



B.Sc. (Hons) in Software Development



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TRiM - A Software Solution for Barber Shops

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Minor Dissertation

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Chapter 1

Introduction

1.1 Context

Small businesses such as barber shops can oftentimes be faced with less than ideal situations if their operation is walk-ins only. Things like lack of business insights, customer friction due to inability to be serviced when they wish, manual bookkeeping, etc. In today's day and age, digitalizing your business is a must, not only because it's what everyone is already doing, but also because it builds a bridge between the business and its customers, leading to a more established presence in the market.

By leveraging technologies such as *TRiM*, we are able to scale the business and bring real value to the table, and not just financial value, but also operational value as this tool aims to improve every corner the business. But what exactly is *TRiM*? This platform aims to support all operations of service-based businesses such as barber shops, from customer bookings, to payment integration, and employee management. The goal is to allow multiple businesses to use the platform independently so that each one of them can have access to all the features offered by *TRiM*.

1.2 Project Objectives

The objective of this project is clear: to deliver a real and robust software solution to local service-based businesses. These are the goals:

- Allow customers to book a service (logged in or as a guest) at a time that suits them with a professional of their choosing while preventing common issues such as double bookings.
- Support payment processing.

- Allow business owners to oversee operations by adding services/employees and prices.

1.3 Dissertation Focus

The focus of this dissertation is mostly architectural, with a focus on database design patterns and data isolation techniques. With *TRiM*, we're exploring how to create a multi-tenant software application that's scalable and robust across the board, but also leverages efficient design patterns that allows us to grow without massive costs or performance overhead. We also investigate how to make sure multiple business can have access to this system whilst maintaining performance and security at the top of our priorities.

1.4 Success Metrics

Describe success metrics.

1.5 Chapters Overview

Give an overview of all the chapters.

Chapter 2

Methodology

Describe the way you went about your project. Was your approach to the problem valid? You need to discuss both your software development methodology and your research methodology.

Chapter 3

Technology Review

This chapter is the literature review part of the dissertation and should be tightly coupled to the context and objective from the introduction. A thorough Technology Review proves that you researched what you were doing!

Chapter 4

System Design

Provide a detailed explanation of the overall system architecture [1], i.e. the HOW of the project. Use UML, system architecture diagrams, screenshots, code snippets and algorithms to illustrate your design.

4.1 Working with Images

You can embed an image in a \LaTeX document using the technique shown below. System diagrams and images with a small numbers of colours (100s, not 1000s) should be stored in PNG format. Although \LaTeX doesn't care where you place your images, it is good practice to place them in a single sensible directory and apply some sort of hierarchy to them, e.g. the path `images/chapter1` might contain all of the images for Chapter 1 of your dissertation.



Figure 4.1: System Architecture.

Image 4.1 can be referenced with the label given to the image, i.e. `\ref{image:sysArchitecture}`. Note that \LaTeX will place the image wherever it deems fit. Don't bother trying to change where a table or figure is placed until your document is ready for final layout.

Chapter 5

System Evaluation

Evaluate your project against the objectives set out in the introduction. This chapter should present results if applicable and discuss the strengths and weaknesses of your system. This is a clear opportunity for you to demonstrate your critical thinking in relation to the project.

5.1 Working with Tables

Table 5.1 can be referenced with the label given to the table, i.e. `\ref{table:HexToBin}`. Note that \LaTeX will place the table wherever it deems fit. Don't bother trying to change where a table or figure is placed until your document is ready for final layout.

Hexadecimal to Binary					
Hex	Binary 2	Hex	Binary	Hex	Binary
1	00000001	B	00001011	15	00010101
2	00000010	C	00001100	16	00010110
3	00000011	D	00001101	17	00010111
4	00000100	E	00001110	18	00011000
5	00000101	F	00001111	19	00011001
6	00000110	10	00010000	1A	00011010
7	00000111	11	00010001	1B	00011011
8	00001000	12	00010010	1C	00011100
9	00001001	13	00010011	1D	00011101
A	00001010	14	00010100	1E	00011110

Table 5.1: Conversion from Hexadecimal to Binary

Chapter 6

Conclusion

Briefly summarise your context and objectives. Remind the reader about the overall rationale and goals of the project. Highlight your findings from the System Evaluation chapter.

Bibliography

- [1] Jianhua Lin. Divergence measures based on the shannon entropy. *IEEE Transactions on Information theory*, 37(1):145–151, 1991.