MOBILE APPLICATION FOR FRESH FOOD ORDERING

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Thesis submitted in fulfillment of the requirements
for the award of the degree of
Bachelor of Computer Science (Computer Systems and Networking)

Faculty of Computer System & Software Engineering

UNIVERSITI MALAYSIA PAHANG

MAY 2019

ACKNOWLEDGEMENTS

First and foremost, thanks to Allah of His Mighty I can complete this Undergraduate Project successfully. I would like to express my sincere thanks to the individuals who have helped me in other to complete this project.

The deepest appreciations to my supervisor, Sir Mohd Faizal Bin Ab Razak for the guidance, encourage me to the highest peak and provide me the opportunity to prepare the project. Without his guidance and help, this project might not complete as the way it is now. I also would like to express my gratitude to the lecturers of my faculty who are willing to help me to complete this thesis.

I would like to thank my beloved family for the encouragement and always supporting me while I am completing this project. With their advices and support, I get encouragement and faced the problems.

Finally, I would like to give special thanks to all my friends who directly or indirectly helping me, gives the opinion and support during the completion of the task

ABSTRAK

Pada abad ini, banyak kemajuan dalam teknologi mudah alih telah diwujudkan untuk membantu masyarakat dalam kehidupan mereka. Mobile Application for Fresh Food Ordering ini dibangunkan untuk semua orang di Malaysia untuk membuat tempahan makanan-makanan segar dari lokasi yang berlainan dengan menggunakan teknologi mudah alih. Bukan itu sahaja, ia juga memudahkan penjual makanan-makanan segar untuk menyediakan perkhidmatan menghantar makanan-makanan segar. Pada masa kini, pasar pagi dan pasaraya masih menggunakan pendekatan lama, dimana pelanggan perlu beratur dalam barisan panjang dan bersesak-sesak untuk membeli makanan segar, terutamanya pada waktu puncak. Oleh itu, pendekatan lama ini memakan masa yang lama dan membuang masa pelanggan. Selain itu, pasaran luar talian mempunyai ketersediaan yang terhad dan setiap pasar mempunyai kekangan ruang sehingga ia tidak mempunyai banyak pilihan untuk pelanggan memilih makanan-makanan segar. Oleh sebab itu, masalah ini akan membazirkan wang pelanggan dan tidak memenuhi keperluan pelanggan. Tujuan projek ini adalah untuk menyediakan pelanggan dengan perkhidmatan tempahan makanan-makanan segar, menunjuk kepada lokasi peniaga dengan aplikasi ini menggunakan antara muka pengguna grafik GPS dan Peta Google. Maka, lebih mudah bagi pelanggan membeli barang-barang segar tanpa perlu pergi ke pasar pagi dan pasaraya dan menjimatkan masa pelanggan.

ABSTRACT

In this century, many advances in mobile technology have been created to help the community in their lives. Mobile Application for Fresh Food Ordering is developed for everyone in Malaysia to place fresh food orders remotely from different locations via mobile devices. Not only that, but it also facilitates sellers of fresh food to provide services send fresh food to customers. Nowadays morning market and supermarket still using the old-fashioned approach, which is customer need to line up in long queues and squeeze to buy fresh food, especially at the peak hour. Because of that, this old-fashioned approach takes a lot of time and wasting customer time. Besides that, because due to the limited availability of offline market and each market has space constraints so it does not have a lot of choices to choose fresh food. Hence, this will waste customer money and does not meet customer requirements. So, the purpose of this project is to provide customers with fresh food requesting service, pointing to dealer's location with this application using GPS and Google Map graphical user interface. As a result, it is easier for customers to buy fresh items without having to go to the morning market and supermarket and save customers time.

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LIST OF ABBREVIATIONS

API	Application Program Interface
CSS	Cascading Style Sheets
GPS	Global System for Mobile Application
GUI	Graphical User Interface
HTML	Hypertext Mark-up Language
MySQL	My Structured Query Language
OS	Operating System
PHP	Hypertext Pre-processor
RAD	Rapid Application Development
SDLC	Software Development Life Cycle

CHAPTER 1

INTRODUCTION

1.1 Overview

This chapter gives a general summary and review of the proposed project in the thesis. Section 1.2 will tell about the complete background for fresh food ordering application. Next, section 1.3 gives a brief description of the problems that people are facing when using the old system. While the goal and objectives for the fresh food ordering application are stated in section 1.4. Meanwhile, in section 1.5, the scope of the study is discussed in the outline of the limitations of the application. Finally, the thesis organization is discussed in section 1.6.

1.2 Background

Technology plays an important role in our society, especially in the 21st century. There are many requests for mobile devices, frameworks, applications and so on to meet the needs of individuals, societies, associations and possibly countries. This is because of our modern day life that demands their lives easier, smaller in error, and what matters is to save their time. Therefore, creating a mobile application for the fresh food system is a satisfying solution that encompasses all the demands. There are lots of the systems and applications existed nowadays that meet with those requirements mainly uses in supermarket services. However, the systems and applications only apply to a big supermarket such as Redtick, Tesco and Grocer Express and not widely implement for morning market, farmer's market and wet market. This project focuses on developing an open-source mobile application that would be helpful for everyone in Malaysia for fresh food ordering.

Since the widespread expansion of mobile devices and wireless technologies, mobile applications have become a global phenomenon and mobile applications that have been downloaded by smartphone users have been increasing year by year. With the help of Global Positioning System (GPS) and integration with Google Map and Google Places API on smartphones with delivery systems, retail delivery can be improved in terms of quality of service to customers. As a result, increased customer satisfaction can be achieved. This type of application can be the best tool and very helpful to the customer by ordering the order easily, can track the location of a specialized seller and make the system more systematic with a less human error.

Primarily, customers will place their order directly from their smartphones without being in the farmer's market, morning market and wet market. The Android-based mobile application name is Easy Market that comprises of different functionality for a systematic fresh food ordering approach. The customers only need to order their choice of fresh food by scrolling their smartphones to view meal menu and click a button to place their order by the Easy Market platform that running on the Android-based mobile device. While the sellers can use the Easy Market application to register their business, customize their menu list and post the list in the application for the buyer to view. Both the customers and sellers need to register with the mobile number, username and password for the authenticity purpose.

1.3   Problem Statement

At this juncture, the basic problem is the farmer's market, morning market and the wet market still using the old-fashioned approach, which is customer need to line up in long queues and squeeze to buy fresh food, especially at the peak hour. Because of that, this old-fashioned approach takes a lot of time and wasting customer time.

The second problem is less variety and option. This is because due to the limited availability of offline market and each market has space constraints so it does not have a lot of choices to choose fresh food. Hence, this will waste customer money and does not meet customer requirements.

Lastly is multiple trips. Usually, the customer tends to forget the fresh food item that they want to buy, so the customer needs to trek back to the market for the single item that has been forgotten. Because of that, customer missed buying the item, wasting money and time.

1.4   Goal and Objectives

The goal of this project is to develop a mobile application for fresh food ordering for the customer. The objectives of the project are:

    i.   To study the issue of selling fresh food at the market.

    ii.   To develop a mobile application that allows the customer to order fresh food from Mobile Application for Fresh Food Ordering.

    iii.   To evaluate the effectiveness of the proposed mobile application system compare to the existing system.

1.5   Scope

    i.   The development of this project is focused on the mobile user which is customer among residents in Kuantan, Pahang.

    ii.   The total of distance that Mobile Application for Fresh Food Ordering able to delivery is 20 km.

    iii.   This mobile application is only developed for the Android platform.

1.6   Report Organization

This chapter provides relevant information which encompasses to the background, problem statement, goal and objective, and scope. The rest of the proposal is as laid out in Figure 1.1. This proposal composed of five chapter.
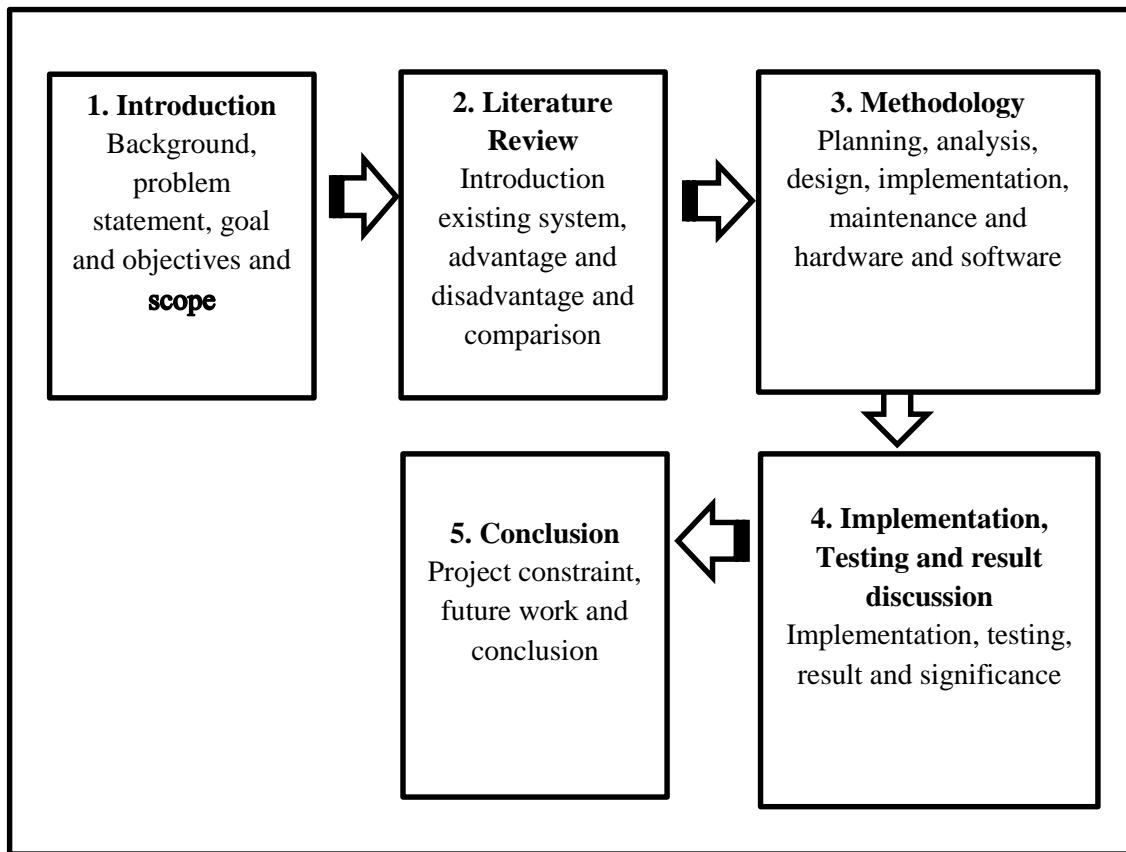
Figure 1.1   Thesis Layout

Chapter 1 describe briefly about the project from a background, problem statement, goal and objectives, project scopes and general methodology.

Chapter 2 covering information about the study of the project in general. In this chapter, it explains the detail of the project, the advantages, and disadvantages of the existing systems and comparison between the existing systems.

Chapter 3 describe the research methodology used in developing this project which is planning, analysis, design, implementation, maintenance and hardware, and software.

Chapter 4 covering the implementation, testing, and result for this project. Step by step implementation for the application is showed and explain in this chapter.

Chapter 5 conclude all about the project and briefly discuss the research constraint and future work for this project so it can be a guideline to continue working on it.

CHAPTER 2

LITERATURE REVIEW

2.1 Overview

This chapter consists of six sections which are section 2.2 will explain about mobile application and the categories which are a web-based, hybrid and native application that created specifically for a given platform. Meanwhile, section 2.3 will discuss mobile platform which are IOS, Android, and windows. Next, section 2.4 will give a brief explanation of GPS. Section 2.5 will discuss the existing system that covers Jaya Grocer, Reddick and Grabs. Section 2.6 will explain the comparison between the existing systems. Lastly, section 2.7 is the conclusion of this chapter that is summarized from the research done.

2.2 Mobile Application

In a mobile application, it can be classified into three major types which are native applications, mobile web applications, and hybrid applications. The early development of mobile application shows that type the application only comes in two types, native application, and mobile web application. Later, researchers design new approaches to mobile applications, a hybrid approach seen as a combination of native and web application approaches.

2.2.1 Native Mobile Application

The original mobile app set the specified binary program set for mobile operating systems (OS) and certain devices (Tun, 2014). Inside this techniques, mobile apps set up simultaneously for mobile OS and for each application, specially developed for one mobile OS. So this app cannot be used on other platforms. In fact, native apps need to be installed a different version for every single mobile platform. All programming applications interfaces (API) can be accessed through native applications without any constraints. Figure 2.1 shows the flow of the native application development method.
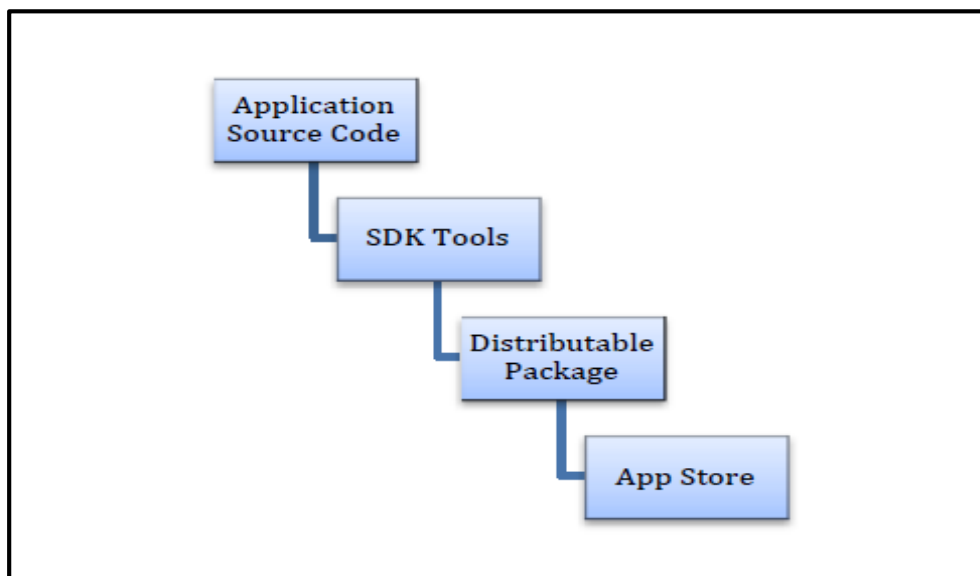
Figure 2.1   Flow of Native Application

2.2.2 Mobile Web Application

The mobile web application functions in a way that's like a native application. According to Tun (2014), websites that store on servers or synchronize HTML, CSS, JavaScript and other related documents stored on smartphones are definitions of the mobile web application. All of this utilizing mobile web applications, web applications take up only a least of main memory mobile devices. But, a good way to use web applications, there should be an internet connection connected. That's because the database is related stored on the web server and the user that want to access the database must be in online mode. However, the system design for web apps optimizes the use of the cache one of the features available on mobile devices to grow whole performance. Figure 2.2 shows the flow of mobile web application development.
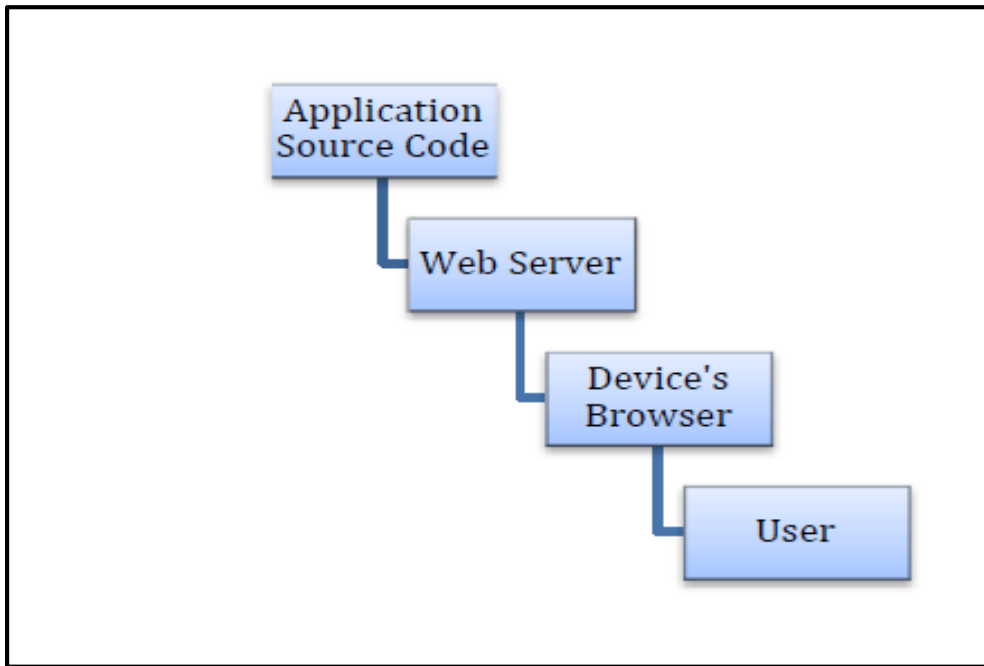
Figure 2.2   Flow of Mobile Application

2.2.3   Hybrid Application

The hybrid mobile app approach is seen as both a combination of native approaches and web applications, however, it most likely looks like a mobile web application, not a native application. The use of this technique, designer code their own structure, take advantage of an immediate advance instrument, for example, "Phone Gap," an open source library that offers a JavaScript programming interface giving access to the hidden operating system functionality gadget(Tun, 2014). It is built using HTML, CSS and JavaScript web technologies and implemented in the original Hybrid approach uses the device browser engine that creates and shows HTML content in the full screen of Web display controls. Figure 2.3 shows the flow of the hybrid application.
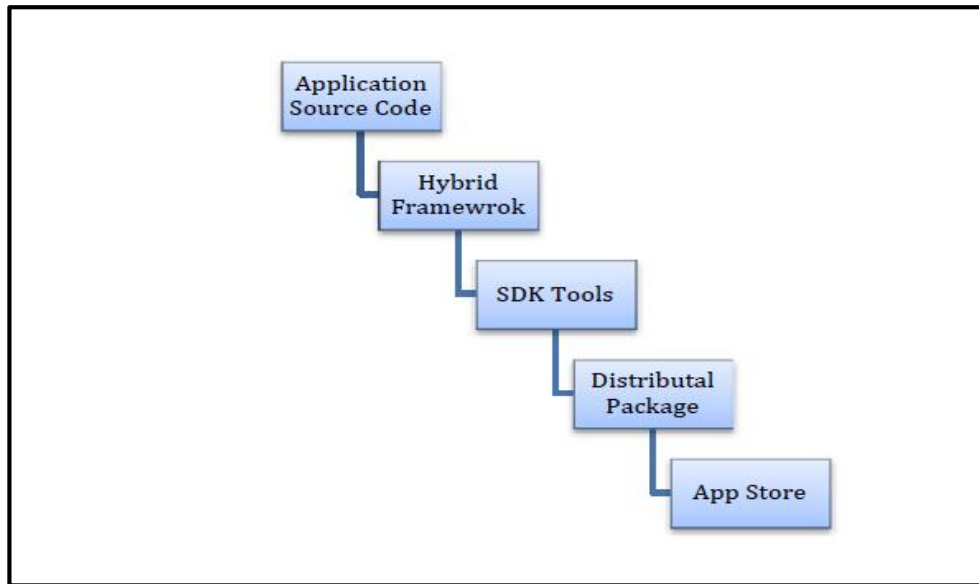
Figure 2.3　　　Flow of Hybrid Mobile Application

2.2.4　Comparison Between Native, Web, Hybrid Application Based On The Advantages And Disadvantages

This part explained the advantages and disadvantage of three applications.

Table 2.1　　　Advantage and Disadvantage for Three Application

Application	Advantages	Disadvantages
Native	i.　Easily combined with mobile devices function	i.　Consume a lot of main memory
	ii.　Usually, load and run process faster from web apps.	ii.　Need a mobile device to use.
	iii.　Utilize the push notifications feature.	iii.　It's hard to get the internet connection that needs to be downloaded for the latest version.

Table 2.2   Advantage and Disadvantage for Three Application (continuation)

Application	Advantages		Disadvantages	
Web-mobile	i.	Can be built for all devices.	i.	Internet connection required for use.
	ii.	Take some of the phone's main memory.	ii.	Push notifications are not available for the service.
	iii.	Smartphones are not necessary, only mobile devices with internet connection required to use their apps.	iii.	Unable to use all device functions.
Hybrid	i.	Fast and easy to be developed and implement.	i.	Slower responsiveness than a native application.
	ii.	Requires a low cost for maintenance.	iii.	Less performance.
	iii.	Not too difficult to update apps.	iii.	Not all device functions can be accessed.

Source :(Luxford & Dickinson, 2015)

2.3   Platform In Mobile

There are three major smartphone platforms that need to be considered in developing existing mobile apps which are Android, iOS and Windows phones. Android is Linux open source and partially open. Androids are more customizable because the interface and basic features are from top to bottom(diffen, 2013). But different from iOS. IOS design elements are sometimes seen as more user-friendly(diffen, 2013). Windows Phone operating system (OS) is a smartphone OS and its development is under Microsoft. Android has usually used platforms that many different phone manufacturers can use but

not to iOS. IOS only compatible with Apple devices. But, for this project, it will use the Android platform. Table 2.3 shows a comparison of the mobile platform.

Table 2.3   Comparison of Mobile Platform

	Android Platform	IOS Platform	Windows
Language	Java	Objective-C	C++,C# and VB NET
Tools	Android SDK	Xcode IDE	Microsoft Visual Studio
Packaging format	apk	.app	.xap

Source:(Tun, 2014)

2.4   Global Positioning System

For years, people have used various techniques to navigate around the world. Traditionally, ancient people go in directions by using stars and landmarks to travel from one location to another, while maps and compass make it easy for people to get lost. The emergence of the Global Positioning System (GPS), meaning people no longer rely on traditional techniques to look for directions(Crato, 2010). The triangulation method is used using an algorithm to determine the exact location of the user whose data is received by the GPS receiver that has been sent from the satellites. There are several situations that can be utilized from GPS technology such as to determine a particular location, to measure the distance between two locations, to navigate to a predefined destination and to create a digital map. Based on some facts about GPS technology, it is suitable for use in mobile applications for mapping, location services and as a guide. This statement can be backed up today, in general, every smartphone already has an embedded GPS function, ready to use at any time without the necessary complex settings and the latest version of the smartphone comes with GPS technology which is Assisted GPS.

2.5 Existing System

The existing system developed by software programmers and other researchers is based on different approaches. So, the purpose of this existing system will be analyzed in different criteria such as functions, features, and technologies used. Hence, three existing systems related to fresh food ordering applications have been selected to increase the proposed application to make it more effective and orderly.

2.5.1 Jaya Grocer

Jaya Grocer is a mobile application specialized groceries ordering service to the customer through their smartphone or iPad. Jaya Grocer was founded in 2007 by individuals with a vision for good-value supermarkets to meet the needs of Klang Valley consumers to meet the needs of quality household products and household goods(T. sdn Bhd, 2016). Start with a small branch of various types and various imported products on shelves, to fresh produce and groceries. Since then, Jaya Grocer has more than 20 branches over the last 10 years and become the largest premium supermarket in Malaysia and continue to grow and serve customers. Today, with Jaya Grocer Online is a one-stop center for all customer daily needs. Jaya Grocer provides an excellent online shopping experience through a variety of quality products and reliable delivery services. Jaya Grocer provide this platform to make it easy for customers to generate Daily Fresh Produce, an easy way to shop and Speedy Delivery for convenient shopping. Figure 2.4 is the main page of Jaya Grocer.

Figure 2.4   Main Page Jaya Grocer

There are 10 categories in Jaya Grocer which are a fresh market, dairy & chilled, food essentials, frozen foods, organic, bakery, snacks, beauty and health, and baby care. Firstly customer can select what they want to order based on the menu list provided by the application and click the cart button to go to the checkout process. Then, the customer needs to fill the address and the date for the items to be delivered before clicking the submit order. Finally is the payment tab, this section customer can choose how to pay the item, whether the customer pays cash on delivery, debit cards, MasterCard and Visa. Besides that, there are also search button, so it is easy for the customer to find what kind of item they want. Next is a customer can know if Jaya Grocer provides delivery at their area by fill the postcode number. Jaya Grocer also provides chat room and customer chat will reply within a few hours.

Jaya Grocer mobile application requires the customer to log in before they could use the application. The application provided three platforms for the customer to login which is by Facebook, email and through customer mobile phone number. When customers choose to log in with Facebook, they do not need to manually register because the platform link with Facebook will register them automatically. Next, if the customer chooses to log in with their own mobile phone customer require to fill their mobile phone, email address, password and confirmation password. However, for the customer to login with email for the first time, they need to first register with their own email and wait for confirmation from the system app administrator before the customer can log in. Figure 2.5 shows the application login interface where users can sign up and login for both Facebook and email by simply clicking the button provided.
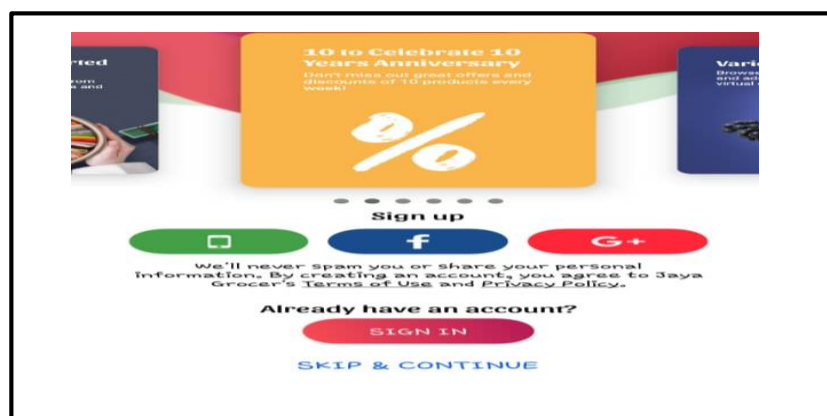

Figure 2.5   Login Interface for Jaya Grocer

The company that developed Jaya Grocer, the developer gives its customers two platforms that are appropriate for mobile customers based on current usage rating that is Android and iOS operating system. Meanwhile, for Android version development uses Java programming language and more coding method based on object-oriented programming concepts. Table 2.4 will discuss the advantages and disadvantages of the Jaya Grocer mobile application.

Table 2.4   Advantage and Disadvantage of Jaya Grocer

System	Advantages	Disadvantages
Jaya Grocer	i. The application is a free version for Android and iOS.	i. Customer need to login in order to place an order.
	ii. The customer doesn't need to long queue to pay the item.	ii. The application only covers the area of Klang Valleys.
	iii. Easy to use as the interface design very user-friendly.	iii. The technology of GPS and Google Map did not apply in this application to show the exact location of the supermarket.

2.5.2   Redtick

Redtick is an online shopping retail company established in 2010 that has an attractive layout that is not only easy in sight but makes it easier to buy(R. sdn Bhd, 2018). Redtick started with the concept of retaining the feel of shopping at a friendly neighborhood grocer that truly cares. By stocking fresh, quality products with sincere pricing. This is because of a simple tab that buyers can buy to quickly find the product they are looking for. Mothers who are not as smart as technology will find that shopping is easier through Redtick. The main purpose of this system is for the customer to orders fresh food directly from the laptop with only click the mouse and without the need to

drive a car and find the nearby supermarket to buy fresh food. Figure 2.6 is the main page of Redtick.
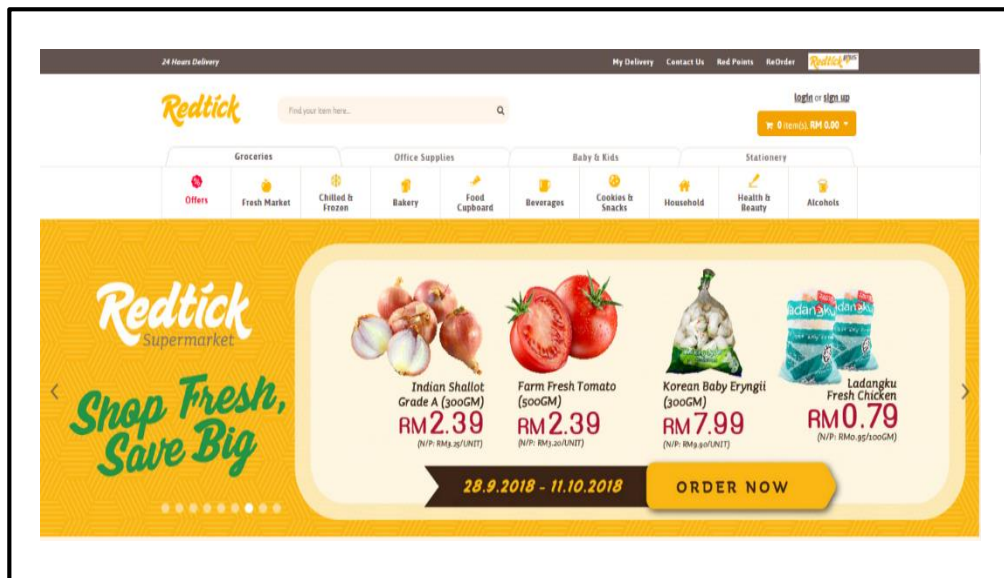

Figure 2.6   Home Interface for Redtick

There are 4 categories to ease the user to use the system and to make the system further organize which are groceries, office supplies, baby & kids and stationary. To purchase the item, customer required to sign up. After that, the customer can select which they want to order based on the list menu and click the cart button to check out the process, Then, the customer needs to fill the address and the delivery slots items to be delivered before clicking the submit order. Finally is the payment tab, this section customer can choose how to pay the item, whether the customer pays cash on delivery or through online payment via mom play.

There are several features in Redtick which are my orders, my favorite, my red credits, my red points, my vouchers, and my messages. Firstly my orders, the customer can know the list that has been placed since the creation of their account. Next is my favorites, the customer can see which item that they want. My redpoints will be rewarded whenever a customer does purchase at Redtick which is customer will earn 1 point for every RM1 that have been spending at Redtick. With every 100 points, the customer will get a discount voucher from Redtick quarterly and it comes in the form of RM1, RM5, RM10, RM20, and RM50. The vouchers will have the period of redemption of 3 months upon auto-generation but vouchers are not exchangeable to cash. Redtick also has a

personal direct chat, so the customer can directly chat regarding order or account. Table 2.5 will discuss the advantages and disadvantages of Redtick.

Table 2.5   Advantage and Disadvantage of Redtick

System	Advantages	Disadvantages
Redtick	i. The customer doesn't need to long queue to pay the item.	i. Customer need to login in order to place an order.
	ii. Easy to use as the interface is simple and well organized.	ii. The application only covers the area of Petaling Jaya, Kuala Lumpur, Seri Kembangan, and Puchong.
		iii. The technology of GPS and Google Map is applied in this application to show the exact location of the supermarket.

2.5.3   Bonfisken Seafood Market

Fish and seafood processing specialist for over 22 years, Bonfisken Seafood Market is a online grocery that will change any negative assumptions you had about buying frozen seafood. By freezing the fishes at sea, the freshness is sealed in along with the taste and nutrition. The frozen seafood are prepackaged into vacuum-sealed bags that can be stored for up to five months and ready to be thawed overnight when needed, which is more economical and environmentally-friendly. Bonfisken offers an impressive range

of seafood: cold-smoked, frozen raw, marinated, salmon terrines, smoked and fresh too. Figure 2.7 is the main page of Bonfisken Seafood Market.
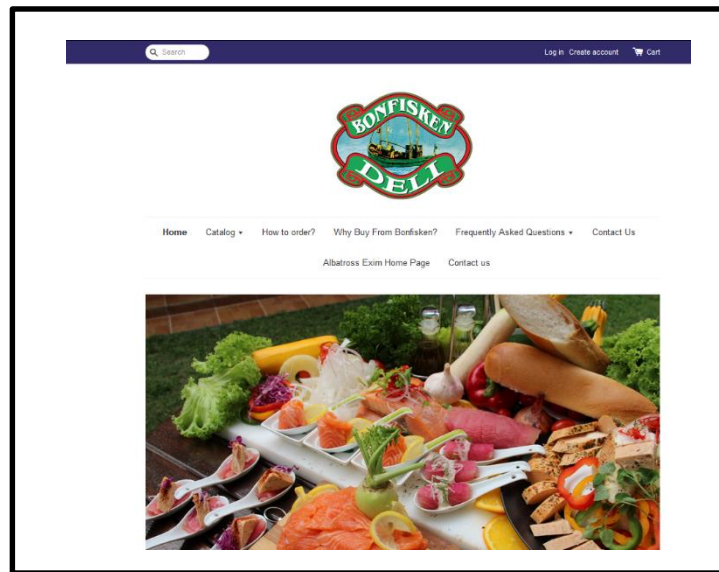
Figure 2.7   Bonfisken Seafood Market

Bonfisken Seafood Market requires the customer to log in before they could use the application. The application provided three platforms for the customer to login which is by Facebook, email and through customer mobile phone number. When customers choose to log in with Facebook, they do not need to manually register because the platform link with Facebook will register them automatically. However, for the customer to login with email for the first time, they need to first register with their own email and wait for confirmation from the system app administrator before the customer can log in. There are several categories in Bonfisken Seafood Market which are cold-smoked seafood, frozen raw seafood, marinated seafood, salmon trines, smoked seafood and fresh seafood. Bonfisken Seafood Market also provide the promotion item. Figure 2.7 is the main page of Bonfisken Seafood Market. Table 2.6 will discuss the advantages and disadvantages of Bonfisken Seafood Market.

Table 2.6   Advantage and Disadvantage of Bonfisken Seafood Market

System	Advantages	Disadvantages
Bonfisken Seafood Market	i. The customer doesn't need to long queue to pay the item.	i. Customer need to login in order to place an order.
	ii. Easy to use as the interface is simple and well organized.	ii. The application only covers the area of Kalng Valleys.
		iii. The technology of GPS and Google Map is not applied in this application to show the exact location of the supermarket.

2.5.4   Easy Market

The Android-based mobile application name is Easy Market that comprises of different functionality for a systematic fresh food ordering approach. The customers only need to order their choice of fresh food by scrolling their smartphones to view meal menu and click a button to place their order by the Easy Market platform that running on the Android-based mobile device. While the sellers can use the Easy Market application to register their business, customize their menu list and post the list in the application for the buyer to view. Both the customers and sellers need to register with the mobile number, username and password for the authenticity purpose. Table 2.7 shows advantage and disadvantage of Easy Market
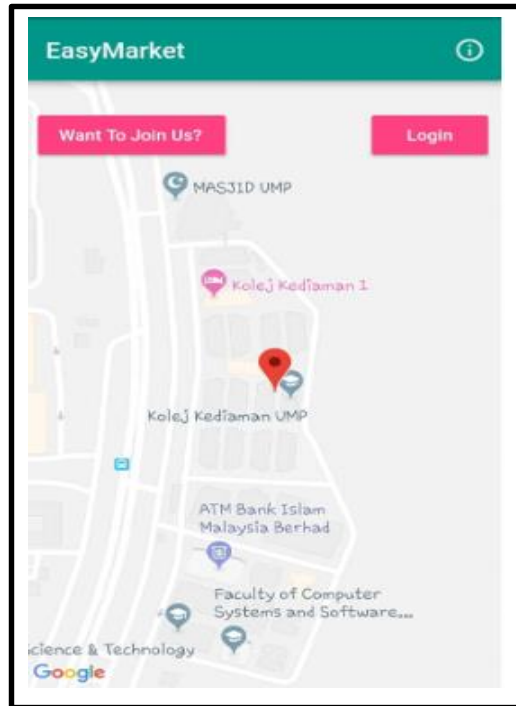
Figure 2.8   Easy Market Homepage

Table 2.7 Advantage and Disadvantage of Easy Market

System	Advantages		Disadvantages	
	iii.	The customer doesn't need to long queue to pay the item.	iv.	Customer need to login in order to place an order.
Easy Market	iv.	Easy to use as the interface is simple and well organized.	v.	The application only covers the area of Kuantan Pahang.
			vi.	The technology of GPS and Google Map is not applied in this application to show the exact location of the supermarket.

2.6   Comparison of Existing System

       This section will compare the three existing systems that have been reviewed based on several benchmarks such as technology used, features available in the system and others. The most interactive graphical user interface for the application is Redrick.. Table 2.7 shows comparisons between Jaya Grocer, Redtick,Bonfisken Seafood Market and Easy Market.

Table 2.8   Comparison Between Jaya Grocer, Redtick and Bonfisken Seafood Market

Features	Jaya Grocer	Redtick	Bonfisken Seafood Market	Easy Market
Interoperability	Mobile Application	Web-based	Mobile Application	Mobile Application
Platform	Android and IOS	Windows	Windows	Android
Area Cover	Klang Valleys	Petaling Jaya, Kuala Lumpur, Seri Kembangan and Puchong.	Klang Valleys	Kuantan, pahang
Type of services	Grocery	Grocery	Grocery	Grocery

Graphical user interface	The interface is simple and attractive.	The interface is simple and well organized.	The interface is simple and user-friendly.	The interface is simple and user friendly
Navigation user interface	Good navigation system.	Good navigation system.	Good navigation system.	Good navigation system

2.7 Conclusion

The conclusion of this chapter is about the literature review of the features associated with the proposed project and the three existing systems, Jaya Grocer, Redtick and Bonfisken Seafood Market. From the analysis, it is better to implement Google Maps as the integration between Google Maps and Android is easy and not too complicated. Additionally, the use of GPS operators that have built-in smartphones can be a good solution to determine location as external GPS hardware is not mandatory and therefore not burdens users. Based on the review, each system has its own advantages and disadvantages. However, there are also some features of system-wide similarities and different limits for each system. From this chapter, useful information based on the research that has been done can be used for the proposed application system and made improvements from it.

CHAPTER 3

METHODOLOGY

3.1   Overview

This chapter gives a summary and review regarding the methodology used in the development of the proposed project. Section 3.2 is the introduction to methodology and existing methodology. Next, section 3.3 will elaborate on the chosen methodology which is the Waterfall model methodology. Then, section 3.4 explains the planning phase, the first phase in the Waterfall model. While the analysis phase is discussed in detail in section 3.5. In section 3.6, the design phase consists of a context diagram, use case diagram, dialogue diagram, general architecture, package module, and a proposed interface will be described briefly. The implementation phase will be explained in section 3.7. The last phase of the Waterfall model method which is maintenance will be described in section 3.8. The details regarding the hardware and software requirement involve in the project development is listed in section 3.9. The timetable of the proposed project is produced and represented by the Gantt chart in section 3.10. Lastly, section 3.11 is the conclusion of this chapter.

3.2   Introduction

This chapter will explain about the entire Undergraduate Project system One and it covers the ways, methods, and approaches used in this project. This chapter explains about the methodology used in this project that shows the information of the study and develops the system. The methodology of the project makes the project conducted more systematic and the course of the project is more focused on achieving the objectives. The

selected methodology will guide to complete this project starting from the beginning to the end before launch it to the customer.

Nowadays, there a lot of software development modules and methods are available such as the Waterfall model, Prototyping model, Incremental model, Spiral model and Rapid Application Development (RAD). The selection of methodologies in application development is important by the developer in determining the success of the project.

In guiding and completing this project, which is a mobile application development, the Waterfall model methodology was selected. The reason why the Waterfall model is chosen, this is because of the model simple and easy to use. Besides that, the Waterfall design also has no overlap because once the previous level is completed then the other phases follow the flow and the time constraints for project completion in two semesters can be covered using this methodology.

3.3   Methodology

The application development used the Waterfall model as the methodology. There is five stage in the Waterfall methodology, which are a planning, analysis, design, implementation, and maintenance(Consulting, n.d.). Every stage needs to go through one by one before the mobile application for fresh food ordering can be experienced by the customer among residents in Kuantan, Pahang. Figure 3.1 shows a summary of the Waterfall model methodology phase.
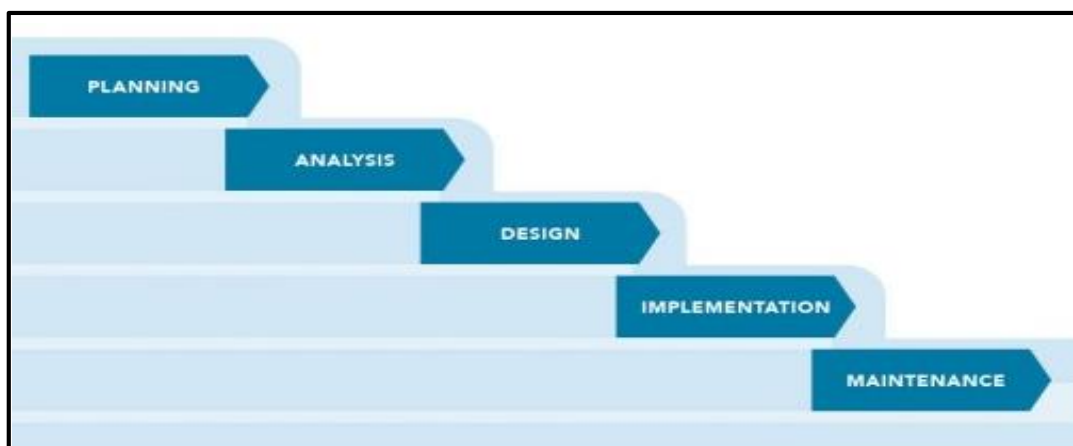

Figure 3.1   Waterfall model of Software Development Life Cycle Phases

3.4   Planning

The first phase in Waterfall model methodology is planning, the function of this phase is to determine the action from the beginning of the project to the end of the project. Therefore, the planning phase is the basic and fundamental part that will determine the success of the project. As mentioned earlier in Chapter 1, planning phase includes the problem statement, goals, objectives and scope of the project that serves as a feasibility study for project initiatives to gather and gather related materials, resources and information in the framework of mobile application development will work efficiently. The steps in the planning phase are as follows:

i.   Designation of the proposed system.
   a) System name: Mobile Application for Fresh Food Ordering
   b) System description: Resident in Kuantan, Pahang can order fresh food via smartphone with the integration of Google Maps and GPS handler to show the location of the seller.
ii.   Critically define the requirement, goal, objective and scope of the project.
iii. Conduct the project planning by scheduling the timetable of the Gant chart.
iv.   Keep track and monitor the project planning.

3.5   Analysis

For phase analysis, the definition of needs or functional requirements needs to be determined and analyzed. The analysis section can be based on several criteria such as based on existing applications, important features that are appropriate to be implemented and details about their function. Solutions from similar project vulnerabilities or requirements for upgrading existing applications need to be analyzed so that these solutions can be used for proposed projects. This phase will discuss user requirements, application requirements and available application features that can be implemented. The steps in the planning phase are as follows:

i.   Requirement definition for the user.
   a) Putting an order is an important feature for users to place orders remotely.

b) Order status is where users can view the status of their orders that include status "ready" to verify the seller.

ii. Analysis of existing system

a) Jaya Grocer mobile application

b) Redtick online shopping

c) Bonfisken Seafood Market

iii. Analysis of existing system, advantages, disadvantages, and comparison between them.

a) This analysis is discussed in Chapter 2

3.6 Design

In the design phase, all the definitions of requirements specified in the analysis phase will be converted to the graphical user interface. This phase also includes design features, functions, specifications and operations of mobile applications. The hardware and software requirements required to achieve project goals, identified during the design phase. Design requirements based on the characteristics and specifications to be used for the proposed application are as follows:

i. Context diagram

ii. Use case diagram

iii. Dialogue diagram

iv. General architecture

v. Package module

vi. Propose interface

3.6.1 Context Diagram

Diagrams are the diagrams representing the processes of a system. This figure also shows the relationship between systems and other external entities. Figure 3.2 shows the mobile app context diagram for fresh food orders.
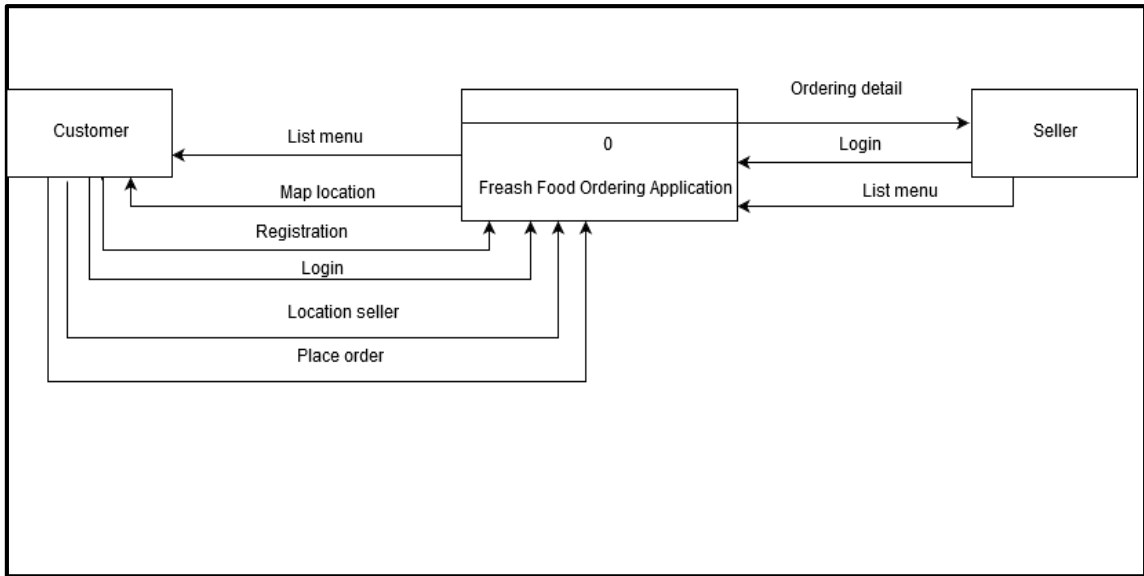
Figure 3.2   Context Diagram Mobile Application for Fresh Food Ordering

3.6.2   Use Case Diagram

Use the case diagram to describe the actions performed by external entities with the system. Figure 3.3 shows the mobile app use case diagram for fresh food orders.
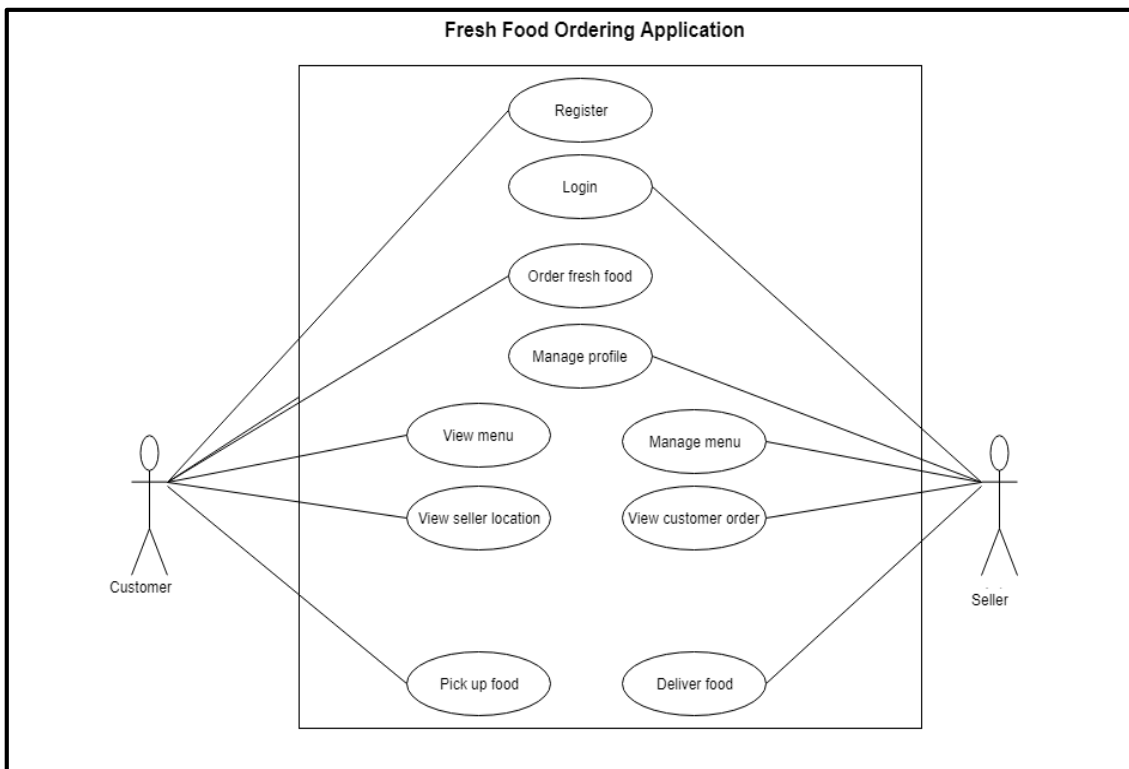

Figure 3.3   Use Case Diagram of Mobile Application for Fresh Food Ordering

3.6.3 Dialogue Diagram

The dialogue diagram on Figure 3.4 shows the sequence of the application. The main menu will be pop up first either it is the user or the admin. Based on the diagram, admin and customer need to log in before access the mobile application for fresh food ordering.
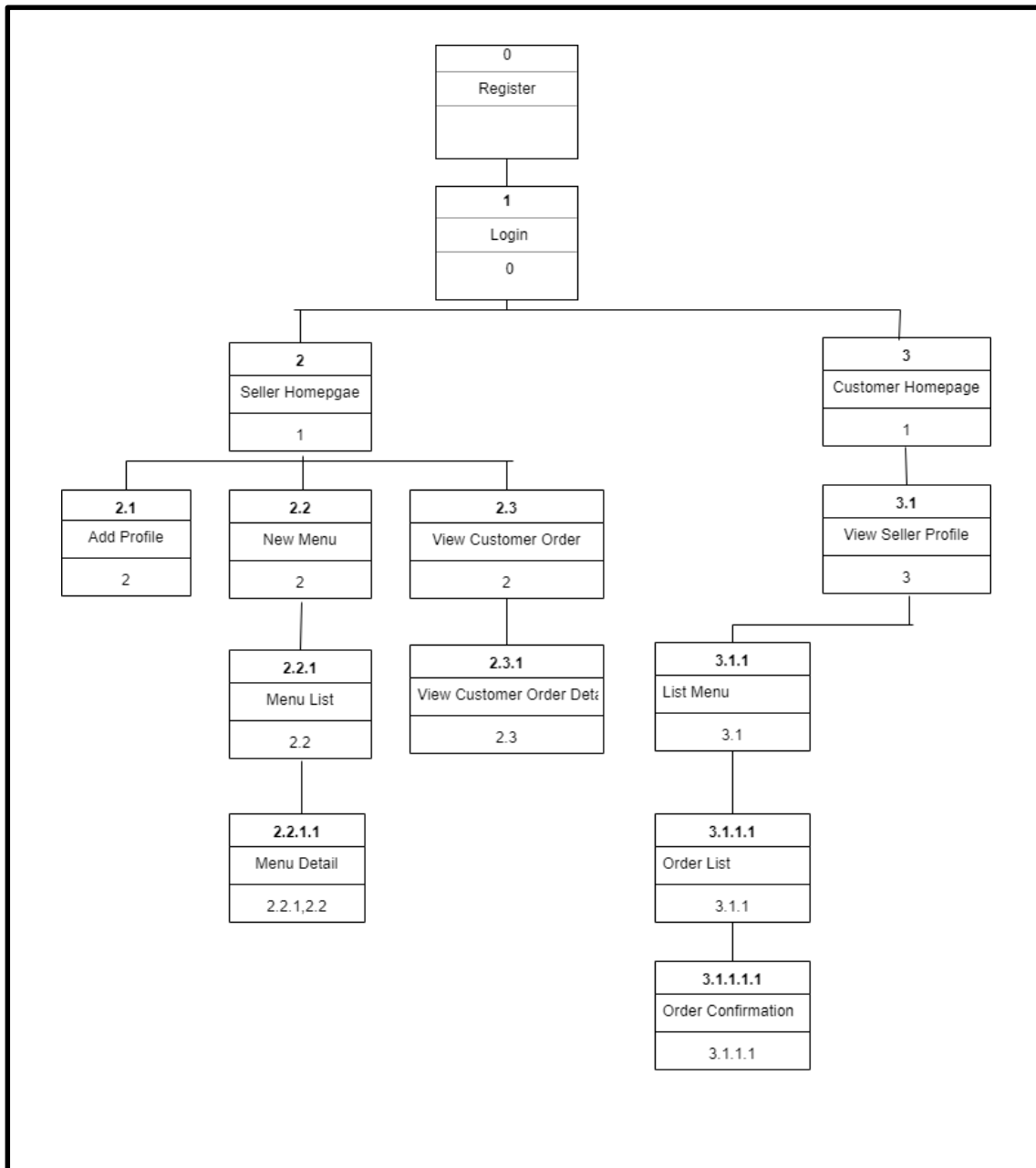

Figure 3.4   Dialogue Diagram of Mobile Application for Fresh Food Ordering

3.6.4 General Architecture

There is two general architecture which is general architecture for Fresh Food Ordering and general architecture of the mobile application.
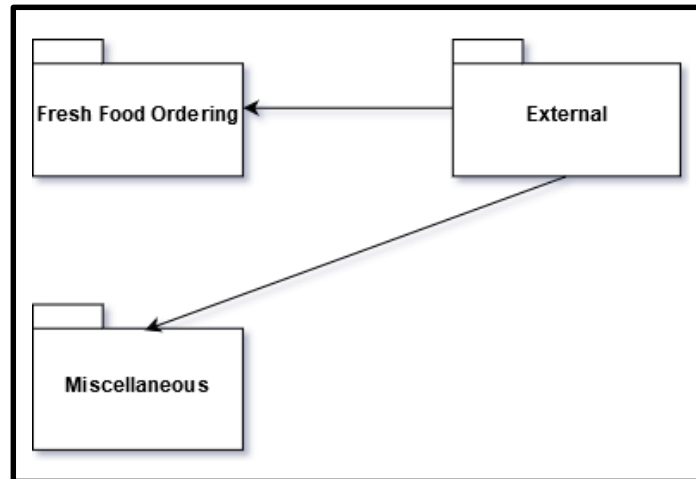

Figure 3.5   General Architecture Mobile Application for Fresh Food Ordering

Figure 3.6 shows the general architecture for fresh food ordering. It consists of three layers namely Fresh Food Ordering layer, External layer, and Miscellaneous layer.

  i.   Fresh Food Ordering Layer

The fresh food ordering layer contains all the fresh food ordering elements.

  ii.   External layer

The external layer contains all the elements that are concerned with a connection to the external system.

  iii.   Miscellaneous layer

The miscellaneous layer contains all the elements where the system database is independent of the user's input.

Mobile apps are typically structured as multi-layered applications that consist of user experience, business, and data layers. Architecture as shown in the picture above. There will be communication between the user and the presentation layer directly will the other is the backhand process. The first box is a mobile client application while the second is a mobile support infrastructure where data synchronization occurs between data access in client applications and local data to data access in mobile infrastructure. On the other hand, the client tool in client applications has two-way communication with the service agent in remote infrastructure. The service tools also send unreliable networks to services in remote infrastructure. Figure 3.7 shows the general architecture of the mobile application.
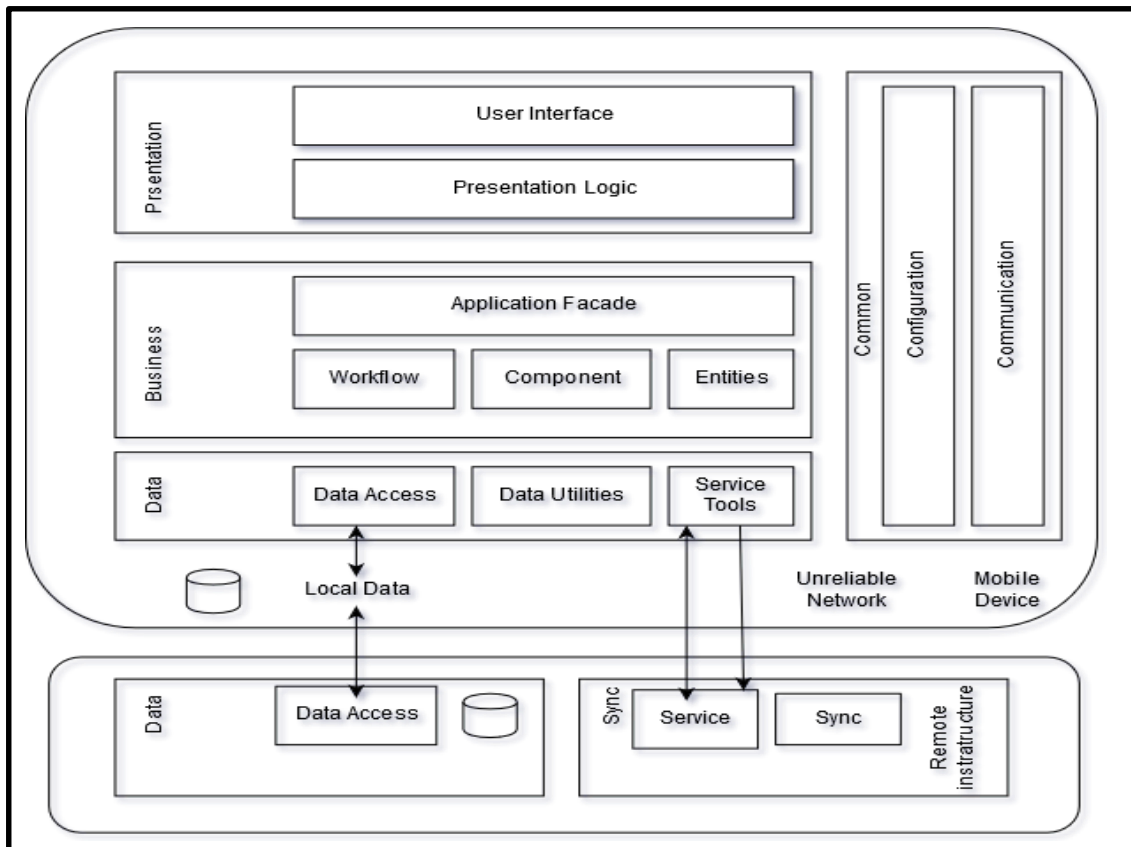

Figure 3.6   General Architecture of Mobile Application

3.6.5   Package Module

Figure 3.8 show module that involves in the Mobile Application for Fresh Food Ordering.   The customer module which is separated into five modules which are a register, login, list menu, seller location, and order status. While for seller module there are login, list menu, customer order and profile module.
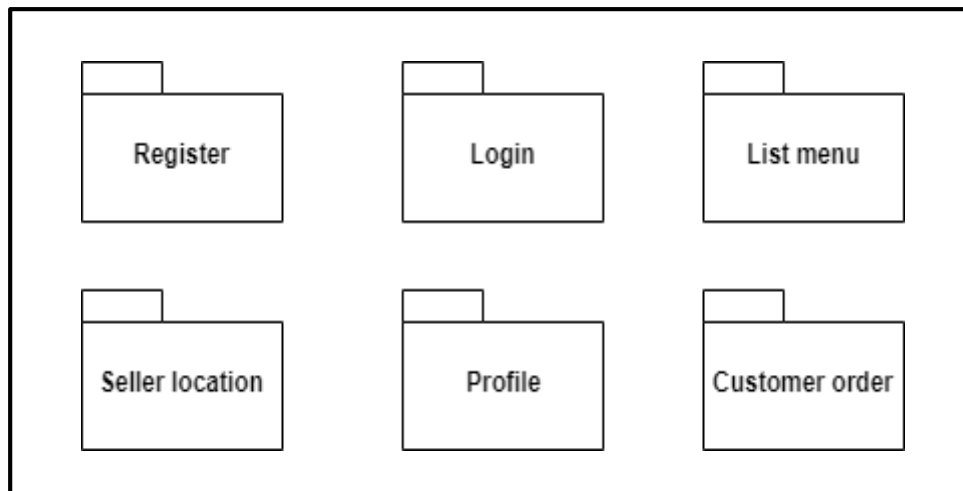
Figure 3.7   Package Module of Mobile Application for Fresh Food Ordering

All modules have different functions that distinguish each other. Therefore, customer and seller can perform different tasks on each module. Table 3.1 shows the module and it has a function that can be done.

Table 3.1   Module Function

Package Module	Function
Register module	The register module requires the user to register before purchasing the fresh food.
Login module	Customer and seller must log in in order to use this application.
List menu module	This package contain list menu of fresh food. In this module, the user can view the list menu of fresh food and make an order. Besides that, the seller is able to manage the list menu of fresh food.

Seller location module	This package help customer to find the location of the market/seller
Customer order module	This module will be view by the seller in order to prepare the order.
Profile module	This module will help the seller to manage the profile such as the title, time and location.

3.6.6 Proposed Interface

The Mobile Application for Food Ordering interfaces is divided into two types, buyer user interfaces, and seller user interfaces. There are several interfaces that both buyer and seller share together like login page.

i. Login Page

Figure 3.8 shows the login interface for the mobile application. This is the first interface when the seller and customer open the application. The seller and customer can go to the respective homepage if the username and password are valid.
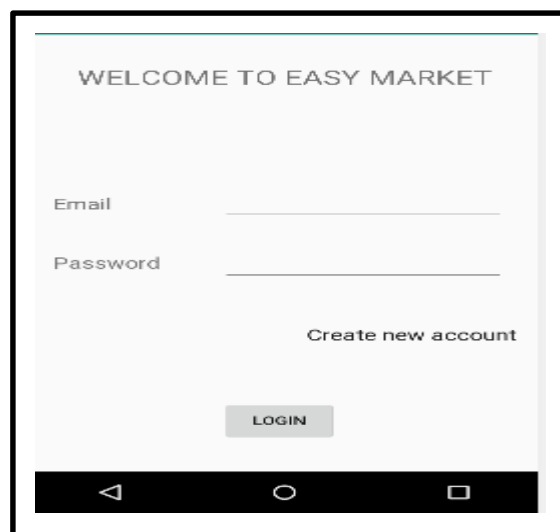

Figure 3.8   Login Page

ii.   Sign Up Page

This is the interface that customer must need to register with the app. For registration, customer needs to fill name, email as username and password. Figure 3.10 shows the registration interface for mobile applications.
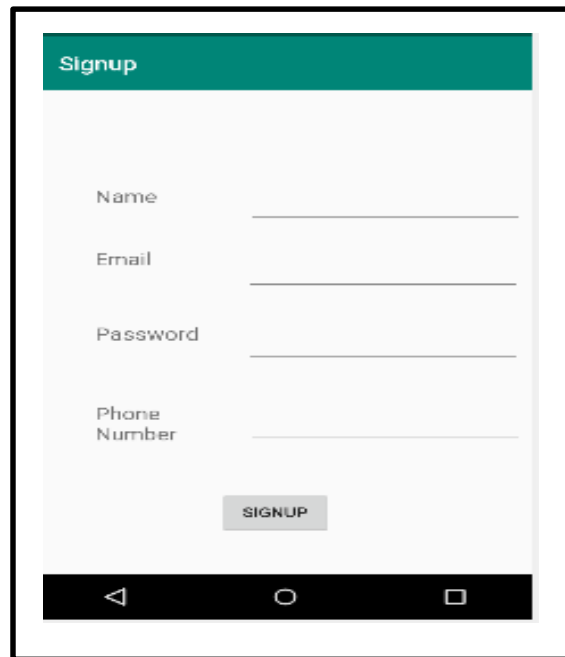

Figure 3.9   Sign up Page

iii.   Seller Homepage

This interface will manage by the seller. There are three options for selecting which are managing profiles, managing menu lists and viewing customer orders. Figure 3.11 shows the main interface for the admin in the application.
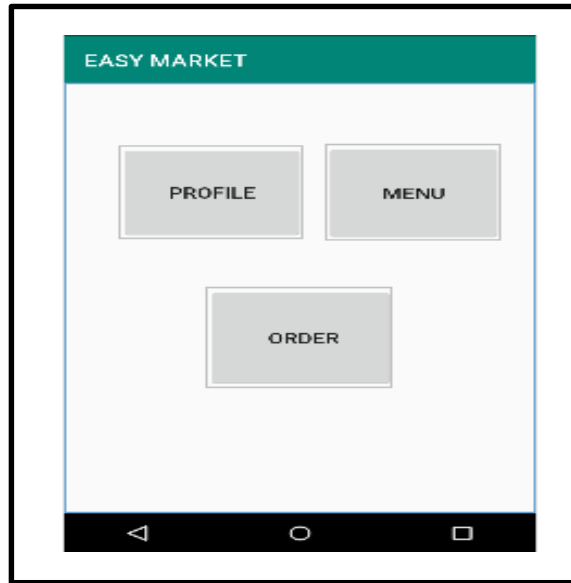
Figure 3.10   Seller Homepage

iv.   Seller Profile Page

This profile interface is for the seller to manage their business profile. The seller can upload a photo and edit related information such as address, an open hour for the service and the location of the market in the map. When the seller, click somewhere in the map, Google Map JavaScript API will automatically generate the latitude and longitude of the current position. Figure 3.11 shows the profile interface for the seller in the application.

Figure 3.11   Seller Profile Page

Seller Menu Page

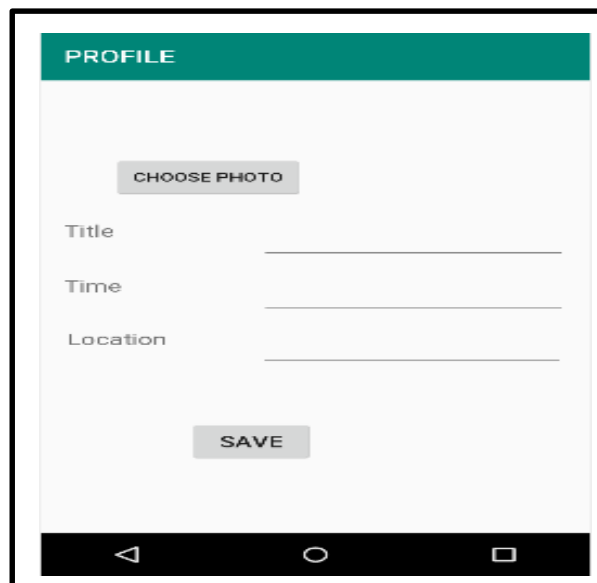This is the interface that the seller uploads menu lists. Seller needs to upload menu pictures, menu names and menu prices Seller can update menu details that have been saved or deleted in the menu update interface. Figure 3.13 and 3.14 show menu and menu detail.
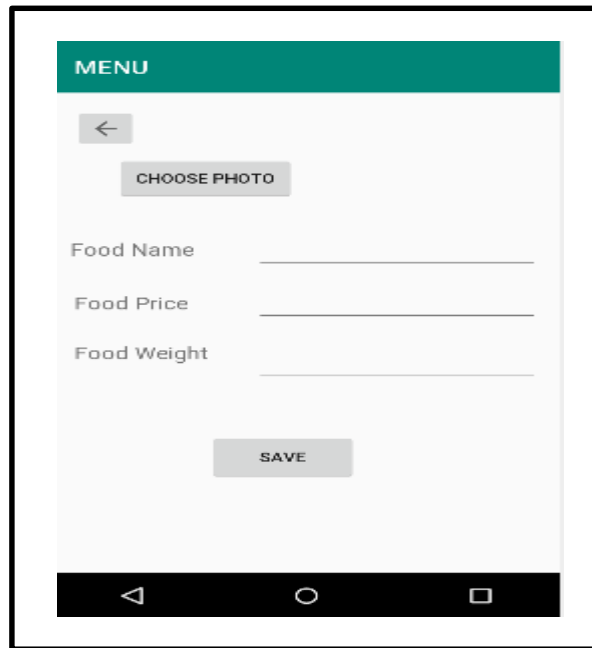
Figure 3.12   Seller Menu Page
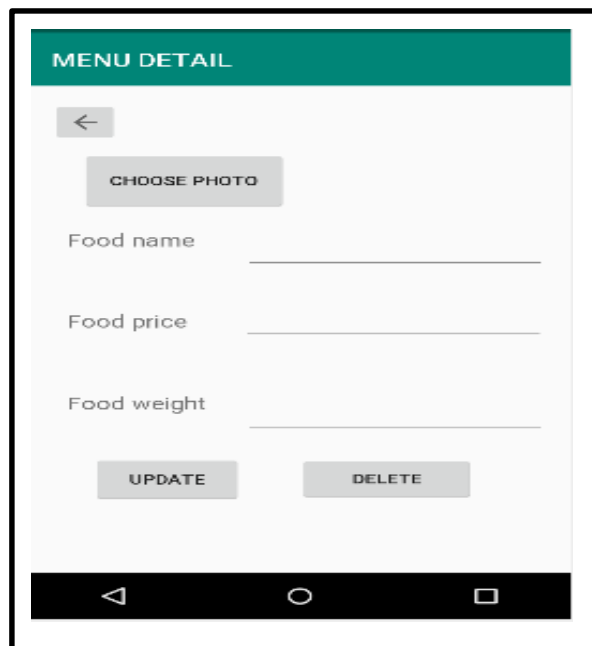
Figure 3.14   Seller Menu Detail

vi. Customer Homepage

This is the interface where the customer locates the market registered with the application. The application uses the Google Map JavaScript API to show the location of the current seller. Figure 3.15 shows the customer homepage.
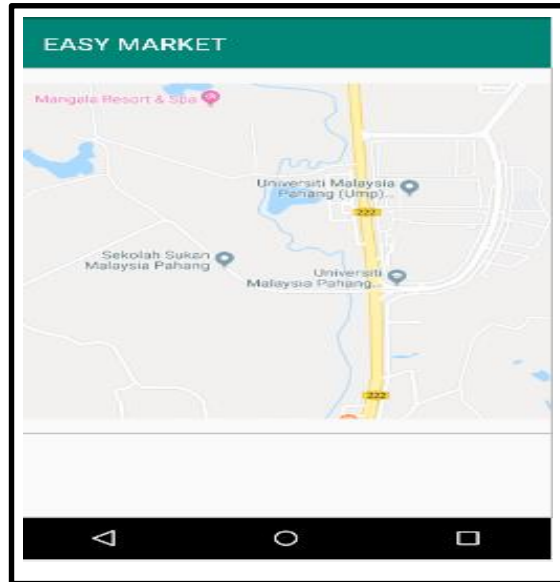
Figure 3.13   Customer Homepage

vii. Customer List Menu

The menu list provided by the seller in this menu interface. The customer can choose their preferred menu by checking the checkboxes provided under the menu list. Figure 3.16 shows the menu interface for mobile applications.
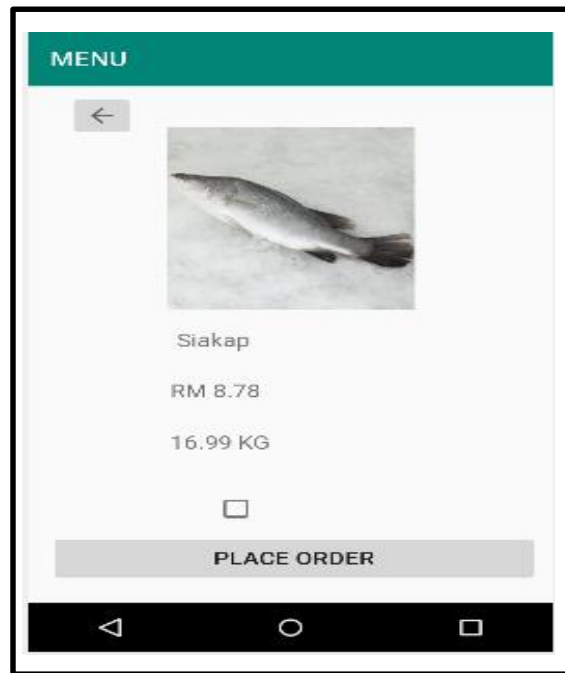
Figure 3.14   Customer List Menu Page

This interface is where customers want to confirm their order. This form contains information that has been extracted from the customer's menu list such which is the order list. Figure 3.17 shows the place order interface for the application.
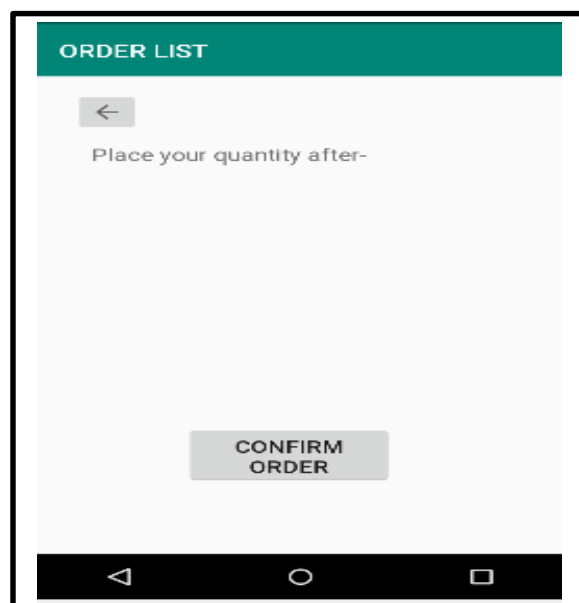
Figure 3.15   Customer Order Page

ix. Status Page

The order status interface shows the status of the fresh food they ordered. The "ready" status marks mean that their ready-made which is the order is delivering by the seller. Figure 3.18 status of the booking order for the app.
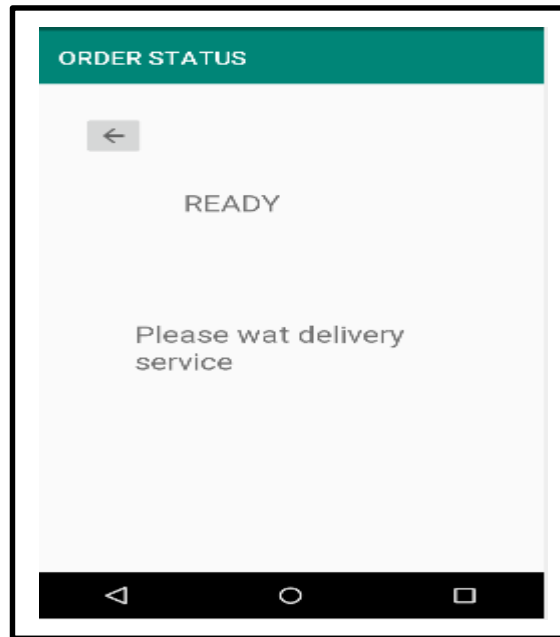
Figure 3.16   Customer Order Status Page

The implementation phase is the fourth phase of the Waterfall model. This phase is where the main work and project implementation begin. In an implementation, the designs described in the design phase will be implemented in the code of conduct. The development phase covers the use of context diagrams, using case diagrams, flowcharts, dialogue diagram, general architecture, package module and all other requirements discussed from analysis to design phase.

For Mobile Applications for Fresh Food Ordering, GPS and Google API JavaScript APIs are used to determine and display the location of the seller of the market. This program is written on a computer using the Android Studio platform for Java programming language. To use the Google Map API, a signup from Google is required to obtain the key used as authentication for the user. After the construction is complete, an app test will be done to ensure the application is working or not. This is also to ensure

no bugs or errors in the application. Any error in the code must be corrected before moving into the final phase.

3.8   Maintenance

The final phase, in maintenance, where the user will begin using the Mobile App for Fresh Food Ordering. At the moment, applications need to be maintained to prevent problems from happening in the future when users use apps and applications evaluated over time to make sure they are not obsolete. This is also a change to the initial software. It involves the continuous evaluation of the system in terms of performance. Feedback from users will be collected and analyzed to contain errors or make some improvements and upgrades

3.9   Hardware and Software

This section will show hardware and software specifications, used during mobile application development and documentation for proposed projects. All the hardware and software involved will be explained in the following subsections.

3.9.1   Hardware Requirement and Specification

Table 3.2 shows the hardware item used throughout the documentation phase of the proposed project

Table 3.2   Hardware Requirement and Specification

Hardware	Specification	Purpose
Laptop	Acer Aspire V5	To write documentation, create and develop the application and create an application database.

| Smartphone | Samsung Galaxy J7 2016 | To test the developing application. |

3.9.2 Software Requirement and Specification

Table 3.3 shows the software list used throughout the documentation and development phase of the proposed project.

Table 3.3   Software Requirement and Specification

Software	Specification	Purpose
Microsoft Word 2016	Version 2016	To write documentation
Notepad++	Version 7.5.1	To write code of HTML, PHP, JavaScript for mobile application.
Xampp	Version 3.2.2	To provide the local host domain and MySQL database for the project development.
Draw io	-	To create the context diagram, use case, dialogue diagram, general architecture, and package module.
Adobe Photoshop cs6	Version 13.0	To edit the image of fresh food.

3.10 Gant Chart

A systematic schedule is important to ensure that the process of developing a project is successful. Refer to Appendix A (Gant Chart).

3.11 Conclusion

In conclusion, this chapter explains the selected methodology used throughout the project development. The waterfall model methodology is selected for use in the proposed project because it is the most appropriate methodology available as this project can upgrade existing applications or use existing application features. Additionally, this method can track and enable the proposed project progress until the project is completed. Project flows and specifications and descriptions of hardware and software used for this project have also been analyzed in this chapter. Finally, the flow and processes involved in this chapter play an important role in determining the success of the project.

CHAPTER 4

RESULTS AND DISCUSSION

4.1   Overview

This chapter will discuss about the result that have been collected from the project and the discussion. Section 4.2 shows the implementation steps for the application project. In section 4.3, the section will have discussed about the testing process of the mobile application to the user. The user will test the mobile application and comment from the user will be recorded in Table 4.1 and 4.2. Next, section 4.4 gives a brief description about the result that are obtained from the application. It included the design and layout of the application that's being used by the user. While, the advantages and disadvantages of the mobile application are stated in section 4.5. Lastly, section 4.6 will conclude all the content in the chapter.

4.2   Implementation

This section explained about the steps in developing and implementing various features of the application. Each process involved is described briefly in this section. In general, the server for the project is using firebase and the application is built using Android Studio.

4.3   Create Project Using Android Studio

First and foremost, to start a new project, user need to open the Android Studio. Then click on the file, new project and empty activity. Figure 4.1 shows the application configuration to create a new project.
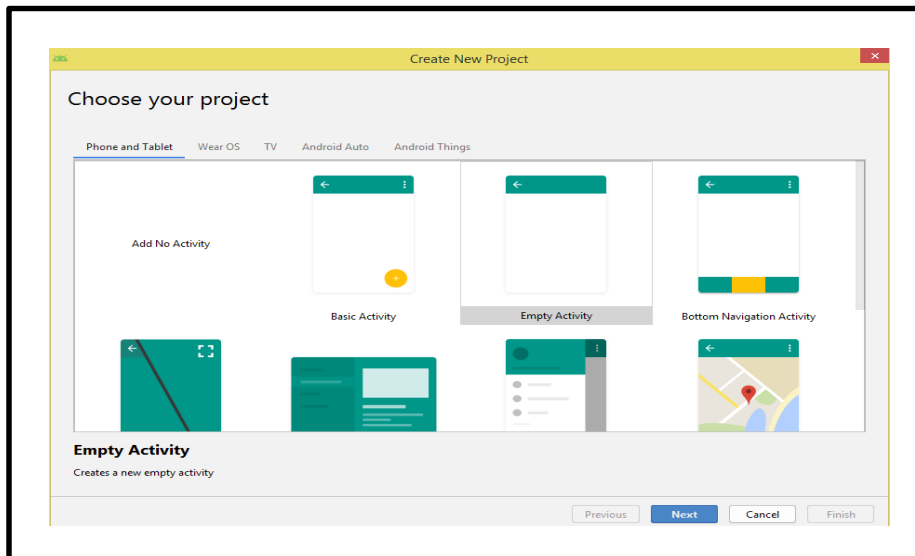
Figure 4.1   Create New Android Studio Project

4.3.1   Start With Xampp

XAMPP is used to provide a local server for the project and a system database. XAMPP is chosen for this project because it supports PHP programming language which is used as server-side scripting. Furthermore, XAMPP provides MySQL service for database management through the PhpMyAdmin interface. PhpMyAdmin makes the user easier to manage the database structured as it shows the structured in graphical user interface. Figure 4.2, 4.3 and 4.4 show the XAMPP control panel, PhpMyAdmin home page, and the database in PhpMyadmin interface of the project.

Figure 4.2   Xampp

Figure 4.3   PhpMyAdmin home page

Figure 4.4   Database of Mobile Application fot fresh food ordering

4.3.2　Server-side Scripting

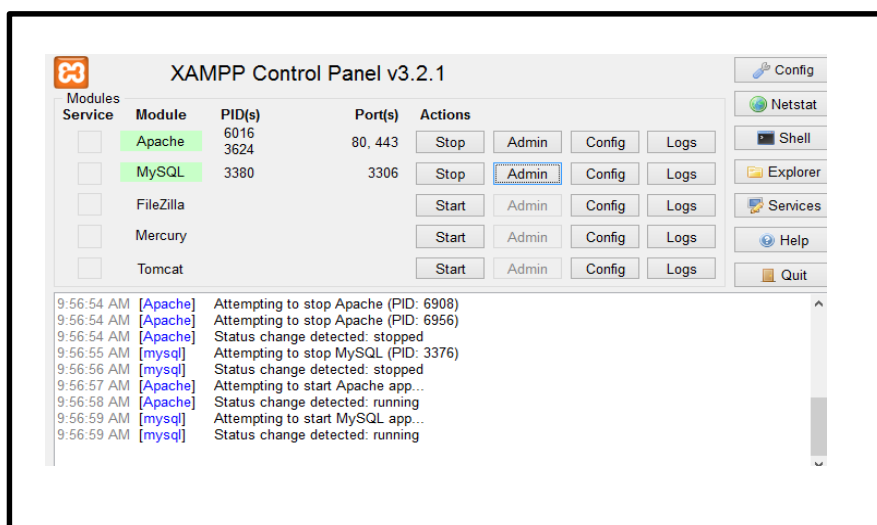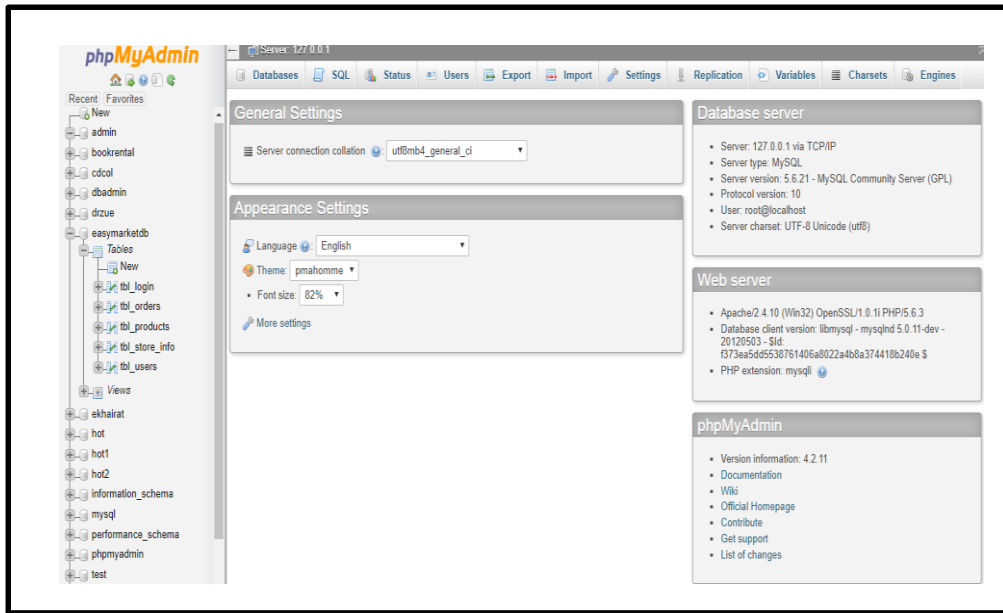Server side scripting is a method that runs the scripting language on a web server. Server side scripting provides an interface to users and is used to limit access to proprietary data and help control script source code. Server side scripts are also used to customize responses based on user requirements, permissions, and query data stores. The scripting language used in this project is a PHP programming language. Figure 4.5 shows an example PHP script from the project source code.


```php
<?php
include("classes/DataBase.class.php");
//productimg
$image = $_FILES['image']['name'];
//$imagePath = "productimg/".$image;
//move_uploaded_file($_FILE['image']['tmp_name'], $imagePath);
$proname = $_POST['proname'];
$proprice = $_POST['proprice'];
$db = DataBase::getInstance();
if(is_object($db)){
    $sqlin = "INSERT INTO ".TBL_PRODUCTS."(userid,pro_name,pro_price,pro_img) VALUES (4,'".$proname."','".$proprice."','".$image."')";
    $res = $db->executeOperation($sqlin);
    if($res){
        $arr['msg'] = 1;
        //echo $_GET['callback'] . '('.json_encode($arr).')';
        echo json_encode($arr);
    }else{
        $arr['msg'] = 0;
        //echo $_GET['callback'] . '('.json_encode($arr).')';
        echo json_encode($arr);
```

Figure 4.5　　　Insert Query For Fresh Food Menu

4.3.3　Client-side Scripting

Client-side scripts are used to run scripts on client browsers. Processing occurs on a computer or end-user device. The source code is transferred from the web server to the user's device over the internet and runs directly within the device browser. The client scripting language used in this Dart project is used to design the application interface. Additionally, Dart is used for application interactivity such as response when a button is pressed, or data is in form, and dynamic animations.

```dart
padding: EdgeInsets.all(10.0),
//color: Colors.white,
height: 100.0,
child: Row(
  mainAxisAlignment: MainAxisAlignment.spaceBetween,
  children: <Widget>[
    RaisedButton(
      child: Text("Want to Join Us?"),
      textColor: Colors.white,
      color: Colors.pinkaccent,
      onPressed: (){
        //print("JOIN NOW");
        var route = new MaterialPageRoute(
          builder: (BuildContext context) => new RegisterPage(),
        );
        Navigator.of(context).push(route);
      },
    ),
    RaisedButton(
      child: Text("Login"),
      textColor: Colors.white,
      color: Colors.pinkaccent,
      onPressed: (){
        //print("LOGIN");
        var route = new MaterialPageRoute(
          builder: (BuildContext context) => new LoginPage(),
        );
        Navigator.of(context).push(route);
      },
    ),
  ]
)
```

Figure 4.6   The example of Dart for Homepage

4.3.4   Configure Google Maps

Google Map allows the application to visualize maps and accessing rich mapping features like the Marker for view location of the cafe or seller. Figure 4.8 and 4.9 show the scripts of Google Map and Google Map interface.

```xml
<meta-data android:name="com.google.android.geo.API_KEY" android:value="AIzaSyCNOFN7_fhbUVjfvVcvf7AJwQm_O1jos9o"
```

Figure 4.7   The Script of Google Map

```
final Marker marker = Marker(
  markerId: markerId,
  position: LatLng(double.parse(storelat),double.parse(storelong)),
  infoWindow: InfoWindow(title: storename, snippet: storephone),
  onTap: (){
    //print("YEHAA");
    showModalBottomSheet(
        context: _scaffoldKey.currentContext,
        builder: (builder){
          return Container(
            child:
            Padding(
              padding: EdgeInsets.all(10.0),
              child: Column(
                mainAxisAlignment: MainAxisAlignment.spaceEvenly,
                children: <Widget>[
                  Expanded(
                      child:Container(
                          padding: EdgeInsets.all(2.0),
                          child: Center(
                            child: Image.network("http://www.71slabsolution.com/easymarket/imagesstore/"+
                          )
                      ),
                  ),
                  SizedBox(height: 14.0,),
                  Text(storename,style: TextStyle(
                    fontWeight: FontWeight.bold,
                    fontSize: 20.0,
                  ),),
                  SizedBox(height: 14.0,),
                  RaisedButton(
                      child: Text("Visit Store").
```

Figure 4.8   Google Map Interface

4.4   Testing

The User Acceptance Test (UAT) is the final phase of the testing process of this application. During UAT, actual application users test the application to ensure it can handle the tasks required in the real environment, according to specifications. UAT is one of the final and critical project procedures that must occur before the application can be used commercially. In general, UAT is the use of software by people from the intended audience and records and corrects any defects found. It gives users the opportunity to interact with the software and find out whether everything works as it should if the features have been ignored, misinterpreted, not delivered, and so on.

The purpose of this section is to outline the User Acceptance Test (UAT) process for the system. The approval of the test indicates that the reviewer is convinced that after the execution of the test plan, the resulting system will be considered fully tested and feasible to carry out. Any errors or problems encountered by the user should be noted on the form. Tables 4.1 and 4.2 show acceptance tests from administrators and users.

Table 4.1   User Type: Buyer User

Event	Test Data	Expected Result	Actual Result	Pass/ Fail
Register as buyer	User inserts their detail, such as name, email, password, and phone number	Successfully register	Same as expected result	Pass
Login with correct username and password	User select identity, key in their username and password	Successfully login into buyer home page	Same as expected result	Pass
Login with incorrect email and password	User does not select the right identity, key in wrong email and password	Login fails	Same as expected result	Pass
View Admin profile	User clicks the marker on the Google map	Successfully view the Admin profile details	Same as expected result	Pass
View food menu	User clicks the Make Order button	Successfully view the admin food menu list details	Same as expected result	Pass
View seller location	Buyer User view the marker on	Successfully view the seller location inside the university campus	Same as expected result	Pass
View seller profile	Buyer User clicks the marker on the Google map	Successfully view the seller profile details	Same as expected result	Pass
Place order	Buyer User clicks the Place Order button	Successfully into order page	Same as expected result	Pass

Confirm order	Buyer User key in order list detail, option, delivery address and clicks the Confirm Order button.	Successfully making an order	Same as expected result	Pass
Confirm order with incomplete detail	Buyer User does not key in order list detail or option, and clicks the Confirm Order button	Confirm order fail	Same as expected result	Pass
Logout	Buyer User can click the logout button and go to login page	Logout successfully	Same as expected result	Pass

Table 4.2   User Type: Seller User

Event	Test Data	Expected Result	Actual Result	Pass/ Fail
Register as Seller	Seller inserts their detail, such as name, email, password, and phone number	Successfully register	Same as expected result	Pass
Login with correct username and password	Seller select identity, key in their email and password	Successfully login into admin home page	Same as expected result	Pass
Login with incorrect email and password	Seller does not select the right identity, key in wrong username and password	Login fails	Same as expected result	Pass
View profile details	Seller clicks the PROFILE button	Successfully into profile page	Same as expected result	Pass

Update profile	Seller User update profile by clicks UPDATE button	Update successful	Same as expected result	Pass
Update with incomplete profile detail	Seller User does not complete one of the profile detail and clicks UPDATE button	Update fails	Same as expected result	Pass
Insert menu	Seller User upload photo, insert menu name and price, and clicks Save button	Insert successful	Same as expected result	Pass
Insert with incomplete menu detail	Seller User does not complete one of the menu detail and clicks Save button	Insert fail	Same as expected result	Pass
View menu list	Seller User view the menu list	Successfully view the menu list	Same as expected result	Pass
Delete menu	Seller User delete menu by clicks DELETE button	Delete successful	Same as expected result	Pass
View order list	Seller User view the order list	Successfully view the order list	Same as expected result	Pass
View order detail	Seller User clicks the order list link	Successfully view the order list	Same as expected result	Pass
Logout	Seller User can click the logout button and go to login page	Logout successfully	Same as expected result	Pass

4.5   Result

The Mobile Application for Fresh Food Ordering interfaces are divided into two types, buyer user interfaces and seller user interfaces. There are several interfaces that both buyer and seller share together like login page and sign up page.

4.5.1   Homepage

This is the interface where customer locate the cafe and seller registered with the application. The application uses the Google Map to show the location of current user and seller. The customer needs to click the marker on the map to view the cafe or seller profile. The customer can click the visit store button within the profile interface to view menu and make an order. Figure 4.9 and 4.10 show the home with seller's profile interfaces for the customer's user.
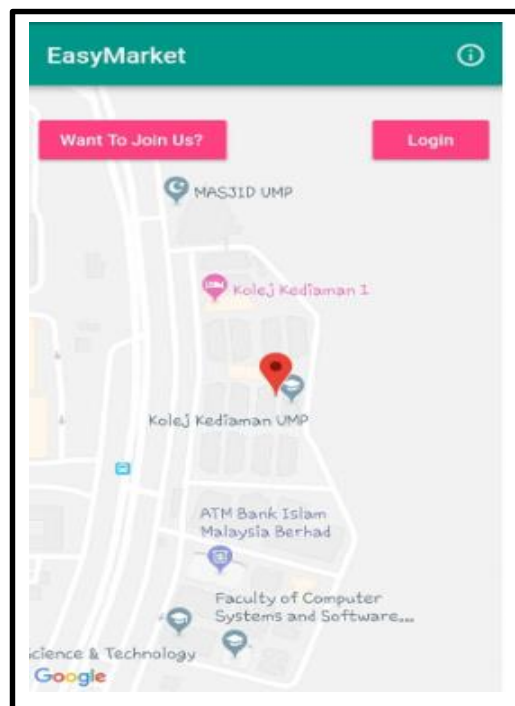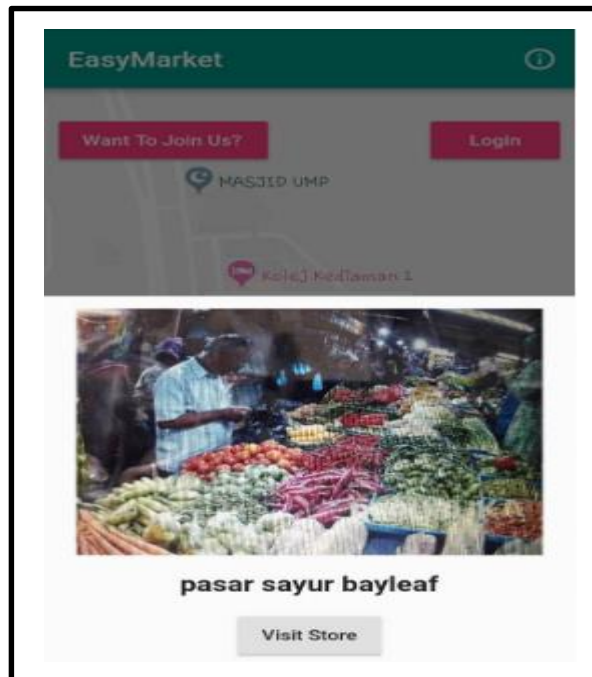

Figure 4.9   Home Page

Figure 4.10   Seller Profile

4.5.2   Login

Figure 4.11 shows the login interface for the mobile application. This is the first interface when the user opens the application. The user can go to the respective homepage if the username and password are valid.
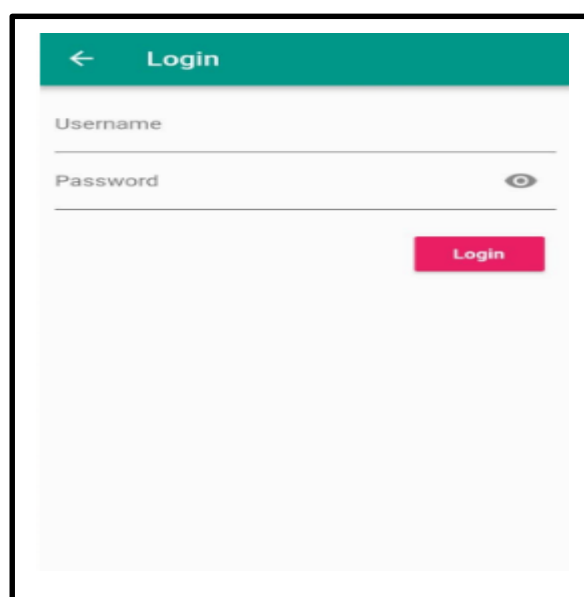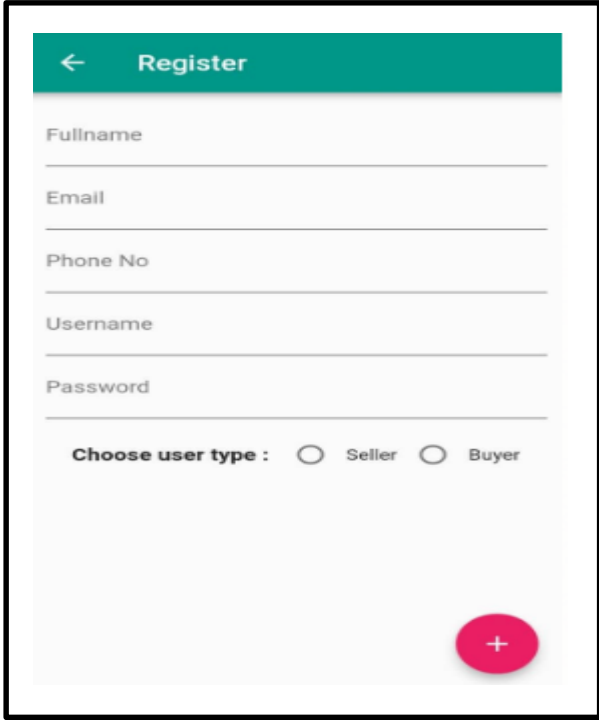

Figure 4.11   Login Page

4.5.3 Sign Up Page

This is the interface that the user must fill to register with the application. For the sign-up, user needs to fill in the name, email as the username and password. All fields are compulsory for the user to key in every detail for the registration to be successful. Figure 4.12 shows the sign-up interface for the mobile application.

Figure 4.12   Sign Up Page

4.5.4   Homepage for buyer

This is the homepage for buyer. This page appear when buyer click login. This home will have for button which are dashboard, shop, my cart and my order. Figure 4.13 shows the homepage for buyer.
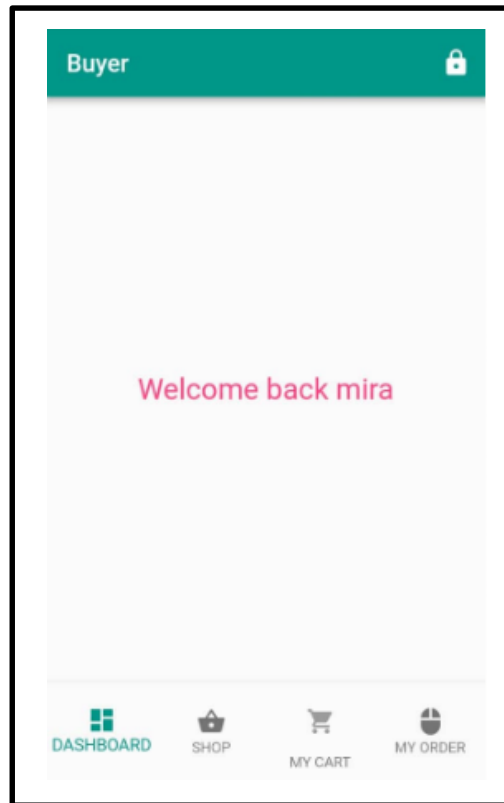

Figure 4.13   Homepage for Buyer

4.5.5   Menu Page for Buyer

The menu list provided by the seller in this menu interface. The user can choose their preferred menu by ticking the check box provided below the menu list. Figure 4.14 shows the menu interface for the mobile application.
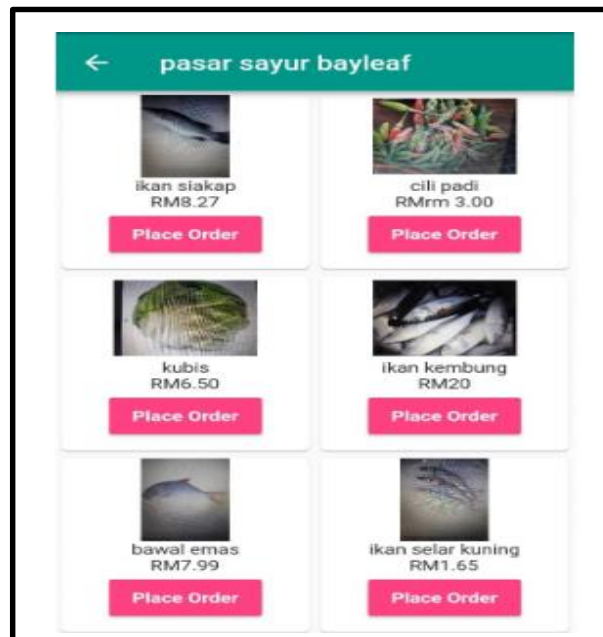
Figure 4.14   Buyer Menu Page

4.5.6   Cart Page for Buyer

This interface will show list of fresh food that buyer choose. In this page buyer can choose more than one of fresh food. Figure 4.15 shows cart page for buyer and Figure 4.16 shows product detail page and buyer can add the product into the cart.
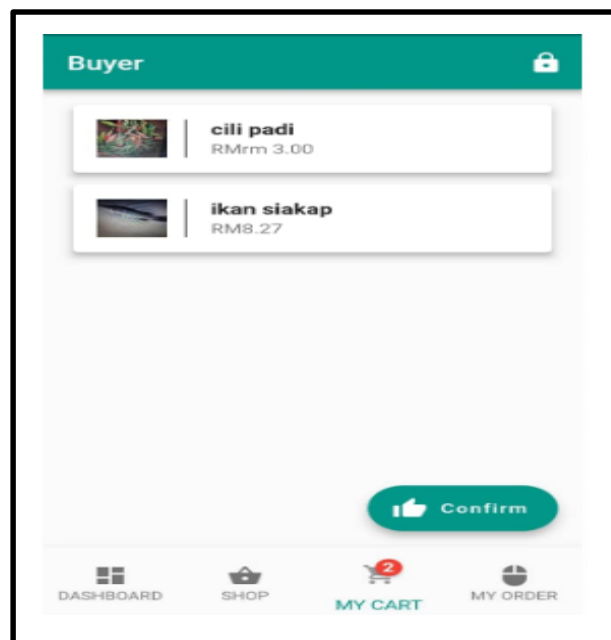
Figure 4.15   Cart Page of Buyer
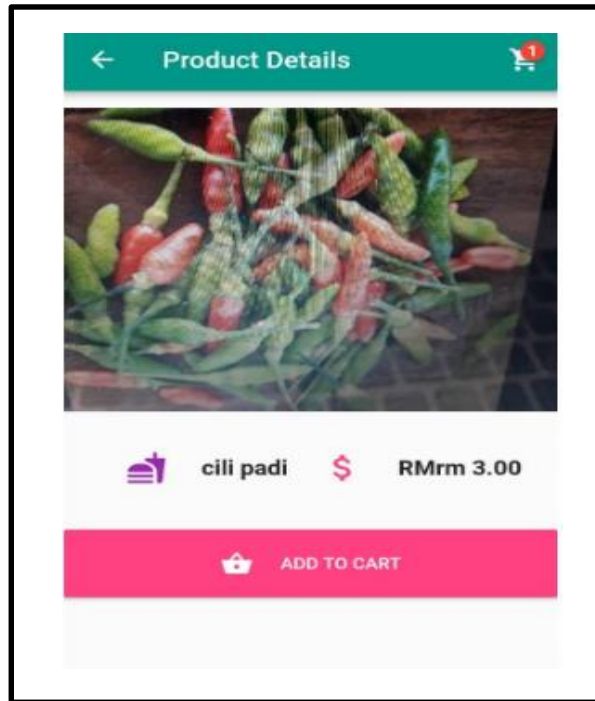
Figure 4.16   Product Details

4.5.7   Order Page for Buyer

This interface is where a customer wants to confirm their order. The form contains information that has already been picked up from the menu list by the customer such as order list, option to pick up themselves the food or use the delivery service and delivery address if they choose delivery option. Figure 4.17 shows the place order interface for the application
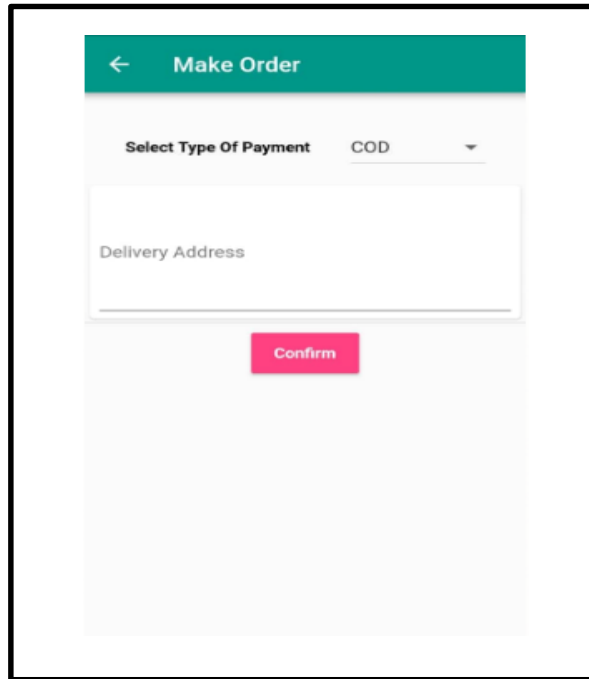
Figure 4.17   Buyer Order Page

4.5.6   Homepage for Seller

This interface is where the seller will manage their account. There are three options to choose, manage store info, manages product and order. Figure 4.18 shows the main interface for the seller in the application
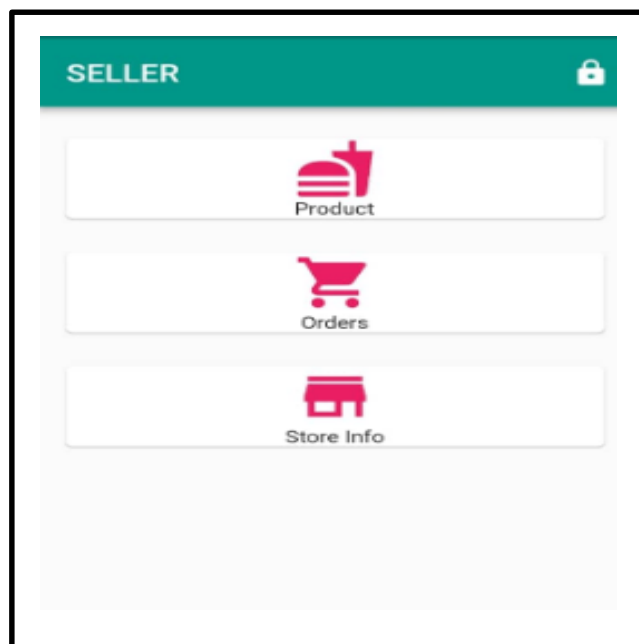
Figure 4.18   Seller Homepage

4.5.7 Seller store info page

This profile interface is for sellers to manage their business profile. The seller can upload photo and edit related information such as address, open hour for the service, latitude and longitude and the location of the cafe in the map. When the seller, click somewhere in the map, Google Map JavaScript will automatically generate the current position. Figure 4.19 shows the store info interface for the seller in the application.

Figure 4.19   Seller Store Info

4.5.8   Seller product page

This is the interface that the seller upload menu list. Seller needs to upload a picture of the menu, the name of the menu and the price of the menu. Figure 4.20, 4.21 and 4.22 show the menu list and add menu interfaces and delete menu for the seller in the application.

Figure 4.20   Menu List

Figure 4.21   Add Menu

Figure 4.22   Delete Menu

4.6   Advantages and Disadvantages of This Application
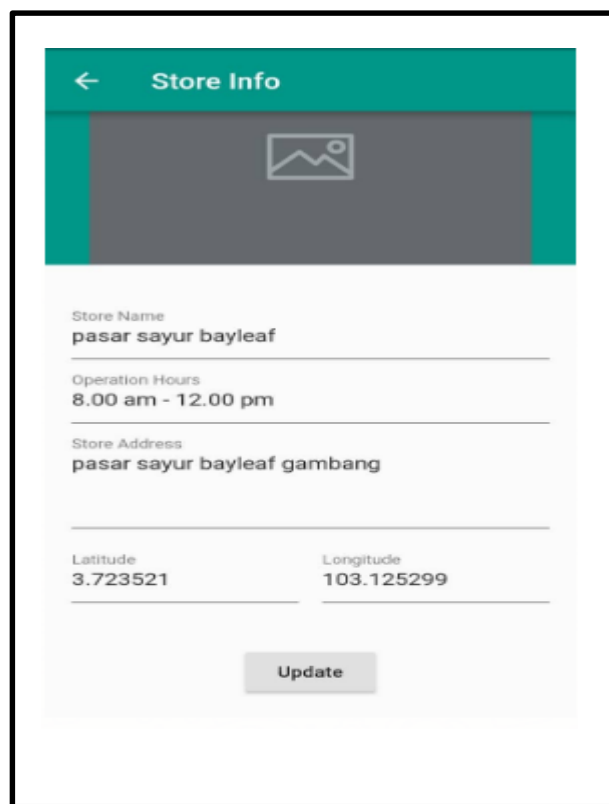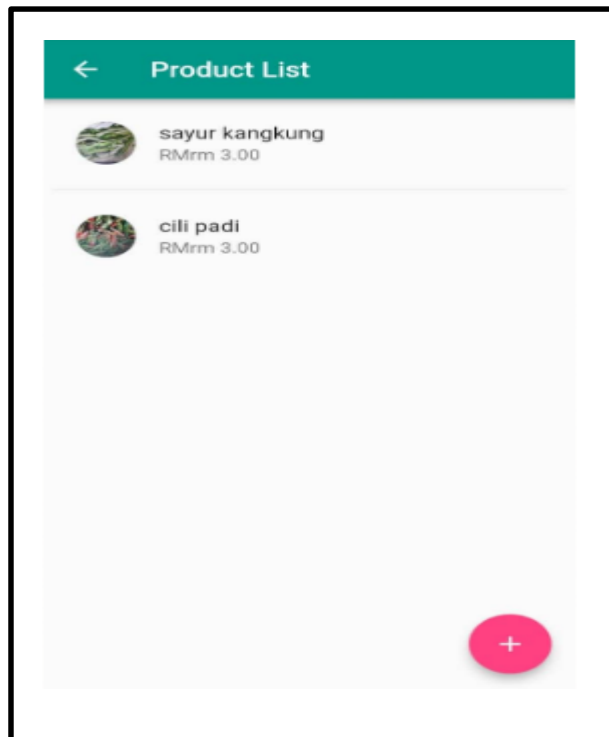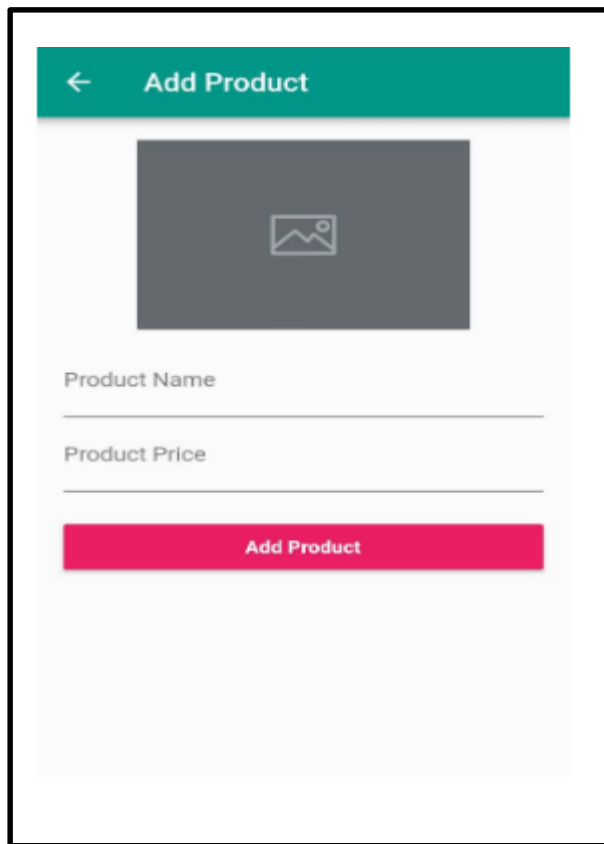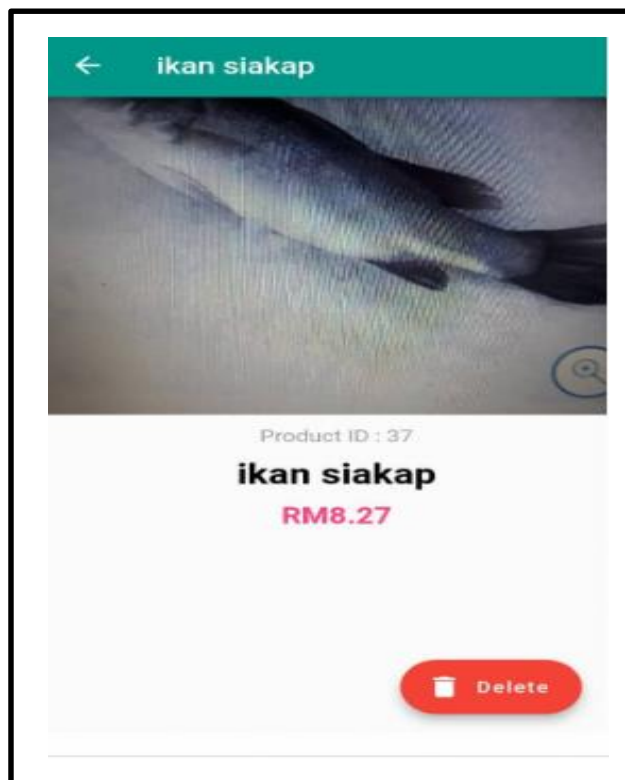
After various tests are done with this application, there are many advantages that can be useful to users. First, this app is useful for buyers or customers to find the morning market. Users can view locations in google maps. Each marker represents the morning market registering with the application. Users can view details of market information such as pictures and market names when the user clicks the marker. Additionally, buyers will not waste their time again, go to the morning market, place orders, and wait there until the order is completed since using this application, users can book remotely. Users can book anywhere as long as they have an Internet connection. After receiving the order notification completed, the user can choose the order or wait for the delivery service.

However, there are also some weaknesses in the application. One of the drawbacks is that users can not cancel or edit orders after ordering. Therefore, if the user has placed the order, the order transaction will be calculated. Additionally, if users do not take their order, the seller can not take any action against the customer.

4.7   Conclusion

The main topic of this chapter provides a brief overview on the development and application of the application. The result shows every detail of the application interface and the function. The result is very important in demonstrating that the application is user-friendly and how trusted the app is. Discussions about the advantages and disadvantages of applications are important to attract and convince users to use the app. No matter how great the function and function of the app is, if something too complicated to use, the user may not like to use it and in the worst case, the user does not have any attraction to use the app altogether.

CHAPTER 5

CONCLUSION

5.1   Overview

This chapter gives a general conclusion about the proposed project in the thesis. In section 5.2, the section discusses about the constraints faces for the developed mobile application. Next, section 5.3 gives a brief description of the future work that will be done in improving the security, efficiency, and effectiveness of the application. Last but not lease, the conclusion of the mobile application for fresh food ordering are stated in section 5.4.

5.2   Project Constraint

There are some constraints of Fresh Food Ordering application because of several factors such as lack of knowledge, time, budget, resources and others. The constraints of the project are:

i. The application can be used by android user only.

ii. The users must have an Internet connection either using Wi-Fi or mobile data to have access to the app.

iii. The user cannot see the history of their previous order.

iv. The Google map will focus based on the seller geolocation, if the sellers update the profile's location, sellers need to find the location in the map themselves.

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vi. The application does not provide forgot password, in case the user forgot their password.

5.3 Future Work

One of the aspects that can be improved from the application is security. Currently, the application can be easily exploited through SQL injection attacks. Therefore, improvements to these weaknesses can give good credit to the application. Furthermore, features such as platforms for sellers reporting fake orders from customers can be added. Also, now, customers can not cancel orders after ordering. It can be a good service, an offer from an app if the customer can cancel the order within.

5.4 Conclusion

In conclusion, the Mobile App for the Fresh Food Directive, which is the Easy Market, has met its goals and can be a solution to the time of disposing of customers when ordering in the farmers' markets. This app can act as an open source, media platform for sellers to advertise their business. This is truly a perfect alternative solution as the app also offers a view of Google map showing a farmer's market or a personal seller's location. While this application is complete, it still needs more improvements and many future improvements to make Mobile Apps for Fresh Food Order everyone's number one favorite option as a fresh food order app.

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Name	Duration	Begin date	End date
Planning		13 9/19/18	10/5/18
○ Research Problem Background		3 9/19/18	9/21/18
○ Determine Problem Statement		5 9/24/18	9/28/18
○ Define goal, objective and scope		5 10/1/18	10/5/18
Analysis		15 10/8/18	10/26/18
○ Research On Mobile Apps		3 10/8/18	10/10/18
○ Research On Existing System		6 10/11/18	10/18/18
○ Compare 3 Existing System		5 10/19/18	10/25/18
○ Submit Chapter 1 & 2		1 10/26/18	10/26/18
Design		20 10/29/18	11/23/18
○ Design Methodology		7 10/29/18	11/6/18
○ Design Flow Application		7 11/7/18	11/15/18
○ Design Interface		5 11/16/18	11/22/18
○ Submit Chapter 3		1 11/23/18	11/23/18
Implementation		95 11/26/18	4/5/19
○ Encoding The Application		80 11/26/18	3/15/19
○ Test The Application		10 3/18/19	3/29/19
○ Get Feedback From User		6 3/29/19	4/5/19
Maintenance		20 4/8/19	5/3/19
○ System Maintenance		20 4/8/19	5/3/19