

**THESIS WRITING GUIDE FOR A BACHELOR
OF COMPUTER SCIENCE PROGRAM**

**By
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Thesis submitted in partial fulfilment of the
requirement for the award of the degree of
Bachelor of Computer Science (Software Engineering) with Honours

**FACULTY OF COMPUTER SCIENCE AND MATHEMATICS
UNIVERSITI MALAYSIA TERENGGANU
2030**

THESIS CONFIRMATION AND APPROVAL

This is acknowledged and confirmed that the thesis entitled: **Thesis Writing Guide For a Bachelor of Computer Science Program** by **Mohammad Faisal Bin Ahmad Ghazali** Matric No.: **S55555** have been checked and all the suggested corrections have been done. The thesis is submitted to the Faculty of Computer Science and Mathematics, Universiti Malaysia Terengganu in partial fulfilment of the requirements for the award of the degree of **Bachelor of Computer Science (Software Engineering) with Honours**.

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DECLARATION

I hereby declare that this thesis is the result of my own research except as cited in the references.

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ACKNOWLEDGEMENTS

The Acknowledgements page is a dedicated space to express gratitude to the individuals and organizations that assisted you throughout your Final Year Project (FYP) journey. Unlike other academic chapters, the writing style here is typically more personal yet professional, and it must be written as a single paragraph limited to one page. Your gratitude should be organized starting with your Supervisors, followed by funding bodies or sponsors, technical contributors such as lab assistants or respondents, and finally, your family and friends. »»>For the FRONT PAGE ensure the title is arranged in a reverse pyramid format if it exceeds one line, and write both the title and your name in CAPITAL LETTERS. Additionally, verify that the program name matches your registered program and the year reflects your actual submission. »» For the CONFIRMATION AND APPROVAL PAGE update the existing placeholders with your specific thesis title, your name, and your matric number. Ensure the program name is correct and include your supervisor's full name, noting that while the Front Page uses uppercase, the writing on the Approval page should follow Camel Case format (e.g., This Is Camel Case). »»»Finally, on the DECLARATION Page, ensure you change the placeholder to your actual name and include your matric number with a CAPITAL 'S' (e.g., S12345), making sure that the matric number and all dates are typed directly using the keyboard.

THESIS WRITING GUIDE FOR A BACHELOR OF COMPUTER SCIENCE PROGRAM

ABSTRACT

The Abstract must begin with the thesis title written entirely in CAPITAL LETTERS and arranged in an inverted pyramid format, identical to the layout on your Front Page. It should be a concise, single-paragraph summary of your research, typically not exceeding 300 words, and must be presented on a single page following a structured sequence. The content should first introduce the problem statement and research objectives, followed by a brief description of the methodology used, including specific tools or experimental setups. Next, it should highlight the key findings or outcomes that directly relate to the research objectives, and finally, conclude with the significance of the findings and their contribution to the field. Ensuring a professional tone is essential, as the abstract serves as the core essence of your entire thesis for examiners and researchers. ABSTRACT is write in english

PANDUAN PENULISAN TESIS BAGI PROGRAM SARJANA MUDA SAINS KOMPUTER

ABSTRAK

Abstrak mestilah bermula dengan tajuk tesis yang ditulis sepenuhnya dalam HURUF BESAR dan disusun dalam format piramid terbalik, sama seperti reka letak pada Muka Hadapan anda. Ia perlulah merupakan ringkasan penyelidikan yang padat dalam satu perenggan, biasanya tidak melebihi 300 patah perkataan, dan mestilah dipersembahkan dalam satu muka surat sahaja mengikut urutan yang tersusun. Kandungannya hendaklah dimulakan dengan pengenalan kepada pernyataan masalah dan objektif kajian, diikuti dengan penerangan ringkas mengenai metodologi yang digunakan, termasuk alatan khusus atau persediaan eksperimen. Seterusnya, ia perlu menekankan penemuan utama atau hasil yang berkaitan secara langsung dengan objektif kajian, dan akhirnya, disimpulkan dengan kepentingan penemuan tersebut serta sumbangannya kepada bidang berkaitan. Penggunaan nada profesional adalah sangat penting memandangkan abstrak berfungsi sebagai intipati utama keseluruhan tesis anda untuk penilaian pemeriksa dan penyelidik. ABSTRAK ditulis dalam bahasa melayu.

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LIST OF ABBREVIATIONS

FTKKI	Faculty of Ocean Engineering Technology and Informatics.
GCD	Greatest Common Divisor.
LCM	Least Common Multiple.
SaaS	System as a Service.
UMT	Universiti Malaysia Terengganu.

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CHAPTER 1

INTRODUCTION

In this section, an introductory paragraph for the chapter must be provided, consisting of 3 to 5 lines. The content should include the purpose of the chapter (e.g., 'This chapter will...'), a summary of the content highlighting the main sub-topics to be discussed, or the final goal explaining how the chapter will enhance the reader's understanding.

1.1 Project Background

The Project Background section is designed to provide readers with initial context by situating the study within a broader perspective before delving into more specific issues. Its primary function is to establish a comprehensive foundation that helps the audience understand the overall landscape of the research area.

This section begins by introducing a general overview of the topic to provide basic understanding, followed by an explanation of current trends or contemporary scenarios to highlight the topic's immediate importance. By discussing these modern developments, you demonstrate why the research is timely and necessary in today's environment.

Furthermore, it is essential to state the significance of the study in terms of its impact on industry, society, or the body of knowledge. This may include a brief history of technological or policy evolution if relevant, and should ultimately bridge the gap between theoretical concepts and real-world applications to demonstrate

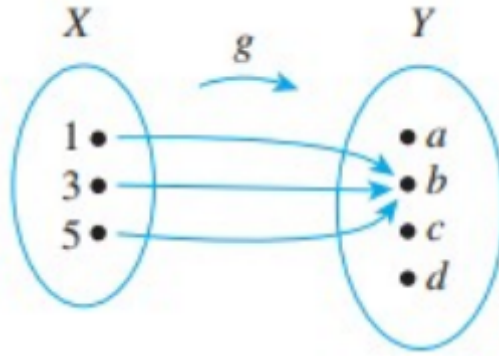


Figure 1.1: Graph 1

the project's overall relevance.

1.2 Problem Statements

In thesis writing, the Problem Statement is a critical section that identifies the specific issue or gap your research intends to resolve, serving as the fundamental justification for conducting the study. It is essential that this section is written in a cohesive paragraph format rather than bullet points to ensure a logical and persuasive flow of arguments.

The narrative should begin by describing the ideal state, briefly explaining the desired goals or the situation as it should exist within the field. This is immediately followed by a discussion of the current problem, identifying the constraints or failures that prevent that ideal state from being realized. Within the same paragraph structure, you must highlight the research gap by pointing out deficiencies in existing solutions or previous studies that leave the problem unresolved. Furthermore, the impact of the problem should be detailed, explaining the negative consequences such as costs, time, or safety risks if the issue persists. Finally, the paragraph should conclude by emphasizing the necessity of the study, stating how your research will address these gaps to provide a superior solution. Given a set of numbers, there are elementary methods to compute its Greatest Common Divisor, which is abbreviated GCD. This process is similar to that used for the

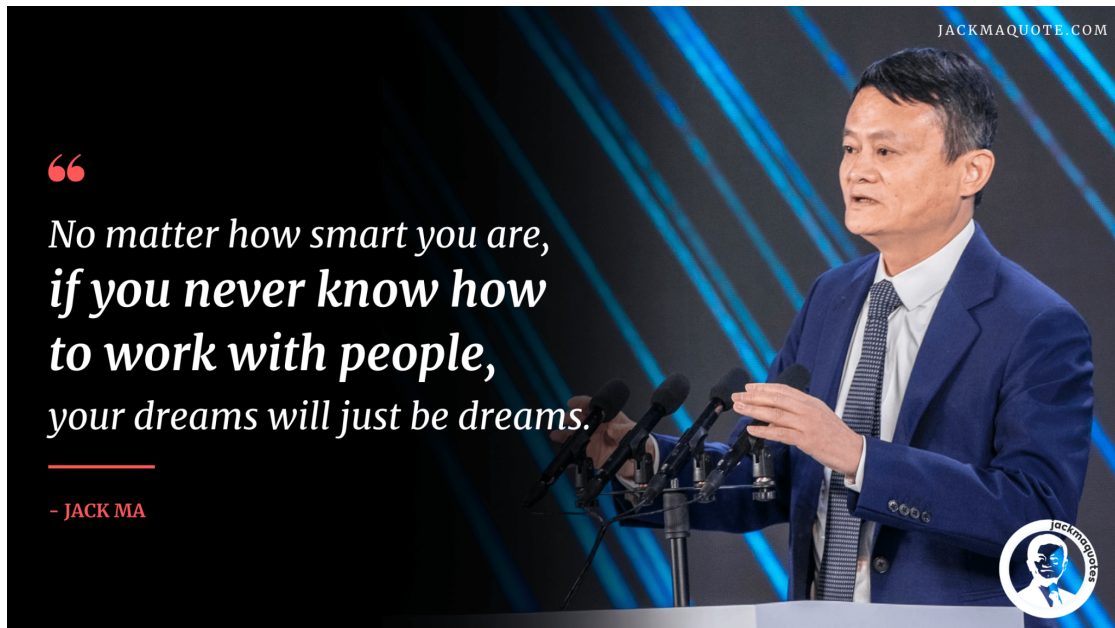


Figure 1.2: Jack Ma

Least Common Multiple (LCM). Universiti Malaysia Terengganu (UMT) is one of the beautiful university in Malaysia. One of the faculty in UMT is Faculty of Ocean Engineering Technology and Informatics (FTKKI). c denotes bla bla bla as shown in Figure 1.2.

Given a number, there is System as a Service (SaaS). SaaS

1.3 Problem Solution

The Problem Solution section must be written in a narrative form or as logically flowing paragraphs rather than in bullet points. Writing in paragraphs allows you to build a strong argument as to why your proposed solution is the best approach to addressing the raised issues. This section begins by directly stating how your project will overcome the identified research gaps. You should describe the technical approach or unique methodology that will be employed to resolve the problem, emphasizing the specific advantages or features of your solution that distinguish it from existing methods that are deemed ineffective or inefficient.

The connection between the Problem Solution and the Problem Statement

must be direct and consistent. If the Problem Statement describes the "ailment" (the problem), then the Problem Solution must describe the specific "cure" (the solution) for that ailment. In these paragraphs, you must refer back to the constraints identified in the Problem Statement. For instance, if you stated that high cost is a primary issue in existing systems, your solution paragraph must explain how your design or method significantly reduces those costs. This creates intellectual continuity, demonstrating that your research is not merely theoretical but a strategic response to the real-world issues you previously outlined.

1.4 Objectives

Research objectives in a thesis or Final Year Project (FYP) must be precise, measurable, and clearly stated in a numbered list. These objectives serve as specific targets that you must achieve to resolve the issues identified in the Problem Statement.

The following are the key guidelines for writing effective objectives:

- **Apply the SMART Principle:** A well-defined objective must be Specific, Measurable, Achievable, Realistic, and Time-bound.
- **Start with Action Verbs:** Each objective point must begin with an active verb that can be verified or measured. Commonly used action verbs include:
 - To design...
 - To develop...
 - To analyze...
 - To evaluate...
 - To investigate...
- **Number of Objectives:** Typically, for an undergraduate project, the number of objectives ranges between two to three (2–3). Avoid setting too many

objectives that may exceed the capacity of your study's scope.

- **Alignment with the Problem Statement:** Ensure that every objective written serves as a direct answer to the problems mentioned in the previous problem statement section.
- **Avoid Vague Verbs:** Do not use verbs that are difficult to measure, such as “to understand,” “to learn,” or “to know,” as the level of comprehension is hard to prove through technical results.

1.5 Project Scope

The Project Scope in a thesis aims to establish the boundaries of the study, ensuring the research remains focused and achievable within the designated timeframe.

The following are the key guidelines for writing an effective scope:

- **Establishing Boundaries:** Clearly state what will be included and, more importantly, what will *not* be included in your study. This prevents unrealistic expectations from readers or examiners.
- **Technical and Equipment Limitations:** Explain the specific software, hardware, or programming languages used. For example, if you are building an application, specify if it is limited to the Android platform only.
- **Study Area or Population:** If the study involves human data or specific locations, clearly state the demographics, age limits, or geographic locations involved.
- **Parameters and Variables:** Specify the variables being studied and the limit of values used (e.g., temperature between 20°C and 50°C only).
- **Timeframe:** Where relevant, state specific timelines or phases that are the primary focus of the project development.

1.6 Thesis Outline

The following is the structured outline of this thesis, organized into five chapters to provide a clear and logical flow of the research. Chapter 1 introduces the project by establishing the research background, defining the problem statement, and outlining the objectives, scope, and significance of the study. Chapter 2 presents the literature review, which discusses relevant theories, previous studies, and reference sources essential to the project's foundation. In Chapter 3, the research methodology is detailed, explaining the methods, flowcharts, system designs, or experimental procedures employed to achieve the stated objectives. Chapter 4 focuses on results and discussion, where the obtained data is presented alongside an analytical and critical interpretation of the findings. Finally, Chapter 5 concludes the thesis by summarizing the overall research outcomes and proposing recommendations for future improvements. Lorem ipsum dolor sit amet, consectetur adipiscing elit. Ut purus elit, vestibulum ut, placerat ac, adipiscing vitae, felis. Curabitur dictum gravida mauris. Nam arcu libero, nonummy eget, consectetur id, vulputate a, magna. Donec vehicula augue eu neque. Pellentesque habitant morbi tristique senectus et netus et malesuada fames ac turpis egestas. Mauris ut leo. Cras viverra metus rhoncus sem. Nulla et lectus vestibulum urna fringilla ultrices. Phasellus eu tellus sit amet tortor gravida placerat. Integer sapien est, iaculis in, pretium quis, viverra ac, nunc. Praesent eget sem vel leo ultrices bibendum. Aenean faucibus. Morbi dolor nulla, malesuada eu, pulvinar at, mollis ac, nulla. Curabitur auctor semper nulla. Donec varius orci eget risus. Duis nibh mi, congue eu, accumsan eleifend, sagittis quis, diam. Duis eget orci sit amet orci dignissim rutrum. . UMT focusses on fisheries.

CHAPTER 2

LITERATURE REVIEW

In this section, an introductory paragraph for the chapter must be provided, consisting of 3 to 5 lines. The content should include the purpose of the chapter (e.g., 'This chapter will...'), a summary of the content highlighting the main sub-topics to be discussed, or the final goal explaining how the chapter will enhance the reader's understanding.

2.1 Introduction

The introduction of Chapter 2 serves to validate the research concerning the theories, technologies, and previous works identified in relation to the developed application. Consequently, this section emphasizes the significance of these fundamental elements as a precursor to their detailed analysis in the following subsections.

2.2 Fundamental Theory and Concept

Give an introduction to your selected theory and concept before further the explanation in the subsection. Fundamental theory is refer to any theory that is used in your project, For example, if you applied the image processing method in your application , suppose there are some theory that was related to image processing such ah Digital Image Representation, Requency Domain or Spatial Domain. Or in the application development the architectural theory such as Client -Side, Server Side or database can be use as the fundamental theory. But it is depends to your

overview of your application and what is more related and needs an explanation.

Concept is a specific idea, variable or phenomenon that is central to your study. Think of it as the "vocabulary" of your research. Before you can prove your thesis, you have to define the terms you are using so the reader understands exactly what you mean. Example: If your thesis is about "Remote Work Productivity," you must define what "Productivity" means. Is it hours worked? Tasks completed? Revenue generated?

Explain each of your theory and concept in each subsection and at least you have 3 subsection on this section

2.2.1 Name of Fundamental Or Theory 1

explain your first theory or concept

2.2.2 Name of Fundamental Or Theory 2

explain your second theory or concept

2.2.3 Name of Fundamental Or Theory 3

explain your third theory or concept. add another subsection if you have more than three items

2.3 Related Works

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2.3.1 Name of Related Works 1

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Figure 2.1 shows bla bla bla

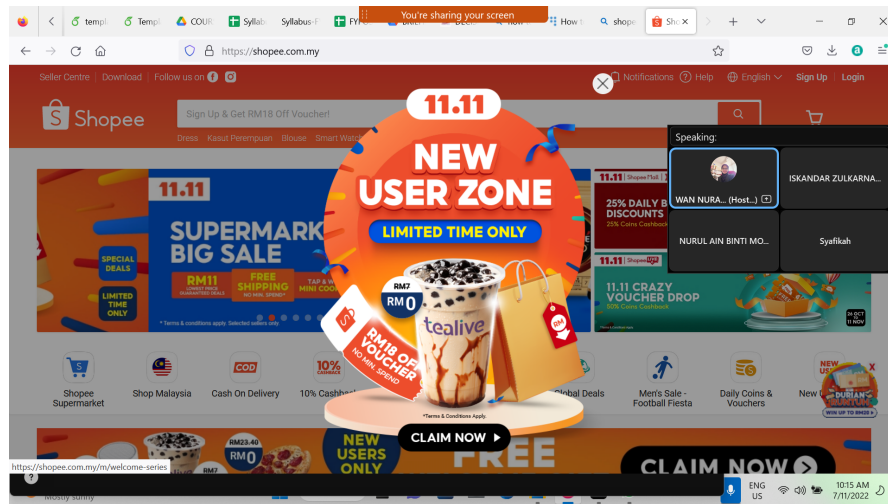


Figure 2.1: Shopee Homepage

2.4 Discussion

2.5 Summary

CHAPTER 3

METHODOLOGY

3.1 Introduction

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3.2 Project Methodology

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3.3 Project Planning Schedule

3.3.1 Milestone

A project milestone is a management tool... as shown in Table 3.1.

Table 3.1: Milestone for Project XYZ

No.	Description	Start Date	End Date
1	Project Title	9 Oct 2022	27 Oct 2022
2	Submission of SPMP		
3	Submission of SRS		
4	Submission of SDD		
5	Project Prototype		
6	Submission of Thesis		

3.3.2 Gantt Chart

A Gantt chart is a chronological bar chart... as shown in Figure 3.1.

Figure 3.1: Gantt Chart for FYP

GANTT CHART

PROJECT TITLE	[Project's title]	SUPERVISOR	[Supervisor's name]
STUDENT'S NAME	[Student's name]	CO-SUPERVISOR (if any)	[Co-supervisor's name]
MATRIC NO.	[Student's matric no.]	STAKEHOLDER	[Organization/Company's name]

[illegible]

3.4 Summary

Nulla malesuada porttitor diam. Donec felis erat, congue non, volutpat at, tincidunt tristique, libero. Vivamus viverra fermentum felis. Donec nonummy pellentesque ante. Phasellus adipiscing semper elit. Proin fermentum massa ac quam. Sed diam turpis, molestie vitae, placerat a, molestie nec, leo. Maecenas lacinia. Nam ipsum ligula, eleifend at, accumsan nec, suscipit a, ipsum. Morbi blandit ligula feugiat magna. Nunc eleifend consequat lorem. Sed lacinia nulla vitae enim. Pellentesque tincidunt purus vel magna. Integer non enim. Praesent euismod nunc eu purus. Donec bibendum quam in tellus. Nullam cursus pulvinar lectus. Donec et mi. Nam vulputate metus eu enim. Vestibulum pellentesque felis eu massa.

CHAPTER 4

SYSTEM REQUIREMENTS

4.1 Introduction

4.2 Requirement Elicitation Techniques

Requirement elicitation refers to the search for details about the functions to be performed by the system and the limitations under which the system must operate. It is regarded as the process of obtaining data from stakeholders; in other words, it can be defined as the process that takes place once the data analyst has interacted with stakeholders to understand their requirements. The goal of requirement elicitation is to thoroughly identify the business needs, risks, and assumptions associated with any given project.

4.3 System Requirements

4.3.1 Functional Requirement

Functional requirements are product features that developers must implement to enable the users to achieve their goals. They define the basic system behavior under specific conditions.

- The system must allow users to log into their account by entering their email and password.
- The system must allow users to log in with their Google accounts.

- The system must allow users to reset their password by clicking on "I forgot my password".

4.3.2 Non-functional Requirement

Non-functional requirements (NFRs) describe the systems operation capabilities and constraints. These outline how well the system will operate, including speed, security, and reliability.

4.4 Requirement Analysis

4.4.1 Use Case Diagram

Use-case diagrams provide a birds-eye view of the basic functionality of the business processes.

4.4.2 Use Case Descriptions

4.4.3 Activity Diagrams

Activity diagrams provide a detailed graphical view of the underlying activities.

4.4.4 Class Diagram

A class diagram is a static model that shows the classes and their relationships.

4.4.5 Sequence Diagrams

Sequence diagrams illustrate the objects that participate in a use case and the messages passed between them over time.

4.4.6 CRUD Matrix

CRUD analysis uses a matrix to identify how objects collaborate (Create, Read, Update, Delete).

Table 4.1: Use Case 1: Make reservation

Use Case Name:	Make reservation	ID: UC1
Importance Level:	High	
Primary Actor:	Customer	Use Case Type: Primary, Essential
Stakeholder and Interests: Customer - wants to reserve for available car. Staff - provide details.		
Brief Description: This use case describes how a customer can make a car reservation.		
Normal Flow of Events: 1. Customer login by entering the username and password. 2. Customer views the details of available car. 3. Customer selects the type of car. 4. Customer makes reservation. 5. Customer logout the system.		
Alternate/Exceptional Flows: 1a. The username and password is invalid, customer must login again.		

CHAPTER 5

SYSTEM DESIGN

5.1 Introduction

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5.2 System Architecture

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5.3 Package Diagram

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5.4 Database Design

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5.5 Interface Design

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5.6 Discussion

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5.7 Summary

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CHAPTER 6

SYSTEM IMPLEMENTATION

6.1 Introduction

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6.2 System Hierarchical Menu

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6.3 System Development

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6.4 Discussion

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6.5 Summary

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CHAPTER 7

CONCLUSION

7.1 Introduction

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7.2 Project Contributions

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7.3 Project Constraints

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7.4 Future Work

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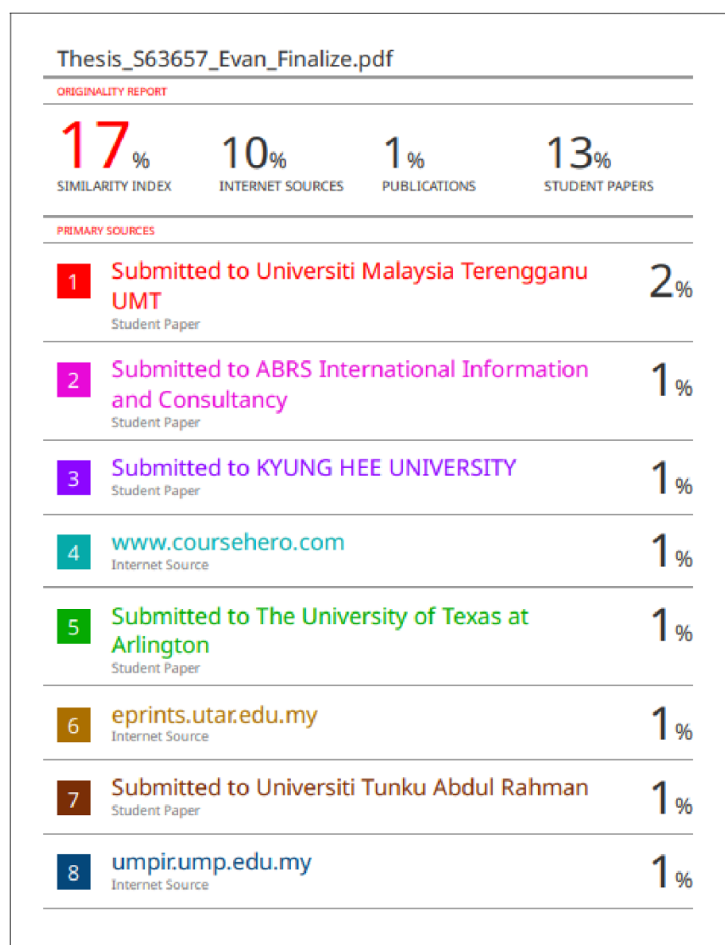
7.5 Summary

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REFERENCES

APPENDICES

Appendix A: Turn-It-In Summary Report



Appendix B: Another Example of Appendix Named Appendix B



جباٲن كحاكٲن شرعٲة ٲرڠڠانو
JABATAN KEHAKIMAN SYARIAH TERENGGANU
DEPARTMENT OF SYARIAH JUDICIARY
STATE OF TERENGGANU
ARAS 5, BANGUNAN MAHKAMAH SYARIAH,
JALAN SULTAN MOHAMAD,
21100 KUALA TERENGGANU,
TERENGGANU.

ٲelefon : 09-6232323
Faks : 09-6241510

Ruj. Kami : JKSTR. 600-6/2/2 JLD.3 (89)
Bertarih : 27 Mei 2019
Bersamaan : 22 Ramadan 1440H

KEPADA YANG BERKENAAN

السلامة عليكم ورحمة الله وبركاته

Tuan,

PENGESAHAN PENGIRAAN ANGGARAN DENDA BAGI KES KHALWAT MENGGUNAKAN KAEDAH ANFIS DAN AHP.

Dengan segala hormatnya saya merujuk perkara di atas, sukacita dimaklumkan bahawa pihak kami telah diberi penerangan pada 11 Februari 2019 dan 27 Mei 2019 berkenaan dapatan kajian projek Estimation of Fines Amount in Syariah Criminal Offences Using Adaptive Neuro-Fuzzy Inference System (ANFIS) Enhanced with Analytic Hierarchy Process (AHP) oleh En. Ahmad Fitri bin Mazlam (GSK2506), pelajar Ijazah Sarjana Sains Komputer, Universiti Malaysia Terengganu (UMT).

2. Sehubungan dengan itu, setelah memahami dan menguji pengiraan yang dicadangkan, pihak kami mengesahkan pengiraan anggaran denda yang dicadangkan dan mengesyorkan supaya formula tersebut dapat digunakan sebagai panduan awal dalam memutuskan denda ke atas pesalah jenayah khalwat di Mahkamah Syariah Terengganu.

3. Segala kerjasama yang diberikan amatlah dihargai.

Sekian, terima kasih.

"TERENGGANU MAJU, BERKAT, SEJAHTERA"
"BERKHIDMAT UNTUK NEGARA"

Saya yang menjalankan amanah,



(KAMALRUAZMI BIN ISMAIL)
Hakim Mahkamah Tinggi Syariah
b.p: Ketua Hakim Syarie
Terengganu

SYARIAH ASAS KEADILAN

Beautiful
Terengganu
Malaysia



BIODATA OF THE AUTHOR

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