Webinar on LaTeX

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Contents

Chapter 1

Day 1

1.1 Installation and basic tools

Download TEXLIVE iso from url http://www.tug.org/texlive/. Same iso image can be used on both linux and windows. Just mount it and run install command in the root directory and accept default options. It might take around 20 minutes to complete installation.

1.1.1 Editors

Although tex files can be edited in any basic text editor. just create a file with extension *.tex. you can create a new file newDoc.txt edit it save it and rename it as newDoc.tex so it can be used by tex or latex system.

However, to ease the process we will use TEXWORKS https://github.com/TeXworks/texworks/releases the default latex editor/compiler that comes with the texlive. This is the minimalist kind of software, in my opinion best for beginners. Later, you might want to try other editors like https://www.texstudio.org/ or https://www.texniccenter.org/.

Shortcuts for texworks

SHORTCUT	FUNCTION
$ctrl + t$	compile
$ctrl + shift +]$	comment line
$ctrl + shift +[$	uncomment line

1.2 Skeleton file

create tex file with anyname.tex
type this code in it and save it.

```
\documentclass{article}


\begin{document}

welcome

\end{document}
```

after-compiling this file you will get a anyname.pdf file in the same folder like
\documentclass should always be first line.
it can be used as any of the following each offer different set of options
\documentclass{article}
\documentclass{book}
\documentclass{letter}
\documentclass{elsarticle}

Lorem ipsum dolor sit amet, consectetuer adipiscing elit. Etiam lobortis facilisis sem. Nullam nec mi et neque pharetra sollicitudin. Praesent imperdiet mi nec ante. Donec ullamcorper, felis non sodales commodo, lectus velit ultrices augue, a dignissim nibh lectus placerat pede. Vivamus nunc nunc, molestie ut, ultricies vel, semper in, velit. Ut porttitor. Praesent in sapien. Lorem ipsum dolor sit amet, consectetuer adipiscing elit. Duis fringilla tristique neque. Sed interdum libero ut metus. Pellentesque placerat. Nam rutrum augue a leo. Morbi sed elit sit amet ante lobortis sollicitudin. Praesent blandit blandit mauris. Praesent lectus

tellus, aliquet aliquam, luctus a, egestas a, turpis. Mauris lacinia lorem sit amet ipsum. Nunc quis urna dictum turpis accumsan semper. we can pass we extra options like selection of default paper size as
\documentclass[a4paper]{article}
\documentclass[letterpaper]{article}

we can select default font size as 10pt,11pt, or 12pt as
\documentclass[a4paper,11pt]{article}

to print anything in document we write between \begin{document} and \end{document} .

the region before \begin{document} is called document preamble and it is used to add different packages, function that alter the formatting to final document.

1.3 Sectioning of document

1.3.1 section, subsection, and subsubsection

$\backslash section\{\}$ $\backslash subsection\{\}$ $\backslash subsubsection\{\}$

1.3.2 paragraph, linebreak, and indentation

$\backslash par$ $\backslash\backslash$ $\backslash noindent$

1.3.3 chapter

$\backslash chapter\{\}$ to group `section` is available in documentclass `book` or `report`

1.4 Label and referencing

$labelsec : lab$ $refsec : lab$

1.5 Math

1.5.1 in-line and equation and eqnarray mode

$**math**$

$$**math**$$

\[**math**\]

$\backslash begin\{equation\}$**math**$\backslash end\{equation\}$

eqnarray

It uses & to align equations and
to change line and add new eqn inside eqnarray environment

$\backslash begin\{eqnarray\}$**math**$\backslash end\{eqnarray\}$

1.5.2 Symbols

$\backslash alpha\backslash beta\backslash partial\backslash Delta\backslash gamma\backslash omega\backslash Omega\backslash vec\backslash nabla\backslash cdot\backslash$

$$\alpha\beta\partial\Delta\gamma\omega\Omega\vec{\nabla} \cdot \vec{B}$$

1.5.3 Fractions sum integrals

$\backslash frac\{num\}\{den\}$

$$\frac{num}{den}$$

$\backslash sum\sum$ $\backslash int$

$$\int$$

1.5.4 Subscript and Superscript

```
$$a^2 $$

$$b_s$$

$$\sum_{i=0}^1 \mathrm{a}r^i$$

$$\int_0^\infty\mathrm{d}t$$
```

$$a^2$$

$$b_s$$

$$\sum_{i=0}^{1} \mathrm{a}r^i$$

$$\int_0^\infty x\ \mathrm{d}t$$

1.5.5 Dashes and minus

$$a-b, a--b, a---b, \$-1\$$$

a-b, a–b, a—b, −1

1.5.6 Array

used to align multiline equations

```
\begin{array}{rl}
A&=b\\
c&=d
\end{array}
```

$$\begin{array}{rl} A &= b \\ c &= d \end{array}$$

1.5.7 Align

It is similar to array

```
\begin{align}
A&=b\\
c&=d
\end{align}
```

$$A = b \tag{1.1}$$
$$c = d \tag{1.2}$$

1.5.8 Brackets in equations

```
\[\{\left\{
```

$$A = \left\{ \begin{array}{rl} A &= b \\ c &= d \end{array} \right\}$$

1.5.9 Example equations

$$\int_0^\infty \frac{\overrightarrow{AB}}{\overrightarrow{C}\overrightarrow{D}}$$

$$\vec{\Delta}.\vec{B} = 0$$

$$E = mc^2$$

$$F = ma$$

$$\vec{F} = m\hat{a}$$

$$\vec{F} = m\hat{a} \tag{1.3}$$

$$\begin{aligned} \vec{F} &= m\hat{a} && (1.4) \\ \int \frac{d}{dt} y &= \frac{\delta y}{\mathrm{d} \quad \text{prateek} t} && y \in \{\mathbf{R}\} \end{aligned} \tag{1.5}$$

$$X(\omega) = \begin{cases} 1 & \text{such that } \omega \in A \\ 1250 & \text{such that } \omega \in A^c \end{cases}$$

$$A = \left\{ \begin{array}{rl} A &= b \\ c &= d \end{array} \right\}$$

$$\vec{\nabla} \times \vec{H} = -\frac{\partial B}{\partial t}$$

1.6 List, items and description

1.6.1 Un-numbered itemize

```
\begin{itemize}
\item A
\item B
\end{itemize}
```

- A
- B

1.6.2 Numbered enumerate

```
\begin{enumerate}
\item A
\item B
\end{enumerate}
```

1. A
2. B

1.6.3 Description

```
\begin{description}

\item[foo]
bar

\item[baz]

bang

\end{description}
```

foo bar

baz bang

In table 1.1 we have described

Table 1.1: table caption

hi sdg sd;f sdfllsdf adfdsf d df;glkd d sdfg;lk how	dear are you	ssa	asd
hi how	dear are you	ssa	asd
hi how	dear are you	ssa	asd

1.7 Table and tabular

1.8 Graphicx and figure

\includegraphics

```
\begin{figure}[htbp]
\includegraphics[width=\linewidth]{./images/1.jpg}
\caption{figure}
\end{figure}
```

Figure 1.1: figure

Figure 1.2: figure*

Chapter 2

Day 2

2.1 IEEEtran LaTeXtemplate

2.1.1 Convert article to IEEEtran

2.2 BibTeX

2.2.1 Bibliography bib file and citation

[1]

2.3 Practice session

2.3.1 Convert webpage in to LaTeX

2.3.2 Convert LaTeX in to different journal formats

Bibliography

[1] P. R. Gautam, S. Kumar, A. Verma, T. Rashid, and A. Kumar, "Energy-efficient localization of sensor nodes in wsns using beacons from rotating directional antenna," *IEEE Transactions on Industrial Informatics*, vol. 15, no. 11, pp. 5827–5836, 2019.