



Faculty of Computer Science and Information Technology

MyVec- “*Vehicle maintenance reminder and door-to-door service car service mobile application for students*”

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Bachelor of Computer Science with Honours
(Multimedia Computing)

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mobile application for students*”**

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This project is submitted in partial fulfilment of the
Requirements for the degree of
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ABSTRACT

A mobile application brings was designed with a purpose to solve people's everyday life from the entertainment to simplifies daily life. In particular, the high costs associated with car ownership and the potential consequences of neglecting car maintenance over time were identified as significant issues. Such negligence can accelerate wear and tear, leading to permanent damage to the engine components and substantial financial burdens. To address these challenges, the waterfall methodology was employed to understand the requirements of potential users, allowing for the successful design and implementation of the mobile application using Android Studio. The application was then subjected to rigorous testing by a diverse group of users. Finally, the app was deployed and is being actively maintained. The results finding should suggest that most user agreed that the functionality of the potential mobile app will helps them to be reminded of future maintenance schedule and enable them to choose the car service they desired. The project aims to develop a mobile app to remind the student to service their car and they can select the option for door-to-door servicing the car by which target the audience in Kota Samarahan called as MyVec

ABSTRAK

Satu aplikasi mudah alih telah direka dengan tujuan untuk menyelesaikan masalah harian orang dari segi hiburan sehingga menyederhanakan kehidupan seharian. Secara khusus, kos tinggi yang berkaitan dengan pemilikan kereta dan akibat yang mungkin timbul dari pengabaian penyelenggaraan kereta dari masa ke masa dikenalpasti sebagai isu penting. Pengabaian sedemikian boleh mempercepatkan kehausan dan kerosakan, yang membawa kepada kerosakan kekal kepada komponen enjin dan beban kewangan yang besar. Bagi mengatasi cabaran ini, metodologi waterfall digunakan untuk memahami keperluan pengguna berpotensi, membolehkan rekabentuk dan pelaksanaan berjaya aplikasi mudah alih menggunakan Android Studio. Kemudian, aplikasi ini diuji secara teliti oleh kumpulan pengguna yang pelbagai. Akhirnya, aplikasi ini diterbitkan dan sedang dikekalkan secara aktif. Keputusan kajian menunjukkan bahawa kebanyakan pengguna bersetuju bahawa fungsi aplikasi mudah alih ini akan membantu mereka diingatkan tentang jadual penyelenggaraan akan datang dan membolehkan mereka memilih perkhidmatan kereta yang diinginkan. Projek ini bertujuan untuk membangunkan aplikasi mudah alih untuk mengingatkan pelajar supaya menjalankan penyelenggaraan kereta mereka dan mereka boleh memilih opsi perkhidmatan pintu ke pintu untuk kereta mereka, yang bertujuan kepada audiens di Kota Samarahan yang dikenali sebagai MyVec.

CHAPTER 1: INTRODUCTION

1.0 Introduction

According to Baffour-Awuah (2018), to guarantee the health and durability of cars as well as human and vehicle safety, vehicles must be constantly maintained and repaired as needed. One of the most essential aspects of daily living for humans is maintenance and repair. Nowadays, a person's car is likely to break down in the middle of the road or have some other issue. According to Sheng (2016), if a vehicle user is in such a scenario, they do not want to spend too much time lost on the road looking for help or in an unknown location.

The automotive industry around the world is quickly expanding these days. The design of modern vehicles has undergone significant technical advancement over the years to make them safer, more effective, and more aesthetically acceptable for the consumer. To deal with the latest car design, these require a skilled mechanic. In the workshop, auto mechanic skills are frequently acquired simultaneously. Practical abilities include the ability to work with tools effectively and efficiently, to complete tasks like brake repair, gearbox rebuilding, and similar tasks, and to identify issues related to repairing motor vehicles. A competent mechanic constantly upgrading their skill not only through assembling parts but through constant practice, studying new diagnostic trends and observing their peers when diagnosing the car. This is where most of the mechanics struggled to improve themselves as they mostly do the repeating job of assembling vehicle parts which causes them unable to properly diagnose a newer vehicle and a more delicate task such as wiring troubleshooting. This coupled by the fact that most of the tools used to carry out the repair job are best described as primitive which may not be helpful when carrying out delicate tasks. (Z. Baba, 2018).

It is also inevitable that mechanics must constantly update themselves on the current trends such as using a mobile application to offer their service to the potential customer as it is very vital for the mechanics survive in the era where most of the service such as food delivery can be done using mobile applications such as Foodpanda. By using the mobile application, mechanics are also able to expand their business provided that potential customers are satisfied with their service offer considering that door-to-door service has become increasingly common these days.

1.2 Problem Statement

Owning a car can be an expensive ordeal. It is known that there is a significant amount of university students who own a car in school where most of the cars are handed down from parents. Students tend to have a severe lack of commitment where they usually neglect their car when it comes to vehicle ownership such as skipping the maintenance schedule of the car. Skipping the maintenance of the car over time will eventually speed up the wear and tear of the car as well as permanently damaging the engine component of the car which will cause a huge bill on their wallet. This poses a huge problem as students are not ready to be financially responsible to afford a huge bill for a serious vehicle repair as most of the students will have to depend themselves when it comes to personal expenses without relying on their parents. Besides, most of the students do not exercise good time management when it comes to their active lifestyle where they do not allocate a time to bring their car to the workshop for regular maintenance.

1.3 Scope

The scopes of this project are:

- a) The project is targeted on UNIMAS student and people who live in Kuching
- b) The project required an internet connection when using the outdoor service function.
- c) The project was targeted at Kota Samarahan and Kuching.

1.4 Aims and Objective

The project is focused on the following objectives:

- a) To develop a mobile app to remind the student to service their car and they can select the option for door-to-door servicing the car.
- b) To provide time-based reminders for the user so that they know when to service their car and to provide a door-to-door service for the mechanic to service the user's car outside their workshop.
- c) To evaluate the feasibility of the proposed app

1.5 Brief methodology

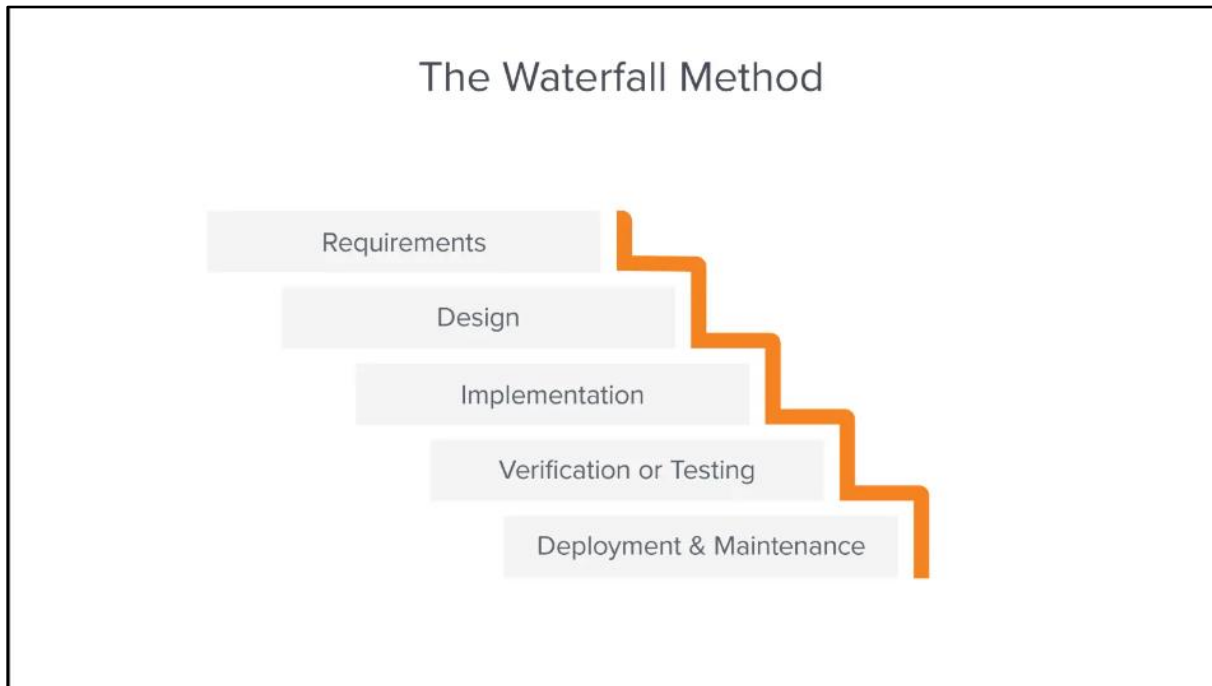


Figure 1.0: Waterfall Model Methodology

(Source: https://www.tutorialspoint.com/sdlc/sdlc_waterfall_model.htm)

Figure 1.0 shows the flow of waterfall model methodology. The methodology used for this project is Waterfall Model Methodology. There are five stages of the waterfall methodology. First was requirement analysis where this project needed to understand the project requirement, gather all the project requirements, and document the requirements such as the timeline needed for completion.

Next was the design, this project needed to study the requirement specification from the analysis done and preparing for the system design which helps in specifying hardware and system requirement which helps in defining the overall system architecture.

The third stage was implementation where this project needed to develop the system in a small program which was integrated into the next phase where each unit is developed and tested for the functionality.

The next stage was integration and testing where the developed units are integrated into the application after testing was done. Integration of the entire application would be tested to troubleshoot any possible bugs and problems.

When all the functional testing was done, the product is then deployed to the customer for evaluation and released to the market. This stage was called as deployment of system.

Lastly was the maintenance stage where patches are released to fix the potential issues within the system. The better version is released as an update where the maintenance was done to deliver the change in the customer environment.

Waterfall Model is chosen over the fact that it is very easy to understand and use as well as simple. It is also easy to manage where each phase has specific deliverables and review process, and the stages are clearly defined. It also helps the developer to properly document the process and result as well as arranging the task.

1.6 Significance of Project

MyVec is a mobile application which helps the user to remind themselves of the upcoming maintenance of the car. Users can optionally choose to have a door-to-door service on their car. For door-to-door service, mechanics would be able to come to the user's place to do vehicle maintenance. This helps the users in many ways as it helps save user's time as well as save the user from a potential major maintenance.

1.7 Project Schedule

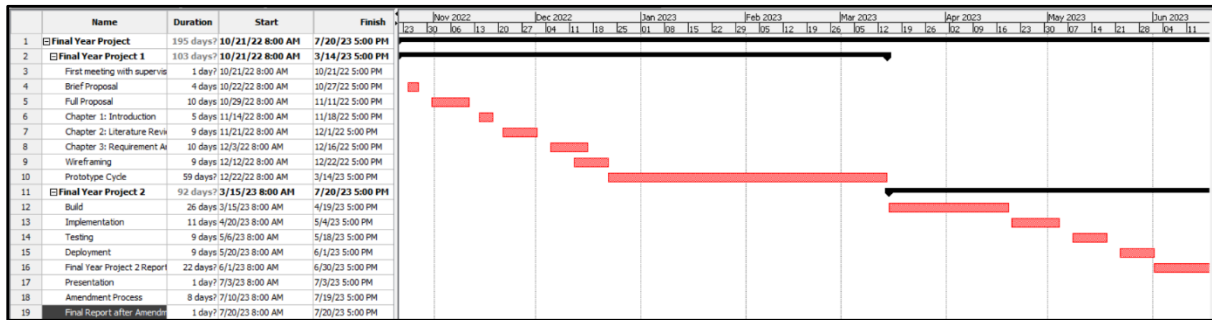


Figure 1.2 Project Schedule for MyVec Application

1.8 Expected Outcome

The project expected outcome is that students will be able to use the apps to remind them to service their car. Students will be able to use the apps to request for door-to-door service when they are not having time to service their car. Additionally, workshop owners will be able to use the app to provide the service to the student.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

In this chapter, 3 existing systems would be reviewed which have similar functions when it comes to mobile vehicle repair services, namely Pomen, Serv and Carput. Additionally, the proposed system will be discussed along with the tool used for the system.

2.2 Review on Existing Systems/Applications

The mobile application used for automobile users has existed for years. In this section, the existing mobile application will be a review that is used to locate the nearest car workshop and contacting the nearest workshop. All these mobile applications have their own characteristics and functions.

2.2.1 POMEN App

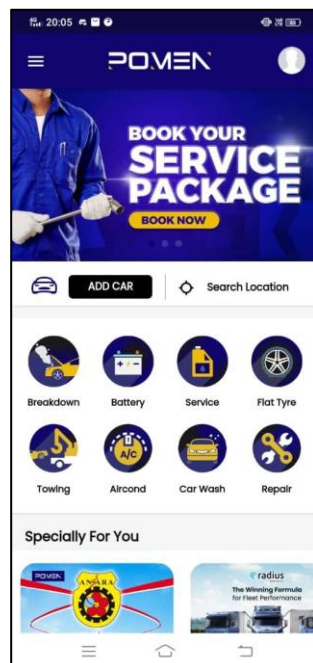


Figure 2.1 Pomen application

Pomen application was developed and launched in October 2018 by Mr Nazmi Najib. Pomen serves as a platform for vehicles' users to the local repair business. Every single Pomen merchant's workshop is committed to helping those in need. One app is for car owners,

while the other is for workshops. Pomen App provides a plethora of services such as vehicle breakdown rescue, car battery services, vehicle service such as changing oil, flat tyre repair and so on. Moreover, the services that they provided are 24/7 emergency roadside assistance in collaboration with myassist which mean that users are entitled to utilise the application anytime they want should they encounter a vehicle breakdown on the road. The mobile apps have more than 1000 mechanics and workshops available so that the user is able to choose the workshop they prefer. Users can get the price quotation for the services so that they are able to confirm the price within their budget before they decide to do the services. Pomen accepts credit and debit payment which gives users a peace of mind when it comes to the payment option The mobile application was available in selected areas such as Klang Valley, Ipoh, Johor, Melaka, Negeri Sembilan and East Malaysia. (Zulhilmi, 2019)

The POMEN App's primary feature is the use of big data analytics (BDA). When a user seeks services, the app will gather information about the breakdown of the automobile, including the reasons for the breakdown, the location, and the model of the car. The POMEN App also allows users to create a single profile for their entire family to use within the app. This will make it possible for everyone to receive updates about the state of a family member who is suffering emergencies on a constant basis.

2.2.2 Serv App

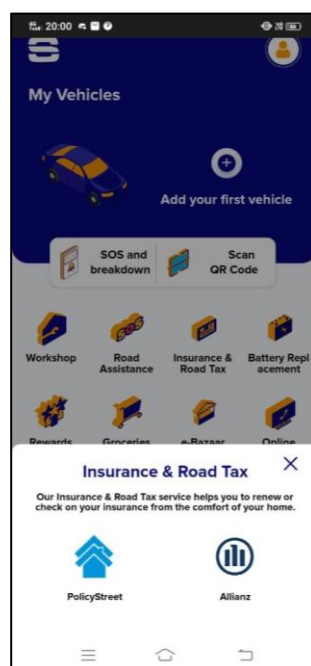


Figure 2.2 Serv Application

Serv application was launched in September 2017 as a start-up application that slowly gained its foot in recent years. They offer a one stop solution for vehicle owners when it comes to vehicle maintenance where the user can book an appointment with the merchant workshop for vehicle servicing. They are given a price quotation for the vehicle services beforehand. One of the most interesting parts of the service is that they offer a 7-day after sales warranty to the user to give users a peace of mind to ensure total reliability of the vehicle. The vehicle services offered by the merchant workshop range from oil changing to suspension repair. (E. Pikri, 2017)

Additionally, users may choose outstation vehicle servicing should the user be unable to come to the workshop. The application offers 24/7 vehicle road assistance service as well as insurance and roadtax renewal service which ease the user in many ways. The users can pay their bills through the application as well which makes it a one stop solution for vehicle owners.

However, Serve has a drawback where they serve in the limited areas due to the limitation of merchants available. Additionally, the user interface of Serve resembles the Pomen app which can cause confusion among the users.

2.2.3 Carput App

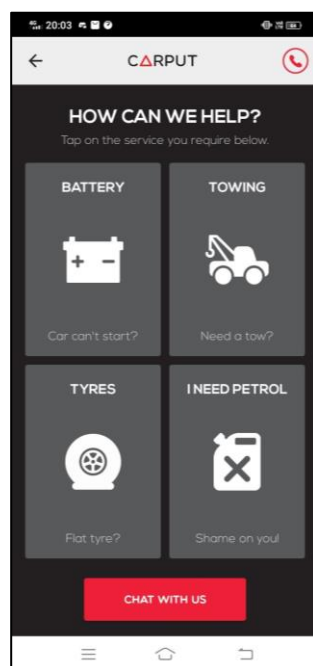


Figure 2.3 Carput Application

Carput application was launched in 2016 by The Battery Shop Sdn Bhd. The application allows the users to connect with the Carput roadside professional to help the user's car when their car experiences a car breakdown on the road. They have a proven track record of assisting the users in less than one hour in which they help more than 40000 users on an average of 39 minutes. (Koh, 2019).

The mobile application features several services such as battery replacement, car towing, tyre replacement and petrol delivery services. Petrol delivery service was the most notable service as they were able to deliver fuel such as RON 95, 97 and Diesel. They also have a free delivery of car batteries, and the installation of batteries are free of charge.

The flipside of the app is that the services they provide are a little limited compared to the competition and they do not have a 24/7 services for road assistance service as they only operate from 7:00 a.m. to 11:30 p.m.

2.3 Comparison on Existing Systems/Applications and the proposed System/App

Table 2.1: Comparison between MyVec and similar mobile application

	Pomen	Serv	Carput	Myvec
Year Launched	2018	2017	2016	2023
Service Area	Klang Valley, Ipoh, Johor, Melaka, Negeri Sembilan and East Malaysia	Selangor, Johor, Melaka, Perak, Kelantan, Terengganu, Pahang	Kuala Lumpur, Johor, Ipoh, Seremban and Melaka.	Kota Samarahan, Kuching
Web-Based Application	Yes	Yes, but	Yes	No

			most feature only available in app		
Download & Installation		Free	Free	Free	Free
Offered Services	User Registration	Yes (One for mechanics and one for users).	Yes	Yes	Yes
	Car Type Selection	Yes	Yes	Yes	Yes
	Pickup Service	Available	Available	Available	Available
	Drive-in	Available	Available	Available	Available
	Road assistance service	24 Hours	24 Hours	7.00 a.m. to 11:30 p.m.	Depending on the opening time of the workshop, most workshop open from 8am to 5pm
	Booking	Available	Available	Available	Available
	Road tax Renewal service	Not available	Available	Available	Not available
	Petrol Delivery	Not available	Not available	Available	Not available
	Tyre replacement	Available	Available	Available	Not available
	After sales	Not available	7 Days	Not available	Not available

	warranty				
	Battery replacement	Installation and delivery are available with a charge	Users can buy the battery from the app and the installation and delivery are available.	Free installation and delivery.	Installation and delivery are available with a charge
	Car wash	Available	Not available	Not available	Not available
	Quotation	Available	Available	Available	Available
User Application	Android	Available	Available	Available	Available
	iOS	Available	Available	Available	Available
Connection Type	Wi-Fi	Available	Available	Available	Available

From the table above, all 3 apps serve a similar base function which primarily offers outstation service and road assistance service. However, all 3 apps are shown to be very different in many ways.

One of the main differences was the coverage area. Pomen applications were able to serve the user in certain areas in Peninsular Malaysia and the East Malaysia while Serv served areas such as Selangor, Johor, Melaka, Perak, Kelantan, Terengganu, Pahang. Carput serves areas such as Kuala Lumpur, Johor, Ipoh, Seremban and Melaka. Serv and Carput did not offer their service in East Malaysia was probably due to the public's lack of interest in the outstation mobile services.

Besides, Serv have after sales warranty for their services which is a very important feature that a mobile application should have while Pomen and Carput do not have the said service.