Webinar on LaTeX

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0.1 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.

0.1.1 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

0.2   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.

0.3 Sectioning of document

0.3.1 section, subsection, and subsubsection

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

0.3.2 paragraph, linebreak, and indentation

par \ noindent

0.3.3 chapter

"chapter{} to group `section` is available in documentclass `book` or `report`

0.4 Label and referencing

$labelsec : lab \quad refsec : lab$

0.5 Math

0.5.1 in-line and equation and eqnarray mode

$$\$\mathbf{math}\$$$

$$\$\$\mathbf{math}\$\$$$

$$\backslash[\mathbf{math}\backslash]$$

$$\begin{equation}\mathbf{math}\end{equation}$$

eqnarray

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

$$\begin{eqnarray}\mathbf{math}\end{eqnarray}$$

0.5.2 Symbols

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

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

LIST OF TABLES

0.5.3   Fractions sum integrals

"frac{num}{den}

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

"sum $\sum$ "int

$$\int$$

0.5.4   Subscript and Superscript

$$a^2 $$

$$b_s$$

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

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

$$a^2$$

$$b_s$$

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

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

0.5.5   Dashes and minus

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

a-b, a–b, a—b, -1

0.5.6   Array

used to align multiline equations

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

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

0.5.7 Align

It is similar to array

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

$$A = b \tag{1}$$
$$c = d \tag{2}$$

0.5.8 Brackets in equations

$$\backslash[\backslash\{\backslash left\{$$

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

0.5.9 Example equations

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

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

$$E = mc^2$$

$$F = ma$$

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

$$\vec{F} = m\hat{a} \tag{3}$$

$$\begin{aligned} \vec{F} &= m\hat{a} & &\tag{4} \\ \int \frac{d}{dt}y &= \frac{\delta y}{\text{d} \quad \text{prateek}t} & y \in \{\mathbf{R}\} &\tag{5} \end{aligned}$$

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

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

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

0.6   List, items and description

0.6.1   Un-numbered itemize

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

- A

- B

0.6.2   Numbered enumerate

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

1. A

2. B

0.6.3   Description

```
\begin{description}

\item[foo]
bar

\item[baz]

bang

\end{description}
```

foo bar

baz bang

In table 2 we have described

Table 1: table caption

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

0.7   Table and tabular

0.8   Graphicx and figure

"includegraphics

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


Figure 1: figure

0.9   Day webinar code

0.10   Introduction

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.

Figure 2: figure*

0.10.1 Sub intro

Figure 3: My first figure caption

_{tiny} small fnsize normal large

0.11 bac

"*italic text* enphasised text **bold**" sans serif roman

'quote'

'backtick'

enphasised text

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.

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

Figure 4: My second figure caption

here some random text	just some extra text	$A = B$
here some random text here some random text-there some random tex-there some random tex-there some random text	just some extra text	$A = B$
random text	extra text	B
here some random text	just some extra text	$A = B$
random text	extra text	B
here some random text	just some extra text	$A = B$
random text	extra text	B
here some random text	just some extra text	$A = B$
random text	extra text	B

Table 2: test table

mauris. Praesent lectus tellus, aliquet aliquam, luctus a, egestas a, turpis. Mauris lacinia lorem sit amet ipsum. Nunc quis urna dictum turpis accumsan semper.

- A
- B
- C

1. A
2. B
3. C

A full discription

B B full disc

C Full discription

test-end test–end test—end $test - end$

$$E = mc^2 \tag{6}$$
$$E = \vec{b}$$

$$\int_{i=0}^{\infty} a = A \tag{7}$$

$$\overrightarrow{AB} \times \vec{BC} \in \tag{8}$$

$$k_{\parallel}$$

$$a = b \tag{9}$$

In line math $a = b$ end line $

??

0.12   temp

0.13   temp2

0.14   Introduction to LaTeX

In section 0.17, we have discussed some thing

START   ipsum dolor sit amet, consectetuer adipiscing elit line end.

0.15   temp

0.16   temp2

0.17   test chapter

In Intro section 0.14

\% &

facilis sem. Nullam nec mi et neque pharetra sollicitudin. Praesent imperdietmi nec ante. Donec ullamcorper, felis non sodales commodo, lectus velit ultrices augue, a dignissim nibh lectus placerat pede. Vivamus nunc nunc, molestieut, 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 aleo. Morbi sed elit sit amet ante lobortis sollicitudin. Praesent blandit blanditmauris. Praesent lectus tellus, aliquet aliquam, luctus a, egestas a, turpis. PARAGRAPH CHANGE
Mauris lacinia lorem sit amet ipsum. Nunc quis urna dictum turpis accumsan END.[2, 1]

$$\left\{ \left(B_{N,2}^2 = \left\lceil \frac{a}{b} \right\rceil \right) \right\}$$

$$a \leq b$$

$$a \neq b$$

$$a \geq b$$

$$a_1^2 + b_1^2$$

Bibliography

[1] Ian F Akyildiz, Weilian Su, Yogesh Sankarasubramaniam, and Erdal Cayirci. Wireless sensor networks: a survey. *Computer networks*, 38(4):393–422, 2002.

[2] Edgar H Callaway Jr. *Wireless sensor networks: architectures and protocols.* CRC press, 2003.