

## CAR SERVICE SYSTEM



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This report is submitted in partial fulfillment of the requirements for the Bachelor of Computer Science (Software Development) with Honours.

UNIVERSITI TEKNIKAL MALAYSIA MELAKA

FACULTY OF INFORMATION AND COMMUNICATION TECHNOLOGY  
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2021

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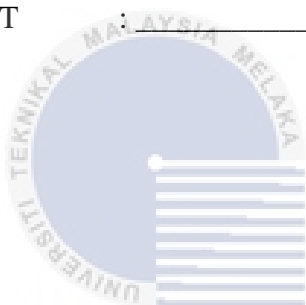
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SUPERVISOR

Date : 10 September 2021

([PROFESOR MADYA TS. DR. MOHD SANUSI BIN AZMI])

**DECLARATION**

## DEDICATION

I dedicated this project work to my beloved parents. A special feeling of gratitude to my loving parents whose words of encouragement and push for tenacity ring in my ears. I also dedicated the project work to my supervisor, Dr. Mohd Sanusi bin Azmi who had supported me throughout the process. I will always appreciate all he done for helping me develop my technology skills. Last but not least, I dedicated this work and give special thanks to my friends whose had gave me many useful and helpful advises when I get into a bottleneck.



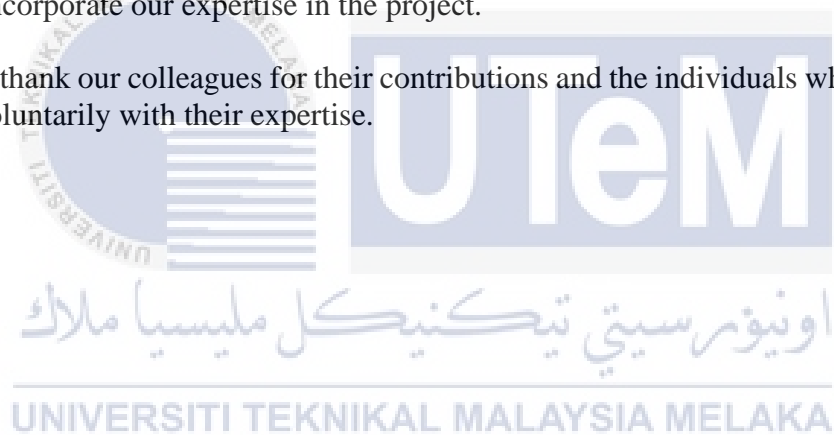
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In this project, without the aid and guidance from many people and my supervisor, Dr. Mohd Sanusi bin Azmi, this would not have been possible. I would like to express my heartfelt appreciation to all these people.

I would like to thank Dr. Mohd Sanusi bin Azmi for giving assistant to complete this project successfully. I am very obliged to Dr. Mohd Sanusi bin Azmi for his encouragement, continuous supervision and knowledge about the project and support for it in the completion of the project. His advice is very beneficial to the project completion. I would also like to thank my beloved parents who have been giving me support and motivation throughout my project.

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I also thank our colleagues for their contributions and the individuals who have helped me voluntarily with their expertise.



## ABSTRACT

This project is aimed to developing a real-time car servicing system for the car owner and the car service industry. The Car Service System (CaSS) consist of two applications which are the desktop application and the mobile application. The system had the own web service as the back-end to handle the data processing between the front-end and database. This system is able to tracking the whole process of the car servicing in real-time in order to help the staffs or technicians to control the servicing process with their customers. In conclusion, CaSS is able to replace the current system with more features and solved the problem of the traditional servicing shop.



## ABSTRAK

Projek ini bertujuan untuk membangunkan sistem servis kereta masa nyata untuk pemilik kereta dan industri perkhidmatan kereta. Sistem Servis Kereta (CaSS) terdiri daripada dua aplikasi iaitu aplikasi desktop dan aplikasi mudah alih. Sistem ini mempunyai perkhidmatan web sendiri sebagai back-end untuk menangani pemprosesan data antara front-end dan pangkalan data. Sistem ini dapat mengesan keseluruhan proses servis kereta dalam masa nyata untuk membantu kakitangan atau juruteknik mengawal proses servis dengan pelanggan mereka. Kesimpulannya, CaSS dapat menggantikan sistem semasa dengan lebih banyak ciri dan menyelesaikan masalah kedai servis tradisional.





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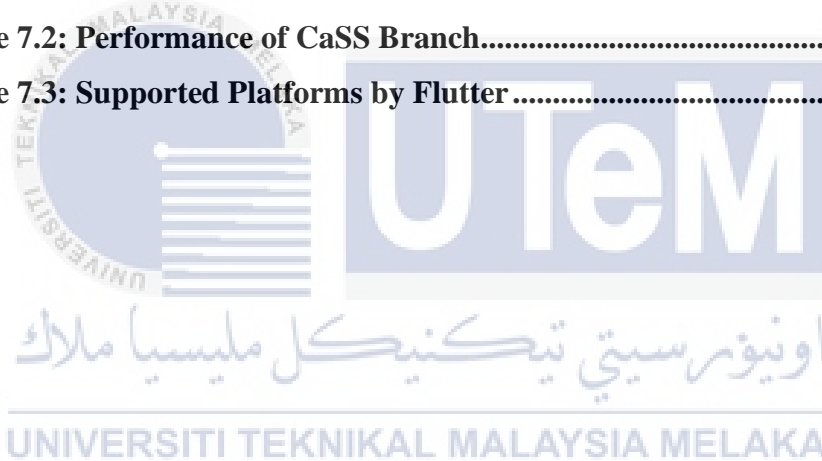


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**LIST OF ABBREVIATIONS**

|             |   |  |
|-------------|---|--|
| <b>CaSS</b> | - | <b>Car Service System</b>              |
| <b>OOAD</b> | - | <b>Object-Oriented Analysis Design</b> |
| <b>SDLC</b> | - | <b>Software Development Life Cycle</b> |
| <b>REST</b> | - | <b>Representational State Transfer</b> |
| <b>JSON</b> | - | <b>JavaScript Object Notation</b>      |
| <b>ORM</b>  | - | <b>Object-Relational Mapping</b>       |
| <b>npm</b>  | - | <b>Node Package Manager</b>            |
| <b>SQA</b>  | - | <b>Software Quality Assurance</b>      |



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## CHAPTER 1: INTRODUCTION

### 1.1 Introduction

In Malaysia, whether students or office workers, most people have a car to travel. This also means that people often need to go to their respective car service centers to regularly service their cars, especially for the newly bought cars. The process of servicing a car is not only time-consuming and complicated, so it requires frequent communication between the customer and the repairman, and sometimes even the counter personnel need to communicate the opinions of both of them through the phone call.

Not only that, booking in advance for car services is also a very troublesome process. Car owners need to call the service center corresponding to their car to make a repair appointment and since the car owner does not know which time has not been reserved, the owner can only waste time inquiring one by one in order to find a time when both of them are available to service the car.

Car owner needs to service the car when the car has travelled a certain distance or time so the car owner needs to check the distance recorder in the car and also the time past from the last service made. Besides, because most of the car owners are not familiar with car-related knowledge, and if they are not lucky enough to encounter more greedy maintenance or service personnel, the car owners will face the situation of extremely high fees from the service center.

## 1.2 Problem Statement

- Lack of platform for processing the service of car that led to time-consuming and complicated.
- Lack of visualization of reservation for servicing car that would cause disputes due to duplication of reservation, conflict in scheduling and so on.
- Unable to track the service process and the result of service.

## 1.3 Objective

- To develop a mobile application which provide the automation features for servicing the car such as the record of the service logbook, the confirmation of service parts of the car after checking and so on.
- To provide a visualized schedule in the calendar for each of the car service center that based on the location and distance of the car owner.
- To track all the process of the servicing and update to the developed platform from time to time. The serviced parts and results would be generated in form of e-receipt with the description and purpose.

## 1.4 Scope

The scope of the project contains the target users and the modules that will be develop in the system. There are three target users and several modules which will be developed in three different platforms.

### 1.4.1 Target Users

- Car owner: a person who own at least a car and act as customer to service the car in the car service center by using the customer mobile application.
- Car servicer: a staff who service the car of the customer in the car service center with the assistance of branch desktop application.

## 1.4.2 Modules

The following modules will be developed into three different platforms which will be used by corresponding target users. The customer mobile application is used by car owner and branch desktop application is used by car servicer.

### 1.4.2.1 Customer Mobile Application

- Authentication module: a module which handles the authentication of the customer.
- Car Module: a module which displays and manages the cars of the customer added.
- Reservation Module: a module which enables the customer to view and find the car service centers and handles the reservation of car service such as make, modify, and cancel the reservation.
- Service Module: a module which enables the customer to track and update the current servicing status.
- Profile Module: a module which enables the customer to manage the profile of the customer.

### 1.4.2.2 Branch Desktop Application

- Authentication module: a module which handles the authentication of the staff of the branch.
- Dashboard Module: a module which displays the dashboard with the summary and visualized information of the reservation.
- Customer Module: a module which manages the customer by adding, modifying, and disabling customer.
- Reservation Module: a module which enables the staff handles the reservation of car service such as make, modify, and cancel the reservation.
- Service Module: a module which enables the staff to start the servicing and update the current servicing status.

## 1.5 Project Significance

Car Service System is a project which developed for automobile industry and focus only for car. The proposed system is digitalized from the current system which the proposed system will provides the platforms for each of the users to improve the efficiency of the whole business process and also avoid the time consuming. The reservation feature will be improved and become independent from both car owner and car servicer. This offers the ultimate freedom to the car owner to make, modify and cancel the reservation of the service and the car servicer also does not require to confirm these operations one by one at the same time. The digitalized system also achieved the data centralization which enable manager of the system can collect, process, and store the data information effectively without data redundancy. In general, this project benefits all of the current users in the current system.

## 1.6 Expected Output

The project is expected to develop a system that form by two subsystems which run in different platforms and use by customer and branch. The subsystem of the customer side will be developed in mobile application (only for Android) as the front-end by using Dart programming language with Flutter framework. The subsystem of the branch side will be developed in desktop application (only for Windows) as the front-end by using Dart programming language with Flutter framework. Besides, MySQL is chosen as the database of the system which host in the localhost with the help of XAMPP. Therefore, a web service that also host in the localhost will be developed as the back-end for communicating these subsystems with the database by using JavaScript with Node.js.

## 1.7 Conclusion

In Malaysia, car service is a potential trade that can be improved and digitalized. Most of the current car service systems are still using pure human resource to handle all of the process which led to time-consuming, data redundancy, and unable to keep records for a long time. Therefore, this project aims to develop the automation features of car servicing, provide clear and visualized schedule to enhance the service reservation, and also digitalize the data to enable the record to be stored and tracked. This system is developed for car owner, car servicer, and manager who will use the customer mobile app, branch desktop app, and manager web app respectively. The project is expected to be developed a mobile app, a desktop app, a web app, and a web service that will communicate these apps with the MySQL database in localhost.

