FACULTY OF COMPUTING & INFORMATION TECHNOLOGY
KING ABDULAZIZ UNIVERSITY

FCIT
KAU

كلية الحاسبات وتقنية المعلومات
جامعة الملك عبدالعزيز

Workshop Series
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V.D. for Graduate Studies and Research of FCIT

LaTeX Workshop

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Outlines

By the end of this week, you be able to understand and apply **basic** Latex functions:

1. Font Size, Style, and Family
2. Tables
3. Acronyms and Glossaries
4. Bibliography
5. Table of Contents, List of Figures, and List of Tables
6. Special Characters
7. Management in a large document (input & include)
8. How to deal with LaTeX issues
9. Import template ZIP file
10. Tips and tricks

Font size

Switch	Example	Result
\tiny	{\tiny Sample text}	Sample text
\scriptsize	{\scriptsize Sample text}	Sample text
\footnotesize	{\footnotesize Sample text}	Sample text
\small	{\small Sample text}	Sample text
\normalsize	{\normalsize Sample text}	Sample text
\large	{\large Sample text}	Sample text
\Large	{\Large Sample text}	Sample text
\LARGE	{\LARGE Sample text}	Sample text
\huge	{\huge Sample text}	Sample text
\Huge	{\Huge Sample text}	Sample text

Font styles

style	command	switch command	output
medium	`\textmd{Sample Text 0123}`	`\mdseries`	Sample Text 0123
bold	`\textbf{Sample Text 0123}`	`\bfseries`	**Sample Text 0123**
upright	`\textup{Sample Text 0123}`	`\upshape`	Sample Text 0123
italic	`\textit{Sample Text 0123}`	`\itshape`	*Sample Text 0123*
slanted	`\textsl{Sample Text 0123}`	`\slshape`	*Sample Text 0123*
small caps	`\textsc{Sample Text 0123}`	`\scshape`	Sample Text 0123

Font Families

typeface = family	command	switch command	output
serif (roman)	`\textrm{Sample Text 0123}`	`\rmfamily`	Sample Text 0123
sans serif	`\textsf{Sample Text 0123}`	`\sffamily`	Sample Text 0123
typewriter (monospace)	`\texttt{Sample Text 0123}`	`\ttfamily`	Sample Text 0123

Tables

- Simple tables can be produced by
  - Tabular
- Within the {tablespec} section
  - Details can be set such as the number of columns and the alignment
  - Examples: {lrc}, {|l|r|c} – Note that the symbol "|" is to draw vertical lines
- Type in from left to right
  - The values for each cell with & in between
  - Put "\\" at the end of each row
  - Then input another row of values.

```
\begin{table} []
      \caption{}
      \label{}
      Table Body
\end{table}
```

```
\begin{tabular}[pos]{t
ablccespec}
    cell 11 & cell 12
\\
    cell 21 & cell 22
\\
\end{tabular}
```

Table Example (3*3 table)

```
\begin{table}[]
   \centering
   \begin{tabular}{ccc}
      Name     & Age   & Location  \\
      Ahmed    & 5     & Jeddah    \\
      Salem    & 10    & Riyadh    \\
   \end{tabular}
   \caption{My First Table}
   \label{tab:my_first_table}
\end{table}
```

The output

Name	Age	Location
Ahmed	5	Jeddah
Salem	10	Riyadh

Table 1: My First Table

Table Enjoinment

```
\begin{table}[placement]
\Caption{table title}
        Body of the table –
e.g. Tabular
\label{tab:example}
\end{table}
```

```
\begin{tableular}[pos]{cols}
Entry 1 & entry 2 & ….entry
n \\
….
\end{tabular}
```

Placement	Description
h	here
t	At the top of the page
b	At the bottom of the page
P	On a dedicated page of floats
!	Override the default float restrictions

pos	Description
t	Align on the top of the row
b	Align on the bottom of the row
c	Align to the center

Placement	Description
l	A column of left aligned items
r	A column of right-aligned items
c	A column with a centered items
p{wd}	A column with a specific width
|	A vertical line

Cell merges (Multi Rows and Columns)

```
\usepackage{multirow}
\usepackage{multicol}
```

- Multi-column
  - \multicolumn{number of columns}{column type}{content}
- Multi-row
  - \multirow{number of rows}{width}{content}

- Leave the empty text where multi-rows and multi-column applies

Multi Rows and Columns Example

```
\begin{table}[]
   \centering
   \begin{tabular}{ccc}
      Name    & \multicolumn{2}{c}{Information}   \\
      \multirow{2}{*}{No name}   & 5     & Jeddah  \\
                                 & 10    & Reyadh  \\
   \end{tabular}
   \caption{My First Table}
   \label{tab:my_first_table}
\end{table}
```

The output

Name	Information	
No name	5	Jeddah
	10	Reyadh

Table 2: My First Table

Tables (Style).

- Regular horizontal lines
  - \hline
  - \cline{2-3}

\usepackage{booktabs}

- Provides fancy commands for horizontal lines with appropriate spacing above and below.
  - \toprule
  - \midrule
  - \cmidrule(r){2-3}
  - \bottomrule

Header1	Header 2	Header3
Column1a	Column2a	Column3a
Column1b	Column2b	Column3b
Column1c	Column2c	Column3c
Column1d	Column2d	Column3d

Header1	Header 2	Header3
Column1a	Column2a	Column3a
Column1b	Column2b	Column3b
Column1c	Column2c	Column3c
Column1d	Column2d	Column3d

Other Tables Packages

- tabular
- tabular*
- tabularx
- ctable
- Longtable
- supertabular
- arrays

Table 3 Summary of commonly-used texture databases

No.	Texture dataset	References	Total images	Texture classes	Image size	Gray or color
1	Brodatz	Brodatz (1966b)	111	111	640 × 640	Gray
2	VisTex	–	167	167	786 × 512	Color
3	CUReT	Dana et al. (1999)	5612	92	200 × 200	Color
4	Outex	Ojala et al. (2002a)	8640	320	746 × 538	Color
5	KTHTIPS	Hayman et al. (2004), Fritz et al. (2004)	810	10	200 × 200	Color
6	UIUC	Lazebnik et al. (2005)	1000	25	640 × 480	Gray
7	KTHTIPS2a	Caputo et al. (2005), Mallikarjuna et al. (2006)	4608	11	200 × 200	Color
8	KTHTIPS2b	Caputo et al. (2005), Mallikarjuna et al. (2006)	4752	11	200 × 200	Color
9	UMD	Xu et al. (2009b)	1000	25	1280 × 960	Gray
10	ALOT	Burghouts and Geusebroek (2009)	25000	250	1536 × 1024	Color
11	RawFooT	Cusano et al. (2016)	3128	68	800 × 800	Color
12	FMD	Sharan et al. (2009), Sharan et al. (2013)	1000	10	512 × 384	Color

Springer

98 International Journal of Computer Vision (2019) 127:74–109

Image content	Instances or categories	Year	Download link
Materials	Instances	2012	Drexel (2012)
Materials	Categories	2014	UBO2014 (2016)
Materials	Clutter	2013	Open Surfaces (2013)
Attributes	Categories	2014	DTD (2014)
Materials	Clutter	2015	MINC (2015)
Materials	Clutter	2015	MINC (2015)
Materials	Instances	2016	Ground Terrain in Outdoor Scenes (GTOS) (2016)
Materials	Categories	2016	LFMD (2016)
Objects	Instances	2016	Robotics Domain Attributes Database (RDAD) (2016)

Table 1: Comparison between K_D values in ? and ? for structure head

Armor Unitsn		Placement	Structure Head SPM 1977 Breaking	SPM 1977 Non	SPM 1984 Breaking	SPM 1984 Non	Slope cot
Quarrystone							
Smooth Rounded	2	Random	1.7	1.9	1.1[a]	1.9	1.5 – 3.0
Smooth Rounded	>3	Random	2.1	2.3	1.4[a]	2.3[a]	c
Rough Angular	1[d]	Random	-	2.3	-	2.3[a]	c
Rough Angular	2	Random	2.9	3.2	1.9[a]	3.2	1.5
			2.5	2.8	1.6[a]	2.8	2.0
			2.0	2.3	1.3	2.3	3.0
Rough Angular	>3	Random	3.7	4.2	2.1[a]	4.2[a]	c[c]
Rough Angular	2	Special[e]	3.5	4.5	5.3[a]	6.4[a]	c
Concrete armor units							
Tetrapod and Quradripod	2	Random	5.9	6.6	5.0[a]	6.0	1.5
			5.5	6.1	4.5[a]	5.5	2.0
			3.7	4.1	3.5[a]	4.0	3.0
Tribar	2	Random	8.3	9.0	8.3[a]	9.0	1.5
			7.8	8.5	7.8[a]	8.5	2.0
			7.0	7.7	6.0[a]	6.5	3.0
Dolos	2	Random	15.0	16.5	8.0[a]	16.0[a]	2.0[b]
			13.5	15.0	7.0[a]	14.0[a]	3.0
Modified Cube	2	Random	-	5.0	-	5.0	c
Hexapod	2	Random	5.0	7.0	5.0	7.0	c
Tribar	1	Uniform	7.5	9.5	7.5	9.5	c

[a] These K_D values are unsupported by test results and are only provided for preliminary design purposes;
[b] Stability of dolosse on slopes steeper than 1:2 should be substantiated by site-specific model test;
[c] Until more information is available on the variation of K_D value with slope, the use of K_D should be limited to slopes raging from 1:1.5 to 1:3. Some armor units tested on a structure head indicate a K_D-slope dependence;
[d] The use of a single layer of quarrystone armor units is not recommended for structures subject to breaking waves and only under special conditions for structures subject to nonbreaking waves. When used, the stone should be carefully placed;
[e] Special placement with long axis of stone placed perpendicular to structure face;
[f] Cotagent of the slope angle that the structure wall makes with the horizontal.

1

Table Exercise

- Suppose we have this sheet.

	A	B	C	D	E	F	G	H	I
1	**Injury Location**	**Gender**	**Age Group**	**Incident Type**	**Plant**	**Shift**	**Department**	**WkDay**	
2	Multiple	Male	25-34	Burn	Iowa	Afternoon	Painting	Wed	
3	N/A	Male	35-49	Vehicle	Alabama	Day	Fabrication	Fri	
4	Eye	Male	18-24	Cut	Georgia	Day	Administration	Fri	
5	Legs	Female	50+	Falling object	Iowa	Day	Painting	Sat	
6	Legs	Male	25-34	Lifting	Ohio	Day	Painting	Tue	
7	N/A	Female	50+	Crush	Georgia	Afternoon	Security	Sat	
8	Neck	Male	25-34	Crush	Iowa	Day	Purchasing	Sat	
9	Feet	Male	35-49	Burn	California	Night	Administration	Sun	
10	N/A	Male	18-24	Fall	Florida	Afternoon	Maintenance	Wed	
11	Arms	Male	50+	Crush	Florida	Afternoon	Administration	Thu	
12	N/A	Female	35-49	Falling object	Iowa	Night	Shipping	Sat	
13	Neck	Male	35-49	Crush	Alabama	Afternoon	Shipping	Thu	
14	Eye	Male	35-49	Vehicle	Florida	Day	Finishing	Sun	
15	Eye	Male	50+	Burn	Texas	Day	Maintenance	Mon	

Acronyms and Glossaries

```
\usepackage{acronym}
```

- Define all acronyms at the top matter
  - \acrodef{kau}[KAU]{King Abdulaziz University}
- Call the acronym at the body
  - use \ac{kau}

Bibliography

- It is more convenient to create a bibliography file, called bibtex file(.bib) and use it as needed. WinEdt is capable of creating a bib file, but there are more convenient tools out there.

- \bibliographystyle{<stylename>}
- \bibliography{<bibfile.bib>}
- To cite: \cite{<bibtexkey>}

Bibliography Cont.

- List of some bib styles.

Style name	Author name format	Sorting
unsrt	Tawfiq Zuhair Hasanin	As refrenced
Plain	Tawfiq Zuhair Hasanin	By author
Named	Tawfiq Zuhair Hasanin	
Autherdate1	Hasanin, Tawfiq Zuhair	
Apa	Hasanin, T. Z. (2020)	
Alpha	Tawfiq Zuhair Hasanin	
Acm	Hasanin, T. Z.	By author
Abstract	Tawfiq Zuhair Hasanin	
abbrv	T. Z. Hasanin	By author

Bibliography Cont.

- @ARTICLE{this_is_an_article, AUTHOR="John Doe", TITLE="Title", JOURNAL="Journal", YEAR="2017",}
- @BOOK{this_is_a_book, AUTHOR="John Doe", TITLE="The Book without Title", PUBLISHER="Dummy Publisher", YEAR="2100",}
- @INBOOK{specific_pages, AUTHOR="John Doe", TITLE="The Book without Title", PUBLISHER="Dummy Publisher", YEAR="2100", PAGES="100-200",}
- @MISC{a_website, HOWPUBLISHED = "\url{http://example.com}", AUTHOR = "Intel", TITLE = "Example Website", MONTH = "Dec", YEAR = "1988", NOTE = "Accessed on 2012-11-11"}

Bibliography Cont.

1. On top of main.tex file
   - *\bibliographystyle{plain}*
2. Inside in the {document}
   - *\bibliography{bibfile.bib}*
3. Within text write
   - ……. *\cite{this_is_a_book}* …….

Bibliography Cont.

4. On the left site choose new file
5. Name it “bibfile.bib”
6. Paste the following as example

```
@ARTICLE{this_is_an_article,  AUTHOR="John Doe",  TITLE="Title",  JOURNAL="Journal",
YEAR="2017",}
@BOOK{this_is_a_book,  AUTHOR="John Doe",  TITLE="The Book without Title",
PUBLISHER="Dummy Publisher",  YEAR="2100",}
@INBOOK{specific_pages,  AUTHOR="John Doe",  TITLE="The Book without Title",
PUBLISHER="Dummy Publisher",  YEAR="2100",  PAGES="100-200",}
@MISC{a_website, HOWPUBLISHED = "\url{http://example.com}",  AUTHOR = "Intel",  TITLE =
"Example Website", MONTH = "Dec", YEAR = "1988", NOTE = "Accessed on 2012-11-11"}
```

Bibliography Cont.

- Multiple citations:

```
\cite{key1, key2, key3, key4}
```

Clever Referencing package

```
\usepackage{cleveref}
```

- Avoid referencing floating environments by name (e.g. see Figure~\ref{fig:foo})
- \Cref can create that for you: see~\Cref{fig:foo}.

How to write and manage bib

- Google scholar
  - ”import into bibtex” for single article
  - Import library of multiple articles.
- mendeley
  - Export selected articles
  - Update articles
  - Remove duplicated articles.

Table of Contents, List of Figures, and List of Tables

- In a LATEX document the table of contents, list of figures, list of tables, and list of equation can be automatically generated and modified to fit a specific style.
- To output the list add any of those lines **after** \maketitle
  - *\tableofcontents*
  - *\listoffigures*
  - *\listoftables*
- To change the title of the list in the preamble
  - *\renewcommand{\contentsname}{Table of Contents}*
  - *\renewcommand{\listfigurename}{List of plots}*
  - *\renewcommand{\listtablename}{Tables}*

Special Characters

- The following characters play a special role in LaTeX and are called special printing characters, or simply special characters.

  # $ % & ~ _ ^ \ { }

- Will give you errors
- Include a \ in front of the character.
- For example, \$ will produce $ in your output.

Management in a large project

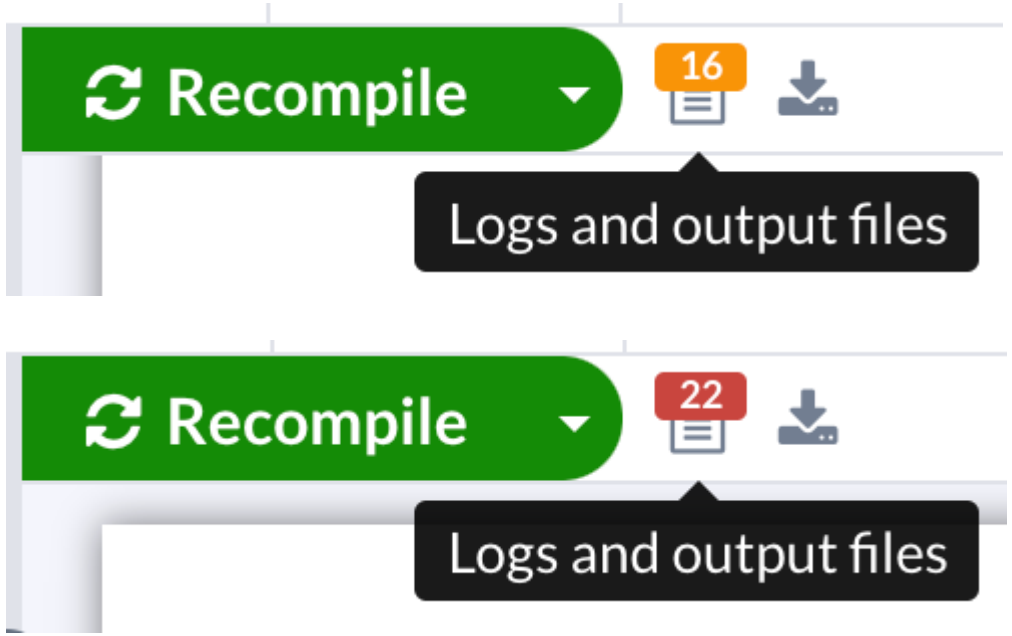
- In large projects, such as books, keeping parts of your document in several .tex files makes the task of correcting errors and making further changes easier.

```
\usepackage{import}
\usepackage{include}
```

- Use this command in the document body to insert the contents of another file named ch1.tex
- This file should not contain
  - \documentclass, \begin{document} or \end{document}
- LATEX won't start a new page before processing the material in filename.tex
- \input allows you to nest \input commands, in files that are already being inputted by the root file

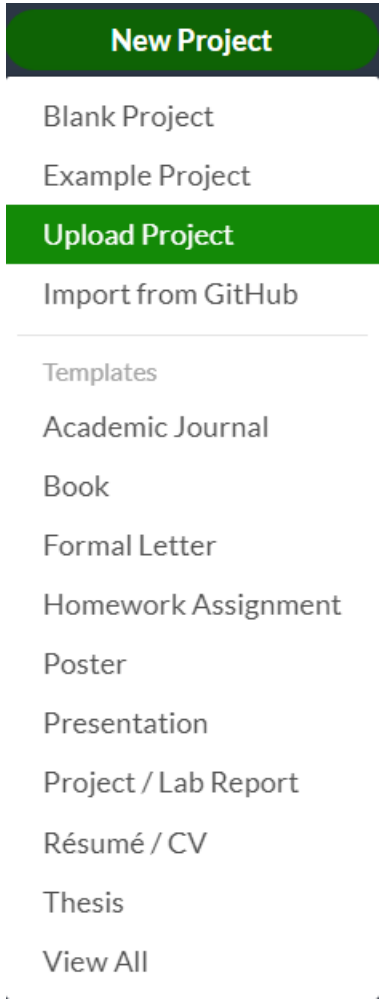
LaTeX issues

- Is there an error or warning?
- Does the document fully compile?



Import ZIP template file

- New Project >> Upload



Formatting Tips

- Use a tilde before \cite \ref etc. to avoid a line break immediately before the reference. For example, write Some also use logging statements~\cite{key}.
- Put a backslash after a non-sentence ending period to ensure this will not be followed by the period-ending spacing. For example, write In 1962 Watson et al.\ famously found …

Formatting Tips

- Match opening and closing quotes using one or two single-opening (‘ or ‘‘) and single-closing (’ or ’’) quote characters. Do not use the keyboard's double quote symbol ("). Alternatively you can use the \enquote{} macro from the csquotes package, which will automatically set the right quotes for the configure language and can handle nested quotes correctly.

Formatting Tips

- Use two dashes (--) to create an en-dash. Use this to specify number ranges, e.g. 2009--2015.
- Use \dots to produce an ellipsis (...) punctuation symbol.
- Avoid underlined text. Underlining is used for emphasis in handwritten text and was also carried over in this capacity in typewritten documents. With modern printers and software you don't need to underline, because you can use a different font style (bold or italic) for emphasis.
- Always be consistent

Thank you

- Good luck