Typesetting UTM Thesis Using LyX Official UTMthesis Version 6.4

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Outline

- Formatting UTM thesis
- Installation and set-up
- 3 Writing flow
- Understanding LyX environment
- 5 Cross-referencing and bibliography
- 6 Mathematics!
 - Managing floats
 - 8 Use notes



What is a Thesis?



 UTM Thesis
 Set-up
 Flow
 Environment
 Referencing
 Math
 Floats
 Use notes
 Conclusion

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Different names of a thesis

- An academic *thesis* is a proposition can be challenged
- According to UTM convention
 - UG FYP Final year project report
 - Master by taughtcourse project project report
 - Master by taughtcourse and research (mixed-mode) dissertation
 - Master by research and PhD thesis
- The main difference is in the substance, not form

Organizing ideas in the thesis

In general, thesis flow must have one solid story-line

- On the importance of the research
- On the current state-of-the-art solutions and their limitations
- The central concept of the proposed solution to the problem
- Validation of the solution
- Implication of findings and contribution to knowledge
- Significance of findings and the way forward

Writing thesis requires...

- Structuring thesis based on best practices (and your supervisor's recommendation)
 - This requires some forms of mind-map (or a good ToC)
- Visualize how ideas can be conveyed and results can be best represented
- Collating and formatting figures very time consuming!
 - Use standard modeling diagrams when appropriate
 - Go for scalable/vector graphics
- Re-reading many references to connect all dots

UTM Thesis Manual 2018

- · Each university has its own thesis style
- The UTM Thesis Manual 2018 defines on how theses should be formatted
 - Available to download from
 - http://sps.utm.my/thesis-formatting-2018/
- UTM also provide templates
 - MS Word template
 - LaTeX/LyX templates
- Using one of these templates will save a lot of your precious time to deal with the thesis content

Why not just using MS Word?

- MS Word is the mostly used word processor, but only practical tool for (very) simple documents IMHO
- The use of LaTeX help typesetting complex documents such as books and theses
- TeX: Typesetting language with macro capability credit to Donald Knuth
- LaTeX: Macro package built upon TeX credit to Leslie Lamport
 - classes: Descriptions of a type of document, using LaTeX, e.g. the UTM thesis
 - styles: Alters the default behavior of LaTeX in some way
- LyX: Visual LaTeX to do its typesetting credit to Matthias Ettrich
 - LyX is the LaTeX front-end
 - LyX is almost WYSIWYG (what you see is what you get)

LaTeX/LyX UTMthesis template

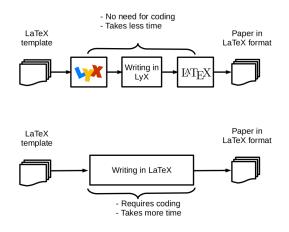
- This UTMthesis template satisfies UTM Thesis Manual 2018
- Some features
 - Auto-generates front pages, table of contents, references, list of tables/figures, and declarations
 - Easy referencing and figure/table/chapter numbering
- Always check for the newest class file on Github https://github.com/utmthesis/utmthesis

Thesis generation flow using LyX

- LyX is what you use to do your actual writing (GUI front-end, easier adoption)
- LyX converts your document to a series of text commands for LaTeX, generating a file with the extension *.tex
- LaTeX uses the commands in the *.tex file to produce printable output
 - Pdf through File > Export > Export [PDF (pdflatex)]
 - This is the normal generated output
 - Other options are available
 - For native LaTeX through File ▷ Export ▷ LaTeX (pdflatex)
 - HTML through File ▷ Export ▷ HTML

LaTeX and LyX Flow

 As LyX front-end is based on LaTeX back-end, both can co-exist (diagram by Mohamed Sultan)



Online access to LaTeX/LyX

- · Web-based, no local installations are required
- For LaTeX user, you may check online template on Overleaf
 - Can be accessed from https://www.overleaf.com/latex/templates/ universiti-teknologi-malaysia-thesis-template/vhhykxgsxcym
 - In LaTeX (text based), not LyX (visual)
 - Can be integrated with Grammarly using TextArea add-ons
- Use LyX on RollApp https://www.rollapp.com/app/lyx
 - Need subscription for saving to cloud storage

Local Installation

- · Local installation is the usual choice for many
- Download and install <u>either</u> MikTeX or TeXlive
 - MikTeX can be accessed from https://miktex.org/
 - Minimal MikTeX will be installed
 - Alternatively, you can install full MikTeX from ProTeXt https://www.tug.org/protext/
 - Alternative to MikTeX, you may install TeXlive from https://tug.org/texlive/
 - Full installation will take 7 GB for complete TeXlive
- Download and install LyX
 - LyX can be downloaded here https://www.lyx.org/
- Packages will be updated over the Internet when installing LyX and when running UTM template (see next slide) for the first time

Downloading the Template

- Download UTM thesis template from https://github.com/utmthesis/utmthesis or from the link on the UTM SPS website
- Files required to run the template (better to download all files)
 - utmthesis.cls class file version 6.4
 - utmthesis.lyx
 - utmthesis.layout LyX layout
 - *.bst BibTeX style file of your choice
- I share the minimal template for you to try here https://drive.google. com/file/d/1PflC8xShfXnxsEoLhNb4SS5fbrjYCAdp/view?usp=sharing
 - I will be using this to demo the template

Testing the template

- Open lyx-thesis.lyx
- To generate thesis PDF
 - File ▷ Export ▷ PDF (pdflatex) to generate PDF in the folder OR
 - Click generate a PDF quick-view
- A PDF should be generated
- In case of unsuccessful PDF generation
 - Open utmthesis.layout using a text editor
 - Check line 13
 - Change to Format 60 (ver. 2.2) or 66 (ver. 2.3)

Learning LyX on YouTube

- Many tutorials are available on YouTube on LyX (albeit the earlier versions)
- Some tutorials on using LyX 1.*
 - Video 2/5 https://www.youtube.com/watch?v=Wq9ti7GGHrs
 - Video 3/5 https://www.youtube.com/watch?v=O5okEyYQ-Og
 - Video 4/5 https://www.youtube.com/watch?v=sJpfyydhAzo
 - Videos 1/5 (installation) and 5/5 (specific template) can be skipped
- References in LyX https://www.youtube.com/watch?v=EGnY486sbDI

LyX UTMthesis writing flow

- Insert
 - Thesis information (author name, degree, faculty, etc)
 - Include preambles (abstract, abstrak (abstract in Bahasa Melayu), dedication, acknowledgement, etc.)

Standard

- Write mainmatters (main chapters)
- Insert the bibliography
- Appendices if any
- Select sectioning from the Environment drop box
 - Chapter
 - Section
 - Subsection etc.
- · Refer to the notes provided in the template for further clarification

Thesis and author's information

- Some are OPTIONAL delete when not in use.
- Degree, Specialization, and Intakeyear must be written properly refer to your student card/offer letter
- We support up to FIVE supervisors do not ask us why
 - If you have more then five supervisor, you need to seriously rethink your life choices (^_^)
- Use Title Case
 - LyX will make to uppercase when necessary

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Preamble pages

- Acknowledgement
- Dedication
- Abstract

- Abstrak (abstract in Bahasa Melayu)
 - Please check with the Dewan Bahasa website http://prpm.dbp.gov.my/ for special terms
 - Do not rely on Google Translate

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Abbreviations and symbols ¹

- List of Abbreviations
- List of Symbols
- Must be alphabetically sorted manually

Note
List of Abbreviations
Note of use: you must declare/call the abbreviation at least once.
Else, an empty hyphen (-) will appear
<24: List of Abbreviations>
Abbreviation GIS Description Geographical Information System
Abbreviation PC Description Personal Computer
Abbreviation UTM Description Universiti Teknologi Malaysia
Abbreviation XML Description Extensible Markup Language
Abbreviation WWW Description World Wide Web
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Name gamma Symbol > Description Whatever

To call an abbreviation or symbol, Insert ▷ New Inset ▷ Abbre



¹This feature was contributed by Dr Loo Hui Ru

 UTM Thesis
 Set-up
 Flow
 Environment
 Referencing
 Math
 Floats
 Use notes
 Conclusion

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Main pages

- Main Matters: Parts, Chapters, and Sections
 - Chapter (e.g., 2)
 - Section (e.g., 2.1)
 - Subsection (e.g., 2.1.1)
 - Subsubsection (e.g., 2.1.1.1) iff necessary
- Do not to go beyond this
 - Restructure your thought
 - · There always options to restructure your chapters/sections
- If unable to do this, quit!

UTMthesis document class

- Document classes are another major part of the WYSWYM (what you see is what you meant) philosophy
- It tells LyX how to typeset the document according to the document class, so you
 do not need to know how
- UTMthesis class is a book-type derived class, hence print on both sides by default
 - You can set set for oneside printing
- This is the endorsed version by SPS
- Some discrepancies in the manual (e.g., if the "Figure" in figure caption should be bold etc.,) have been verified by SPS

LyX is WYSIWYM, almost WYSIWYG

- WYSIWYM means what you see is what you meant
- The class file defines how the document should be typeset
- The hardest thing for new users is on how LyX handles white spaces
- A return (new line) means a new paragraph
 - As many times as you hit Return, you will only get one blank line
- A space means writing another word
 - As many times as you hit Space, you will only get one white space
 - On a blank line, LyX will not let you type even one space
- The Tab key will not move you forward one tab stop; in fact there are no tab stops!
- There is no ruler at the top of the page to let you set tabs or margins
- Fine-tuning white spaces in LyX can be done (only when necessary)
 - Protected Break, which you get by typing Ctrl+Return
 - Protected Space, which you get by typing Ctrl+Space

LyX environments

Standard

- Different parts of a document have different purposes; we call these parts environments
- Certain types of documents have special environments (an abstract and a title for journal, but not letter)
- An environment may require a certain font style, font size, indenting, line spacing, and more.
- The Environment choice box is located on the left end of the toolbar

Basic features

- Undo LyX has multiple levels of undo and redo. Currently limited to 100 steps
- Cut/Paste/Copy Like MS Word
 - Even figures, but we do not suggest this as the figure will be in bitmap format
- Find/Replace
- Character Formatting
- Toolbar (tons of them) Just need to get used to them

Paragraph alignment

- Edit ▷ Paragraph Settings dialog or click
 - Justified default
 - Left
 - Right
 - Center
- For vertical alignment default is raggedbottom

has are sample	inction represents a module of the conceptualized architecture. Each of t total inputs, such as value of capacitances, transition counts, technology size MATLAB-ode written for calculating energy consumption of CMOS state is scheme in Listen 3.3.
	Listing 3.3 A sample of MATLAB code to calculate energy consumption of standard OB and
	$ \begin{array}{llllllllllllllllllllllllllllllllllll$

An Administration Medical

The impact of different configurations of testing features on NoC are analyzed by area overhead and efficiency metrice-bandwidth, number of test patterns, supply voltage and number of nodes.

3.8.1 Area Overhead

To enable testing in NoC, IEEE 1149.1 components are added in the ship that



Figure 3.8 As illustration of evaluation metric affecting parameter comparison between two different enline testing methods

an important design constraint in DSM technologies [57]; this critesia must be known from early design stages.

3.8.2 Efficiency Metrics Versus Affecting Parameters

As exercised is Capter 2, handrakh, sunker of see patterns, apply wilege and sumber of nodes are effecting parameters on toti time and energy consumption of torking. The comparisons are Hantandi in 2D hard durar, when working lasts of charts is one of the evaluation metrics versus variation of effect handwidth, number of tot patterns, supply subject and mode or moles in horizontal and.

A surple charts is listential in Figure 7.8, in this chart, one methods and here compared based on an evaluation methy isoften energy consumption or of Thy and handwide. The chart is parameter to the NGC size, anyly volve, analyte of Thy and handwide. The chart is interpreted such that, the method is a origotimese method. Bit is low material fasting argument with termided frame/merses method as it higher whites. Also, it is formable that simulation setsils are chart in the results from program danced.

Using different character styles

- Ctrl+B will bold the text selection
- Ctrl+I or Ctrl+U will not work in LyX
- Italic: Emphasized style (toolbar button ^(K))
- Noun style (toolbar button 🙈)
- Can also be accessed from menu Edit ▷ Text Style
- Don't overuse character styles!

Lists and sublists

- Enumerate
- Itemized
- List (not native to LaTeX)
- Description
- Can be made nested
 - Plan/elaborate the outline
 - A plot for your thesis writing
 - Target: logical story for the document
 - Results
 - * Stand-alone tables/graphs
 - * Describe each, then number crunch
 - * Use Appendices for detailed items
 - · Get feedback from the supervisor
 - If you are writing in a language other than your mother language, consider getting specialized editing help

Footnotes and margin notes

- [Only for textbook] Margin notes should not be used

Labels and cross-references

- The use of label and cross-reference
- Dynamic numbering of
 - <reference>: prints the float number, this is the default
 - (<reference>): prints the float number within two parentheses, e.g. for Equation
 - <page>: prints the page number
 - on page <page>: prints the text "on page" and the page number (suggested)
 - <reference> on page <page>: prints the float number, the text "on page", and the page number
- I suggest using the last method, "on page <page>" will be added when necessary

Bibliographies

- If you make a statement, back it up with your own data or a reference
 - · All references cited in the text must be listed
 - · UTM supports either the numbering or author-year format
 - Try to avoid inclusion of references as footnotes
- We recommend dynamic (and smarter way) Use BibTeX
- BibTeX is text based
- Some visualization tool such as JabRef can be used
- If you worked with EndNote for MS Word before, your references list database can be exported to BibTeX format

BibTeX samples

```
@article{CitekeyArticle,
author = "P. J. Cohen".
title = "The independence of the continuum hypothesis",
journal = "Proceedings of the National Academy of Sciences",
vear = 1963.
volume = "50",
number = "6".
pages = "1143 - -1148",
}
@book{CitekeyBook,
author = "Leonard Susskind and George Hrabovsky",
title = "Classical mechanics: the theoretical minimum",
publisher = "Penguin Random House",
address = "New York, NY".
year = 2014
3
```

BibT_EX styles

- UTM supports either numbering (mostly science and engineering) or author-year (social sciences) format
- Note that the latest UTM thesis manual allows any standard styles, provided that it is used consistently throughout the thesis
- For numbering, use utmthesis-numbering.bst (or any other numbering BibTeX styles such as IEEEtran.bst)
 - Document ▷ Settings ▷ Bibliography ▷ Citation Style ▷ Basic (BibTeX)
 - Click on BibTeX Generated Bibliography to change the BibTeX style Style Browse and select utmthesis-numbering.bst
- For author-year, use utmthesis-authordate.bst (or any other numbering BibTeX styles such as APA)
 - Document ▷ Settings ▷ Bibliography ▷ Citation Style ▷ NatBib (BibTeX)
 - Click on BibTeX Generated Bibliography to change the BibTeX style Style Browse and select utmthesis-authordate.bst

Where to get BibTeX items?

- Usually obtained from
 - Publishers

LITM Thesis

Set-up

- Google Scholar
- Mendeley (citations manager)
- Usually, we don't manually define BibTeX from scatch
 - Usually require manual edit as some fields may be inaccurate or missing
 - Read https://www.bibtex.com/e/entry-types/ for more details

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	≥ include patents ≥ include citations	V. CONCLUSI investigated in th WINoC [4] 'IE 17 99 Cited b	Chilesen,	architectures. IEEE Transactions on Very Large Scale Integration (VLSI) Systems, 25(3), 1126-1139. Duraisarry, Karthi, Yuankun Xue, Paul Boodan, and Partha		
6	Create alert	Performance wave small-w J Mumy, R Kim.	Chicago	Durasamy, Kami, Yuansun Xue, Hau Bogan, and Partha Pratim Pande. "Multicast-aware high-performance wireless network-on-chip architectures." <i>IEEE Transactions on Very Large Scale (miligration (VLSI) Systems 25, no. 3 (2017):</i> 1126-1130.	(PDP) colostate.edu	
		WINGC archite aim is to evaluate DTM followed by ☆ 99 Ched b	Harvard	Duraisamy, K., Xue, Y., Bogdan, P. and Panda, P.P., 2017. Multicast-aware high-performance wireless network-on-chip architectures. IEEE Transactions on Very Large Scale Integration (VLSI) Systems, 25(5), pp.1128–1130.		
		Robust and T Efficient mm- N Mansoor - 2017 communicatio propose the cross the MAC is all	Vancouver	Duraisarry K, Xue Y, Bogdan P, Pande PP, Mutticast-aware high-performance wireless network-on-chip architectures. IEEE Transaction on Vey Lange Scalar Integration (VLBI) Systems. 2017 Mar.25(3):1126-39.	(PoP) rit.edu	

Inserting bibliography

- At the end of the document (after the last chapter), insert Bibliography
- Can be accessed through menu Insert ▷ List/TOC ▷ Bib(la)TeX Bibliography



• Set reference BibTeX file (*.bib) and BibTeX style file (*.bst)

Define BibTeX files	BibTeX Bibliography	O
Define <u>BibTeX</u> styles	Databases Add	
	Delete	Add a BibTeX database file
List of Publications	Up Down	
Categorize according to publication		
For co-authored publications, group <25: List of Publications>	Style Rescan	
	utmthesis-numbering • Browse.	
Journal with Impact Factor	Content: all cited references c Add bibliography to TOC	
1. Paper 1		
2 Paper 2		

Inserting citation

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This template conforms with the UTM 2018 new requirement, Students wh	Available Citations:	Selected Citations:
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(#hyndownload). You do not need to know deep on LaTeX [#intex wiktbook] to use this LyX template. This is an added text.

INTRODUCTION

This template conforms with the Universiti Teknologi Malaysia (UTM) 2018

new requirement [1]. Students who wish to learn more on LyX should refer to

BibT_EX Author-Year style

- For author-year, use utmthesis-authordate.bst (or any other numbering BibTeX styles such as APA)
 - Document ▷ Settings ▷ Bibliography ▷ Citation Style ▷ NatBib (BibTeX)
 - Click on BibTeX Generated Bibliography to change the BibTeX style Style Browse and select utmthesis-authordate.bst

		Ly>	K: BibTeX Bibliography		
_	LyX: Document Settings 😣	Databases			
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Page Layout Page Margins	Bibliography Style				
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	Bibliography Generation				
Float Placement Listings	Processor: Default +	Style		<u>R</u> escan	
Bullets Branches Formats	Options:	utmthesis-authordate	•	Browse	
LaTeX Preamble		Content: all	cited references 🔹 👻		
Use Class De Restore	faults Save as Document Defaults QK Apply Cancel	Add bibliography to <u>T</u> OC		<u>O</u> K Cancel	

List of Publications

- After the list of references
- Should follow BibTeX style (convention) used in References



Typesetting Math

- Three types
 - Numbered equations
 - · Single- or multi-line equations are possible
 - Use of Eqnarray is encouraged
 - Inline formula
 - Use toolbar button ∑ or from menu Insert ▷ Math ▷ Inline Formula
 - Mainly limited to simple expression

Walkthrough of some Math features

- Exponents and Subscripts e.g., x²y, you will get x² and type a_1 to get a₁
- Fractions by typing \frac or using the icon $\frac{a}{b}$ in the Math Panel
- Roots using the Math Panel button $\sqrt{1}$ or the commands \sqrt or \root
- Operators with Limits Sum (\sum) and integral (\int) operators
- Math Symbols includes Greek, Operators, Relations, Arrows. Also AMS additional symbols
- Altering Spacing using protected space

More on Math features

- Functions function macros, such as sin, lim, etc.
- Accents circumflex, tilde, breve, etc through command
- Brackets and Delimiters Auto-sizing delimiter via icon
- Arrays and Multi-line Equations Matrices are entered using the Math Panel matrix button
- Cases Insert ▷ Math ▷ Cases Environment or the command cases

Theorems

- LyX supports theorem, definition, etc.
- Go to Document > Settings > Modules

iearch	Available:		Selected:
Document Class	Section Boxes	Add	Theorems
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Managing floats

- Figures and tables float in the text
 - A float doesn't have a fixed location
 - It can float forward or backward to wherever it fits best to get a high quality layout
 - Caption as part of a float
- Float Placement
 - Here if possible: try to place the float at the position where it is inserted (default in UTMthesis)
 - Top of page: try to place the float at the top of the current page
 - Bottom of page: try to place the float at the bottom of the current page
 - Page of floats: try to place the float at an own page
- You can insert a figure float inside another figure float to create subfigures
 - Insert ▷ Float ▷ Figure and again, Insert ▷ Float ▷ Figure

Graphics and images

- A good thesis needs good diagrams/graphs/illustrations
 - Spend some time doing in properly
 - A good picture tells a thousand words
- Place the cursor and click on the toolbar icon ¹ or select Insert ▷ Graphics from the menu
- Use scalable images such as SVG, EPS, PDF
 - Normally one can't convert a bitmap image into a scalable one, only vice versa
- You can copy and paste as well (just like MS Word) but will result in bipmap image
 - Not good enough
 - If you drew diagrams using Microsoft Word, you may copy-and-paste it to Visio or PowerPoint – then export as scalable images

More on graphics and images

Set dynamic width of figures/tables



More on graphics and images

- · Citations should not be included in LoF, LoT
- Short float caption without citations
 - Click on figure caption, Insert > Short Title



Tables

- If you need to show exact values (instead of trend for graphs), use tables instead.
- Insert a table using either the toolbar button ^Ⅲ or the menu Insert ▷ Table
- Use with cross-referencing
 - Use ctrl+space so that "Table" and "Table number" are concatenated as one, i.e., will not be in separate lines

Use with cross-referencing, such as Table_Ref	f: table:1				
float: Table					
	Table 1:	Tat	ole	ca	caption
table:1					
	а	b	с	d	d
					7
	1	\vdash			-
		\vdash	-		-

Table resize²

Add graphicx package Document > Setting > LaTeX Preamble

Search	\usepackage{graphicx}
Document Class Modules Local Layout Fonts Text Layout Page Layout Page Layout Page Margins Language Colors Numbering & TOC Bibliography Indexes PDF Properties Math Options Float Placement	(vargebickage (j) spinick /
Hoac Placement Listings Bullets Branches Formats	Find

²This tutorial on writing algorithm is done by Mr Mohammed Sultan Ahmed Mohammed

Table resize (cont'd)

- Using LaTeX command (Ctrl+L), add the following command inside table float before the table: \resizebox{\textwidth}{!}{
- Also using LaTeX command, close the bracket directly after the table: }



- Take note that table resize is to justify the size of a table after you have set column width
- Too much scaling will make table font too small compared to the main text

Algorithms³

- Use algorithm and algorithmic packages
- Download the latest version of LyX Algorithm-Style Layout from http://bgu.perso.libertysurf.fr/
- Copy algorithm.inc file to LyX layouts folder

 - Layouts folder in Ubuntu: /usr/share/lyx/layouts
- Copy algolyx.sty file to your working directory
- Add Input algorithm.inc to your LyX .layout file

³This tutorial on writing algorithm is done by Mr Mohammed Sultan Ahmed Mohammed

Algorithms

Open* 🛎		*utmthesis.layout -/Desktop/UTM-thesis.lyX-template=vX			Save	Ξ	
#% Do not delete # \DeclareLaTe>	the line below; configure depends on Class[utnthesis]{book (UTM Thesis)}	this					
<pre># Input general Input stdiounter Input stdiists.i Input stdiists.i Input stdisection Input stdiserser #Input stdiisets #Input stdiisets #Input stdiisets Encent 66</pre>	s.ine ine ne is.ine ttons.ine i.ine rmats.ine						
Sides 1 SecNumDepth 3 TocDepth 3							
NoStyle Part NoCounter part NoStyle Part* NoStyle Labeling NoCounter labeli	ng						
			Plain Text 🔻	Tab Width: 8 💌	Ln 13, Col 1		INS

- Insert an algorithm float Insert > Float > Algorithm
- Change the text layout style inside the algorithm float to either <u>Algorithm</u> or

Algorithm (num) using the upper left-hand standard drop-down menu

Algorithms

· Write your algorithm

float: Algorithm	Algorithm 1 Calculate $y = x^n$
Algorithm 1: Calculate $y = x^n$	Require: $x \ge 0$
Require: $x \ge 0$	Ensure: $y = x^n$
Ensure: $y = x^n$	$y \leftarrow 1$
* y = 1	$X \leftarrow x$
* X=x	$N \Leftarrow n$
* N=n	while $N \neq 0$ do
while $N \neq 0$	if N is even then
if N is even * X=X×X	$X \Leftarrow X \times X$
* X=X×X * N=N/2	$N \Leftarrow N/2$
elseif $\{\{N\} \text{ is odd}\}$	else if {N is odd} then
* $y = y \times X$	$y \leftarrow y \times X$
* N=N-1	$N \leftarrow N - 1$
endif	end if
endwhile	end while

You have to use reserved keywords

if	endif
for/forall	endfor
while	endwhile
repeat	until
loop	endloop

Use (*) symbol in front of unreserved keywords

File listings

- Insert > File > plain text to insert ext in verbatim mode
- Insert ▷ File ▷ external document to insert PDF or XFIG figures
- Insert ▷ File ▷ Child document
 - You can split chapters as individual LyX files and called using *include* command faster compilation and better writing overview

Eile: ch1.lyx		Browse
Include Type: Include	×	Edit

- Other options are input, verbatim, program listing
- Verbatim in typewriter font
- Program listing can be configured language-aware

Program listings

- Insert ▷ File ▷ Child document
- You may change the type to program listing and configure it as you need
 - breaklines=true
 - captionpos=b
 - frame=tb
 - language=Python
 - commentstyle={\normalfont\textit}
 - keywordstyle={\textbf}
- Refer to Listings Latex package.

Turn on the spelling checker

- Sloppily-written thesis spells disaster
- If the examiners feel that you could care less with your thesis, they will do likewise
- Tools > Preferences > Language Setting > Spellchecker > Spellchecker engine
 - Turn on Spellcheck to check continuously
- Having a spellcheck does not fix sentence structure or grammar
- Do use additional tools (Online grammar check or any other tools)
 - To improve your manuscript quality
 - To reduce the chances of your supervisor having a headache while reading your thesis



Track changes between reviews

- Revision is a daunting process
 - Help your supervisor to visualize changes been made
- Document
 Change tracking
 Track changes
- If you need to show the changes in pdf, select Document
 Change tracking
 Show changes in output

CHAPTER 1

INTRODUCTION

This template conforms with the Universiti Teknologi Malaysia (UTM) 2018 new requirement [1]. Students who wish to learn more on LyX should refer to documentations available here [2]. You do not need to know deep on LaTeX [3] to use this LyX template. This is an added text.

1.1 Definition of thesis

Thesis (generic term, see also Figure 1.1) is a documented evidence of defined scope and length that a candidate is

Introduction
This template conforms with the <u>UTM</u> 2018 new requirement [#immitescannia]. Students who wish to learn more on lyX
should refer to documentations available here (@hoconsists]. You do not need to have deep on LATEX [Historackibail] to use

this LyX template. This is an added text. 1 Definition of thesis

Chapter 1

- Thesis (generic term, see also Figure. Ref. figl.) is a documented evidence of defined scope and length that a candidate is
- · Understand relevant theoretical is:
- · Technically competent
- · Has critical-thinking ability
- · Able to conduct scholarly research

 UTM Thesis
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 Environment
 Referencing
 Math
 Floats
 Use notes
 Conclusion

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Using specialized packages

- UTMthesis uses the following packages
 - acronym
 - algorithm
 - caption
 - emptypage
 - enumitem
 - geometry

- hyperref
- ifplatform
- newtxmath
- newtxtext
- nowidow
- parskip

- pdfpages setspace tocloft
- tocvsec2

- Do not re-declare these packages in Document > Setting > LaTex Preamble
- If you need to include advanced features and/or specialized packages, potentially some packages may generate errors due to conflict with used packages in utmthesis.cls
 - Add a package at a time when necessary

Fine typesetting

- You may need to do post-writing customization
- Orphan and widow lines
 - Only perform fine typesetting (page break, vertical skip, etc.) before finalizing the document
 - Forced page break may be required
 - Insert > Formatting > Clear Page (open any)
 - Insert ▷ Formatting ▷ Clear Double Page (open right)
- Float placements
 - · Some float may be too far from the referencing text, or
 - On a page on its own
 - Right-click on the float
 - Settings ▷ Advanced placement options ▷ Here if possible

One-side or double-side printing

- UTM allow either single or double-sided printing for submission of thesis for oral examination purposes (UTM Thesis Guideline, 2018) Section 2.3 on page 13
- By default, the template is for double-side printing
- To change to a single-sided document Document ▷ Settings ▷ Document Class, type oneside in Custom Class Options

Font type

- You can also choose different font types (UTM Thesis Guideline, 2018) Section 2.4 on page 14–15.
- Document ▷ Settings ▷ Fonts ▷ Default family then select either Roman (default) or Sans Serif
- You may also define font type packages in LaTeX preamble Document ▷ Settings ▷ LaTeX Preamble

LyX: Document Settings	
Search Vate[15: Kovember 2018] Counter Class Child Dourness Vate[15: Kovember 2018] Vate(15: Kovember 2018) Vareex-command (textendash) {} Yreex-command (textendash) {} Yreex-command (textendash) {} Yreex-command (textendash) {} Vreex-command (te	
Use Class Defaults Save as Document Defaults Restore OK Apply Close	
Restore OK Apply Close	

• Go to http://www.tug.dk/FontCatalogue/sansseriffonts.html for many

60/62

UTM Thesis	Set-up	Flow	Environment	Referencing	Math	Floats	Use notes	Conclusion
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Known issues

Some reported bugs (system-specific issues)

- Spacing between a section title and the first paragraph thereafter (MikTeX on Windows)
 - Define LaTeX preamble Document > Settings > LaTeX Preamble \usepackage{titlesec} \titlespacing*{\section} {0pt}{2\baselineskip}{\baselineskip} \titlespacing*{\subsection} {0pt}{2\baselineskip}{\baselineskip}
- Use of the babel package messed up with the preamble pages
- Use of the notoccite package messed up the ToC, LoT, and LoF

Last words

- We could not cover all grounds under-the-sun, as we know only the requirement in EE and EEE
- LaTeX/LyX are not a silver bullet to make thesis writing automated
- You most probably need to read further on beyond-basic LaTeX and LyX functions
- We (my students, other volunteers and I) receive a lot of questions or requests to solve some issues
 - Sometimes, due to multiple constrains, we are unable to help more that what was expected
 - Or we could not know more that the one asking (the question)
- We all volunteer in this endeavor believing that knowledge is to be passed to others