace}

\singlespacing
\doublespacing
\onehalfspacing

← Horizontal b/w lines

\vspace{X}
\smallskip
\medskip
\bigskip
\vfill

← Vertical

\
\,
\hspace{X}
\hfill

← Horizontal

\noindent
\LaTeX\ Document \\



Logo

SPACING CONTENTS

- Packages :
    1. Itemize
    2. Enumerate
    3. Description

```
\item
\item[.... :]
```

- Syntax :

```
\begin{enumerate}[<Style>]
```

- Example :

```
\begin{enumerate}[(A)]
\begin{enumerate}[(i)]
```

↓

Add in package

- Package : amssymb

```
\blacksquare
\Square
\bullet
\cdot
\diamond
-
*
\circ
```

```
\renewcommand{\labelitem<Level>}{$<Style>$}
```

BULLET & NUMBERING

- Package: amsmath
  mathtools
  ↑
  Tool

$.....$ or \[.....\]

θ \theta
$\cup$ \cup
$\in$ \in

\frac{....}{....}

$\times$ \times

$\geq$ \geq

$\leq$ \leq

\Bigg
\bigg —▷ Size of brackets
\Big
\big

$\sum$ \sum_

- Integration-

\Int_{min}^{max}

- Limit -

\lim_{...}

- $\int_0^{\infty} f(x)dx$

\[\int_{0}^{\infty} f(x)dx\]

MATHEMATICS SPACING

- $\lim_{x \to c} f(x) = L$

```
\[ \lim_{x \to c} f(x) = L \]
```

- Matrix-

→ equation, align

```
\begin{...}
.....
\end{...}
```

↓

matrix
pmatrix
bmatrix
Bmatrix
Vmatrix
Vmatrix

& new column

\\ new row

- Tabular environment
- \begin{tabular}{cols}
  .....
  \end{tabular}
- Cols
  - l
  - r
  - c
  - p{xcm} : left align
- column : &
- Row : \\

Example

```
\begin{tabular}{clr}
    No. & Items & Price \\
     1  & Pen   & 10 \\
     2  & Pensil & 5 \\
     3  & Other & 20 \\
\end{tabular}
```

p{4cm} ↑

→ Add Borders :

- Vertical : |
- Horizontal : \hline
- Specific : \cline{i-j}

```
\begin{tabular}{|c|l|r|}
\hline
No. & Items & Price \\
\hline
1 & Pen & 10 \\
\hline
.
.
.
\end{tabular}
```

TABLE

\cline{1-2} \cline{4-4}

↑

For similar entry merger

→ Dashed Border -

- Package : arydshln
- Vertical : :
- Horizontal : \hdashline [size of dash/space between dash]
- Specific : \cdashline{i-j} [size of dash/space]

Eg:

→ \hdashline [1pt/2pt]

→ \cdashline{2-3} [1pt/2pt]

→ Merging Rows & Columns -

Merge rows & columns

Spacing Tables

- Package : multirow
- Syntax : \multirow{numberofRows}{Width}{...}

Example :

\multirow{2}{*}{3}

↑

Text

- Syntax : \multicolumn{TotalColumn}{Alignment}{...}

⇨ \renewcommand{\arraystretch}{Value}

↑

Stretch Array

- Saviour for Large Tables :
  → Long Table data Handling
  - Package : longtable
  - Environment :

```
\begin{longtable}{columns}
.....
\end{longtables}
```

  → \endhead
  ↓
  Title will appear on each page of same Table.

- Table Environment -

```
\begin{table}[Position]
    your tabular code
    \caption{....}
\end{table}
```

\listoftables
↑
content page command

- Including Image :
  - Package: graphicx
  - \includegraphics[attributes]{filename.extension}

to change size (width, height)

Either use width attribute or height attribute.

- Image properties :

Scale:

\includegraphics[scale=0.5]{...}

Crop: \includegraphics[clip=true, trim=15mm 5mm 7mm 3mm]{...}

Rotate: \includegraphics[angle=180]{...}

- Working with Image borders :
  - \fbox{\includegraphics.....} ← Image Border
  - \Setlength{\fboxrule}{2pt} ← Border Thickness
  - \Setlength{\fboxsep}{15pt} ← Border spacing

- Figure and subfigure :

→ Figure Environment –

```
\begin{figure}[Position]
    \includegraphics[...]{....}
    \caption{....}
\endfigure}
```

→ List –

\listoffigures.

↑

Content Page

IMAGE

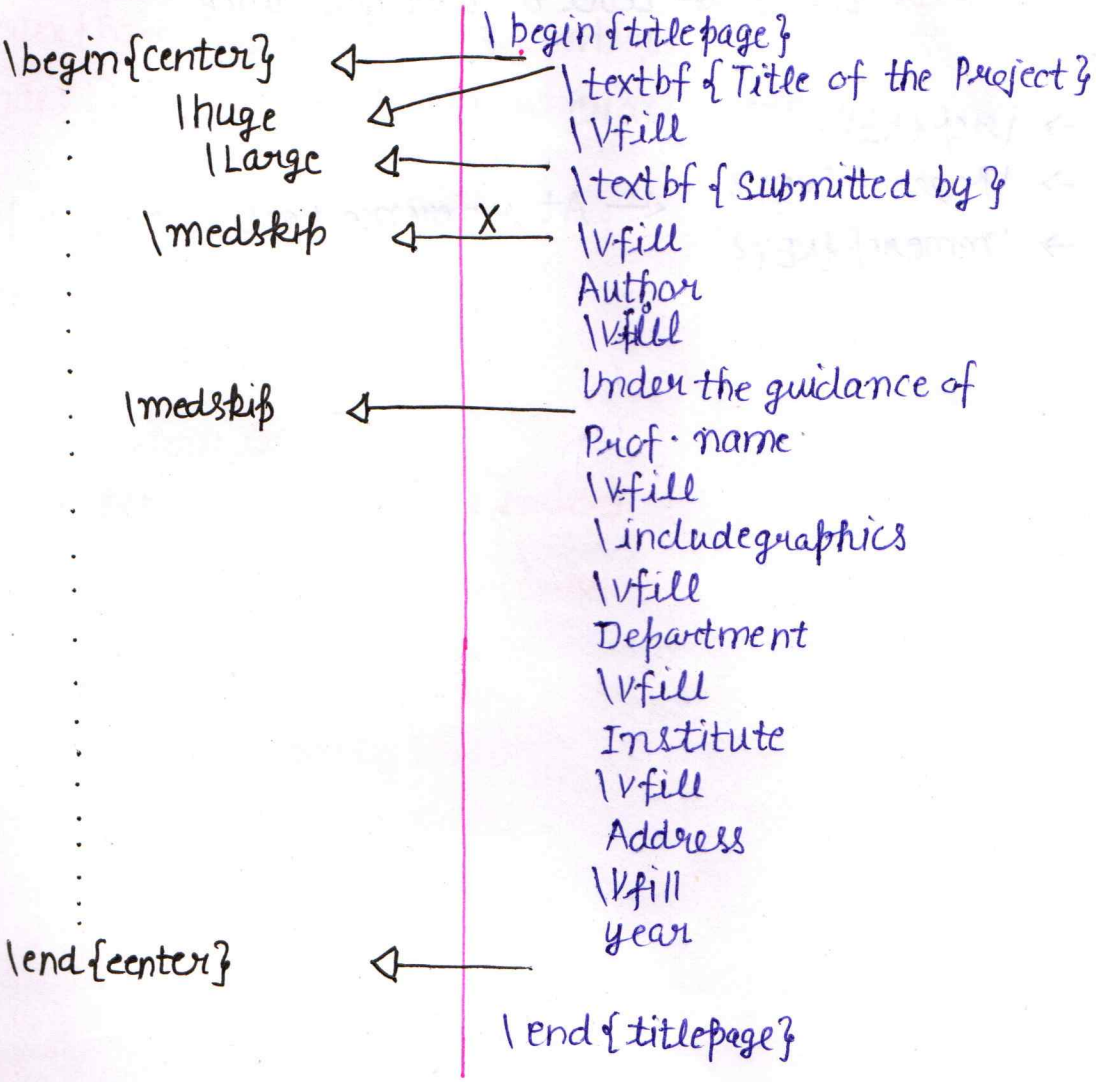
→ Subfigure –

- Package : caption, subcaption
- Structure :

```
\begin{figure}[<Position>]
    \begin{subfigure}{[<Width>]}
        \includegraphics
        \caption{...}
    \end{subfigure}
    .....
    \caption{....}
\end{figure}
```

- Title Page-
  - Environment : titlepage

```
\begin{titlepage}
.....
\end{titlepage}
```



- Hyperlinks:

Package: url , hyperref

↑

hypertext

\href{...}{....}

↑ Link ↑ Text

//HYPERLINK//
//CREATING TITLE PAGE//
REFERENCING & INDEXING

- Refer:
  - #Section
  - #Table
  - #Figure
  - #Page number
- Label: `\label{KEY}` ← Label at original place
- Refer:
  - → `\ref{KEY}`
  - → `\pageref{KEY}` ← At reference text
  - → `\nameref{KEY}`

CROSS REFERENCING

- Index:

```
\usepackage{imakeidx}
\makeindex

\index{KEY}  <- create index keys
\printindex  <- display index
\index{ParentKey!Key}  <- Subentry
\index{KEY|See{Otherkey}}  <- cross referencing
```

- Number of columns:
  - Columns:

```
\makeindex[columns=X]
```

  - Display custom title:

```
\makeindex[title=Back Index]
```

  - Add the entry in table of contents

```
\makeindex[intoc]
```

CREATING INDEX

- Bibliography:

  → Bibtec data

  - cite:

    \cite{KEY}

  - Style:

    \bibliography{Style}

    plain
    alpha
    unsrt
    acm

  - bib file

    \bibliography{filename.bib}

  - Include reference without citing

    \nocite{KEY}

\documentclass[conference]{IEEEtrans}
\bibliography{IEEEtrans}

BIBLIOGRAPHY
CROSS REFERENCING

- Introduction:
  - Documentclass: beamer
  - Slides:

```
\begin{frame}[t|c|b]{frametitle}
.....
\end{frame}
```

↓

Rest is LaTeX

  - \usetheme{...}
  - \usecolortheme{...}
  - \tableofcontent

- Blocks & Columns:
  - \begin{blocks}{title}

```
....
\end{blocks}
```

Another commands
alertblock
example

  - \begin{Columns}

```
.....
\end{Columns}
```

  - \columns{X\textwidth}

- Overlays:

\pause

↑

Animation effect

//INTRODUCTION// PRESENTATION USING BEAMER

<1->

For Items to show

\onslide<1->

For Other effect

\setbeamercovered{transparent}

Invisible

Show or Invisible Items which are still in pause

- Customize basic information:

\title[ ]{....}
\author[ ]{....}

Notes

- Customize Theme :

background title
frametitle
title

\setbeamercolor{structure}{fg=color}

- Footer (Colour Element)

\setbeamercolor{palette tertiary}{bg=color, fg=Color}

Secondary
primary

- Aspect Ratio :

```
\documentclass[aspectratio=169]{beamer}
```