UNIVERSITI TEKNIKAL MALAYSIA MELAKA

DEVELOPMENT OF DELIVERY MAN LOCATION TRACKING APPLICATION USING XAMARIN SOFTWARE

This report is submitted in accordance with the requirement of the Universiti Teknikal Malaysia Melaka (UTeM) for the Bachelor of Electronics Engineering Technology (Telecommunication) with Honours.

by

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2021

DECLARATION

I hereby, declared this report entitled Development of delivery man location tracking application using xamarin software is the results of my own research except as cited in references.

Signature: ……

Author: Danial Azri Bin Ahmad Ramli

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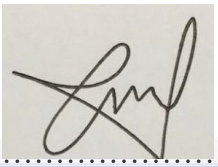
APPROVAL

This report is submitted to the Faculty of Electrical and Electronic Engineering Technology of Universiti Teknikal Malaysia Melaka (UTeM) as a partial fulfilment of the requirements for the degree of Bachelor of Electronic Engineering Technology (Telecommunication) with Honours. The member of the supervisory is as follow:



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Supervisor : NORLEZAH BINTI HASHIM

ABSTRAK

Pada era globalisasi ini, penghantar barangan adalah yang paling penting bagi semua orang terutama bagi pengguna kerana terdapat pelbagai sumber maklumat dan barangan yang diperlukan untuk pengguna. Dalam penghantaran barangan, terdapat banyak maklumat mengenai setiap aspek yang diperlukan oleh mereka. Bayangkan senario dalam situasi di mana waktu sibuk dan lalu lintas di pusat bandar berada di waktu puncaknya, hampir banyak masa seseorang itu bazir kerana mengambil barangan dengan sendiri. Sebenarnya, ekoran daripada permintaan yang tinggi untuk pengguna menerima penghantaran tepat pada waktunya, sebilangan pengguna hanya mengabaikan penghantaran tersebut dan menyebabkan diri mereka menghadapi masalah. Untuk mengatasi masalah ini, ia memerlukan aplikasi yang dapat membantu pengguna untuk mengetahui tepat lokasi barangan dengan cara mencari lokasi barangan. Oleh itu, tujuan projek ini adalah untuk mengembangkan aplikasi pengesanan lokasi penghantar barangan. Objektif projek ini adalah menganalisis aplikasi pengembangan dari segi fungsinya. Hasil daripada projek pengesanan lokasi penyampaian barangan, aplikasi ini akan dikembangkan dan dibuat dengan menggunakan perisian Xamarin dan aplikasi mudah alih yang merupakan aplikasi Android di mana ia dapat mengesan kedudukan pengirim. Akhir sekali, untuk kesimpulan aplikasi ini dapat membantu pengguna untuk mengesan kedudukan penghantaran barangan oleh manusia dengan mencari tempat dan dapat meningkatkan lagi aplikasi ini untuk kegunaan masa hadapan.

ABSTRACT

Nowadays, delivery man is the most important for everyone especially for users because there are various source of information and item that are required for the user. In delivery, there have a lot collection of information on every aspect what they need. Imagine a scenario in this case where it's rush hour and traffic in the city center is at its height. Almost of the time are been wasted to make a person to pick up the delivery by themselves. In fact, due to high demand for people to receive the delivery on time. To overcome this problem, it needs some of the application that to track the location of their parcel in real time when the parcel is out for delivery by delivery man. Therefore, the purpose of this project is to develop a application of delivery man location tracking application and to analyse the develop applications in term of its functionality. As a result of the project of development delivery man location tracking, this application will develop and create by using Xamarin software and mobile application which is Android application where it can track the position of delivery man. Lastly, for the conclusion of this application can help the users to tracking the position of delivery man by search the place and can be upgrade this application for the future use.

DEDICATION

I dedicate this project to my supportive beloved parents, my supervisor and my BEET classmate. A special thanks to my father Encik Ahmad Ramli Bin Ahmad and my mother Puan Nurul Liyana Binti Abdullah who always give me courage and being support my idea to do this project. Furthermore, I would like to say thank you to my beloved supervisor, Puan Norlezah Binti Hashim for the guidance, advices, encouragement, inspiration and attention given throughout the day for development of my final project and writing this report. Lastly, I would like to say thank you to all my BEET classmate that who always support me to complete and developed this project.

ACKNOWLEDGEMENTS

Special thanks to Allah S.W.T for the His blessing and gift because giving me the ability to complete my Projek Sarjana Muda (PSM). This report is as a mark of my sincere appreciation to Universiti Teknikal Malaysia Melaka (UTeM) for giving me this chance to further study on Bachelor's Degree in Electronics Engineering Technology (Telecommunication) in Faculty of Electrical and Electronic Engineering Technology (FTKEE). I would like to express my sincere appreciation and deepest gratitude to my dearest supervisor Puan Norlezah Binti Hashim for always provide crucial information, guidance, advices, encouragement, inspiration and attention given throughout the day for development of my final project and help for completing the writing report. Without her guidance and assistance, this project would never be completed. My gratitude goes to my beloved parents Encik Ahmad Ramli Bin Ahmad and Puan Nurul Liyana Binti Abdulllah, my family, and my BEET classmates that always give courage and support me to complete my project. Deepest thanks and appreciation to my parents for their cooperation, encouragement, constructive suggestion and full support for the project completion from beginning till the end. Thanks to their moral support and care they had given to me up until this project is done. Finally, I would also to say thank you to all lecturer and staff who was involved directly or indirectly in helping me to completing this project. All the kindness and cooperation from all names mentioned above will always be treasured.

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CHAPTER 1

INTRODUCTION

1.0 Introduction

This chapter is an overview of the delivery man location tracking application. Furthermore, the background study and the problem statement regarding to the research is defined. Then, it is followed by the useful resource of research objectives and scope which includes the aspect to show the tracking application.

1.1 Research Background

The research of this project is about "Development of delivery man location tracking application using Xamarin Software". This application will help the users to easily tracking the delivery man through the map in applications. Although the map has a large collection of places, finding a delivery man is one of the problems.

To overcome this problem, the method that are used to develop this project is using a mobile application which is Android application. This application includes functionality to track the delivery man location in a real time. This provided the interfaces for the users can quickly get the details information delivery man from interface of the Android applications.

1.2 Problem Statement

In modern times, the advancement of GPS technology is growing rapidly. Pickup and delivery problem is a set of routes has to be constructed in order to satisfy transportation requests. Let us imagine a scenario in this case where it is rush hour and traffic in the city center is at its height. In fact, due to high demand for people to receive the delivery on time, some people just ignore the delivery and make their self in trouble. In some cases, violators have fake documents displayed at the delivery process.

To overcome this problem, the solution that are proposed to develop this project is create an application of delivery man location tracking application by using Android application. This developed project can help the users to find the delivery man more easily through an android application. This application, the user needs smartphone that build in with GPS to connect. Lastly, this system will create and developed by using simulation of Microsoft Visual Studio 2019 (Xamarin Software) and Mobile Xamarin.

1.3 Objectives

Based on the problem statement that had been discussed above, the objectives of this project are:

a) To develop an application for delivery man tracking system using Android platform.
b) To analyse the application developed in term of its functionality.

1.4 Scope of Work

The scope of work on this project are established based on the objectives that had been mentioned above. This project is to create an applications of delivery man tracking location application. The development of this project will cover in these areas:

a) Microsoft Visual Studio 2019 (Xamarin Software).

This project is about software developments that are used to create an android application of the system by using Microsoft Visual Studio 2019 (Xamarin Software). This project will

be cover on the software part only, where it is including about the design interface of projects, coding and develop an application by using mobile application which is android.

b) Android application.

This project is developed by mobile application which is Android application. The researcher will use the software of Microsoft Visual Studio (2019) because this software is very suitable and also great to create an application and design the application.

1.5 Thesis Outlines

This report consists of five chapters which are include of introduction, literature review, methodology, results and discussion and lastly a conclusion and recommendation. Each of this chapter will be elaborated in detail.

Firstly, the chapter one is the introduction about the project or case study. In this chapter, it consists of research projects, problem statements, objectives, and scope of projects. All of the summary information that are related of this projects will be discussed and presented in this chapter.

Next, literature review about the journal or research. In this chapter, it will do the research about the previous studies will be conducted. This chapter is discuss about the methods that are used from other researcher in previous projects. This is important to study the comparison of strength and weakness that can be used as the guidelines to develop a good related projects.

Then, for chapter three that are focused on the methodology and approaches about the related projects. In this chapter, it will be discussed about the flow charts of projects, how the process are work, about how to development and applying the projects. And the software and hardware that are used.

Chapter four presents the results and discussion. This chapter will show the function and output of the projects. The results will be analyzed in this chapter.

Finally, for the chapter five is about conclusion and recommendation. In this chapter, the summary of the projects and recommendation for the future will be presented.

CHAPTER 2

LITERATURE REVIEW

2.0 Introduction

This project is delivery man tracking location application. There are several parts of this chapter. In the first part shows the previous project that is related with the following explanation. There are several literature review that had been read and been conclude.

2.1 Previous Project Study

2.1.1 Real time Google map and Arduino based vehicle tracking system

(Rahman, Mou, Tara, & Sarkar, 2016) discussed a vehicle tracking system is exceptionally valuable for following the development of a vehicle from any area at any time. In this work, genuine time Google outline and Arduino based vehicle tracking system is executed with Worldwide Positioning System (GPS) and Worldwide system for portable communication (GSM) innovation. GPS module gives geographic arranges at normal time intervals. At that point the GSM module transmits the area of vehicle to cell phone of owner/user in terms of scope and longitude. At the same time, area is shown on LCD. Finally, Google outline shows the area and title of the put on cell phone. In this way, owner/user will be able to ceaselessly screen a moving vehicle utilizing the cell phone. In arrange to appear the achievability and effectiveness of the framework, this work presents exploratory result of the vehicle following framework. The proposed framework is client neighborly and guarantees security and observation at low maintenance cost.

2.1.2 College Bus Tracking Android Application using GPS

(Kumar, Aishwarya, & Mounika, 2016) introduced a College Bus Tracking android application enables the client to discover out the transport location information so that the client does not get delayed. The main point of this paper is to gather the information from GPS and delivering it to server from where it'll be brought by android application and the transport genuine time area can be seen on Google map, which is coordinates onto the android application. The clients can log on to the application and can know almost the scheduled courses of the college bus. This application is user-friendly and adaptable to utilize because it may be a time saving application to the client. To achieve automatic Vehicle Location system that can transmit the location data in real time, Active systems are created. Real time vehicular following system incorporates an equipment gadget introduced within the vehicle and a farther Following server. The data is transmitted to the following server using GSM/GPRS modem on GSM organize by using SMS or utilizing coordinate TCP/IP association with Following server through GPRS. Following server also has GSM/GPRS modem that gets vehicle area data by means of GSM network and stores this data in database. This data is accessible to authorized clients of the system through site over the internet.

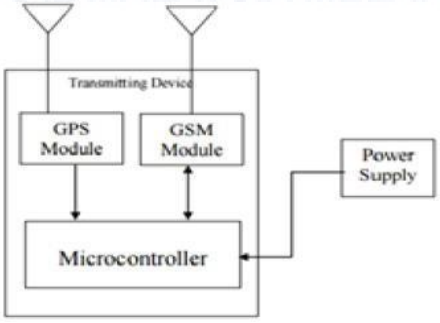

Figure 2.1: Transmitting Unit

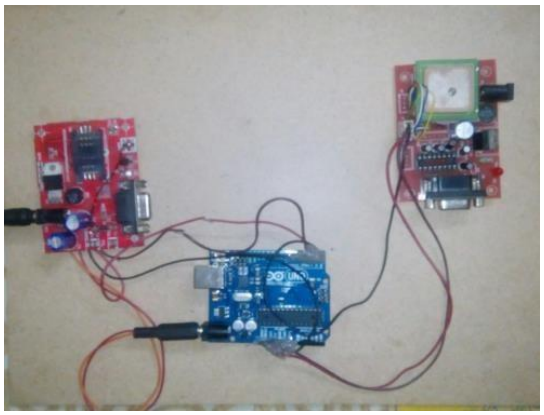

Figure 2.2: Hardware Setup

2.1.3 Access control in location tracking system

(Herrala, S. 2016) stated that a strategy for controlling get to in a area following framework is given. In reaction to discovery of the presence of a portable tag of the area following framework in an area having at slightest one get to control gadget, an area following gadget of the area following framework enacts the access control gadget to start foundation of a communication connection with the versatile tag so as to arrange access rights of the versatile tag. For indoors area tracking, earlier art teaches frameworks that utilize a pico arrange of remote base stations, and the area of a given individual within the coverage area of the pico organize is decided on the premise of which wireless base station right now serves an individual communication gadget of the individual. Earlier craftsmanship too educates location tracking frameworks based on radio frequency identification (RFID) where a RFID readers are arranged to cover an area in which the area following is to be carried out. RFID tags are related with observed subjects, as example human beings and resources such as gear. Wifi is additionally an alternative for carrying out location tracking.

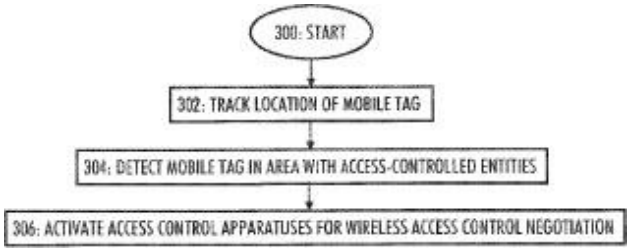

Figure 2.3: Drawing Sheets

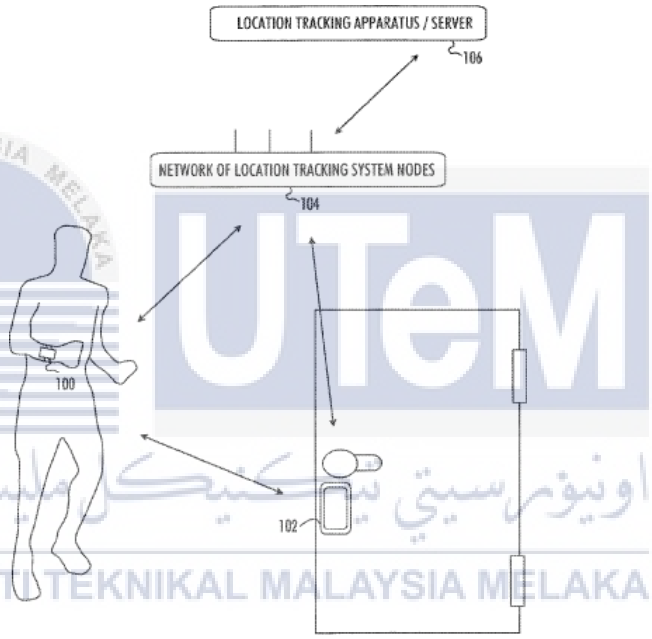

Figure 2.4: Diagram Network Tracking

2.1.4 Real-time and offline location tracking using passive RFID technologies

(Rehman, S. 2017) stated that a system for area following utilizing passive tags incorporates a reader and an area tracker. The reader gets an identifier related with a to begin with inactive tag. The area tracker gets the area of the inactive tag, and maps the area of the primary detached tag to the identifier related with the primary detached tag. The area tracker decides the area of a question based on the area of the primary inactive tag. The area tracker may get the area of a moment detached tag, and outline the area of the moment passive tag to an identifier related

with the moment passive tag. The area tracker may update the area of the object using the area of the moment detached tag in reaction to the readers accepting the identifier related with the moment passive tag. Radio Frequency Identification (RFID) is a programmed identification technique that depends on the remote disposal and recovery of devices that use information, such as RFID labels or transponders. RFID labels or transponders are also known as proximity, proxy, or contactless cards, as information can be retrieved from an RFID tag without physical contact. For the most part, a device such as an RFID reader uses radio waves to remotely recover a special identifier that is put away using the RFID tag when the RFID tag is within the RFID reader's proximity. RFID labels can be connected to or joined to an item, creature or individual because the RFID readers distinguish proof. RFID readers can be installed on entrances, in cars prepared, over freeways, mounted on vehicles, and in portable handheld gadgets can also be epitomised.

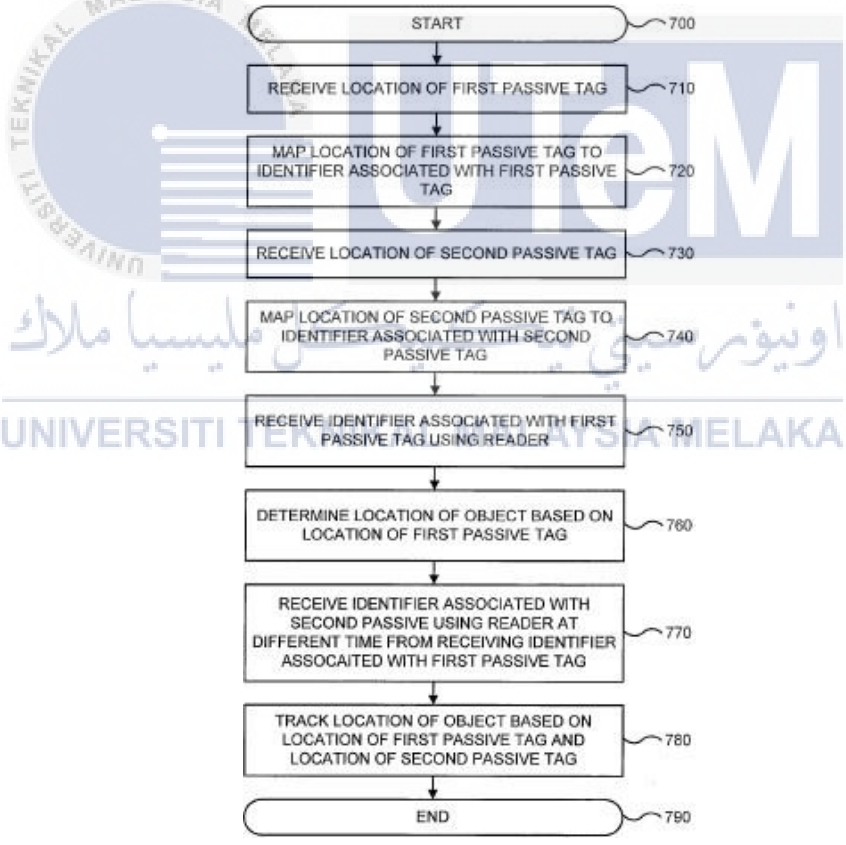

Figure 2.5: Flowchart Structure RFID

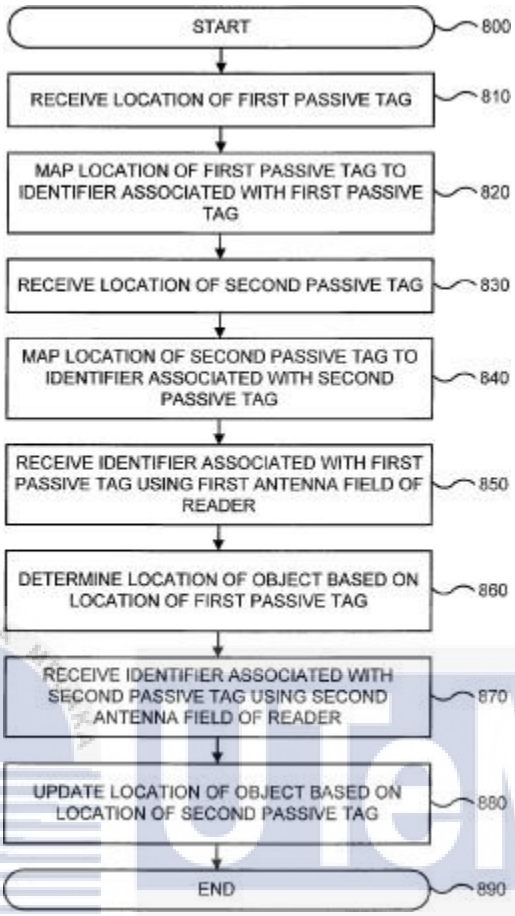

Figure 2.6: Flowchart Structure RFID

2.1.5 Smart Bus Tracking and Management System Using IoT

(Sridevi, Jeevitha, Kavitha, Sathya, & Narmadha , 2017) introduced introduced bus tracking is a bus-tracking application that gathers the distance to each station along its route. Tracking system includes installing an electronic device in a bus, with an introduced Android app on any smart phone to allow the administrator / user to track the location of the bus. This extension is implemented as an android application based on IoT. There are two server applications, and one for the client. Buses are carrying GPS gadgets for monitoring their locations. By this to server positions are updated periodically. Client application shows a map showing the bus location. It appears where the buses are on a map and use RTC to provide the updated data to students and staff at unique time frames. The server will monitor where it is located and store its information

within the database. It is a real-time device, since this approach ultimately sends data to a machine / SMART phone on the GPS network. The students / staff can use the app to get travel planning adaptability, to choose when to catch the bus. Arduino UNO microcontroller is used for module programming and equipment programming. And it's connected with the cloud and the android app that takes it out. The user's waiting time will diminish. The key to Bus Tracking system is the basic mode of communication. For central monitoring system this program can be quickly expanded to keep track of all the buses. The numerous enquiries and effective route management can be achieved easily via a central server system.

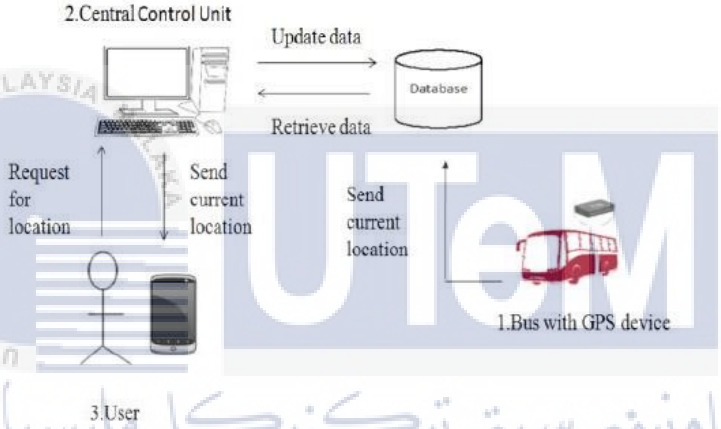

Figure 2.7: Block Diagram of the system

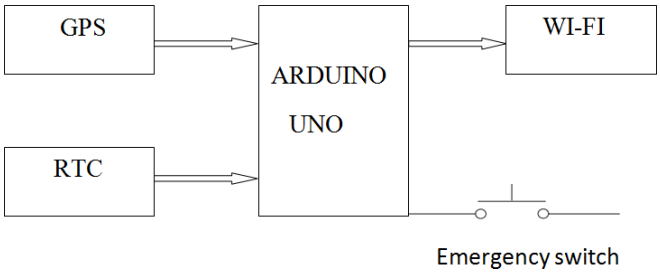

Figure 2.8: Block Diagram of transmitter

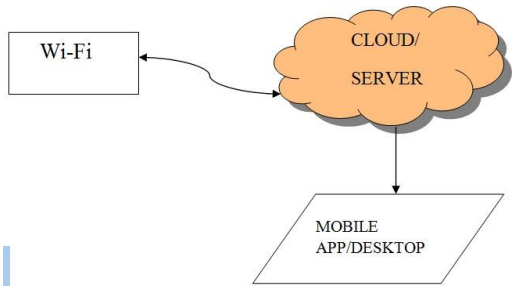

Figure 2.9: Block Diagram of Receiver

2.1.6 Use of GPS tracking collars and accelerometers for rangeland livestock production research

(Bailey, Trotter, Knight, & Thomas, 2017) discussed that the two decade, Global Positioning System (GPS) collars were used to track animals in investigative considerations. Commonly, accelerometers are combined with GPS on commercial collars following. Accelerometers are sensitive nowadays, and it can record movements for periods of weeks to months at fine time scales. Tracking collars have ended up creating and building simpler, making them essentially less expensive than commercially accessible collars. The essential use of the following GPS was to archive spatial developments in the livestock sector and to evaluate management practices outlined for manipulating distribution designs f or grazing. For illustration, cattle use of feed supplements placed in areas away fromwater and on soak slopes can be measured with following GPS and estimated corresponding impacts on distribution designs. Continuous work has identified genetic markers correlated with designs for the spatial growth of cattle. Genetic selection for brushing distribution can end up feasible if the findings can be accepted. Some research questions may be planned so that subordinate factors are measured by livestock spatial movements, and in such cases, the following GPS could be a viable device for conducting studies on extensive and rough pastures of rangelands. The combination of follow-up GPS and accelerometers is a valuable resource for detecting changes in livestock behavior associated with animal diseases and other welfare concerns. Recent technical advancements will make monitoring on rangelands possible in real time or in near-real time. This would improve applications that could remotely screen the well-being of livestock on broad rangeland and inform ranchers when animals require treatment or other management.

2.1.7 Ecommerce Order Tracking System

(Tuhin, 2018) propose a monitoring system for e-commerce orders is a cloud based program. Usage of Visual Studio Application, Atom, and Sublime Text3 to monitor ecommerce order system. The program is specifically for Company e-commerce and customers. The application offers a full e-commerce platform where customers can buy goods by meeting all the requirements and can monitor their order via the application after purchasing or placing an order. The special highlight of this application is real time google outline following system. Getting orders from clients e-commerce authority can proficiently handle all the orders through the application at the meantime clients can get inform through mail and the application. After completing all the method of an order and prepared for shipment when the conveyance man begins conveyance or shipment he can begin GPS of his portable phone with the arrange id and real time area (latitude, longitude) will consequently spare to server comparing to the arrange id. At the meantime client will inform the area of his item through a google outline within the application client can able to inform the order information updates and time.

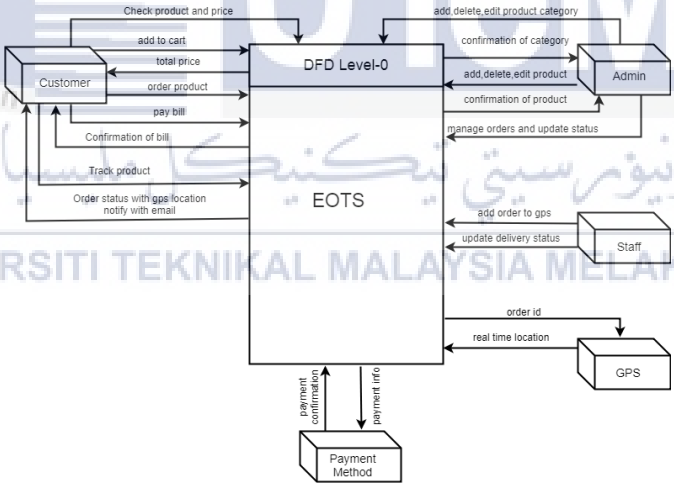

Figure 2.10: DFD Level-0

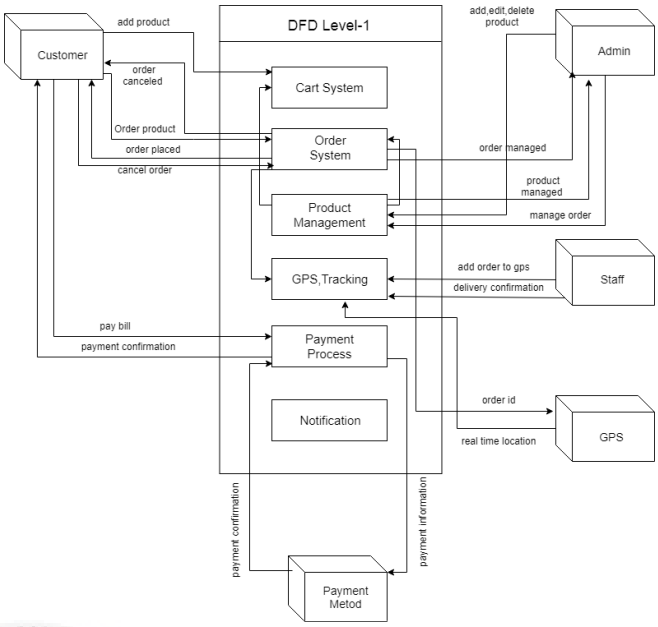

Figure 2.11: DFD Level-1

2.1.8 Development of Android Based Real Location Tracking App

(Sharma, P., Sachdeva, R., & Sharma, R. 2018) stated that an Android App can be very valuable in deciding the area of the client. By recognizing a user's area in an Android app can be truly valuable. Clients take their mobiles all over the put and are habitually utilizing them on the go, and as engineers we can advantage from that by giving a more suitable nature based on their current area. This paper presents a few easy steps which can make an App that will distinguish the client area effectively. It can moreover alarm her almost area frequently. This App occupies less space on the portable gadget and it can be introduced on any Android based portable like Redmi OPPO and many more. While developing a location-aware application for Android, ready to make utilize of GPS and Android's Arrange Area Supplier to obtain the client area. In spite of the fact that GPS is most exact, but it as it were valuable in outside, it rapidly devours battery control, and does not return the area as rapidly as users needed.

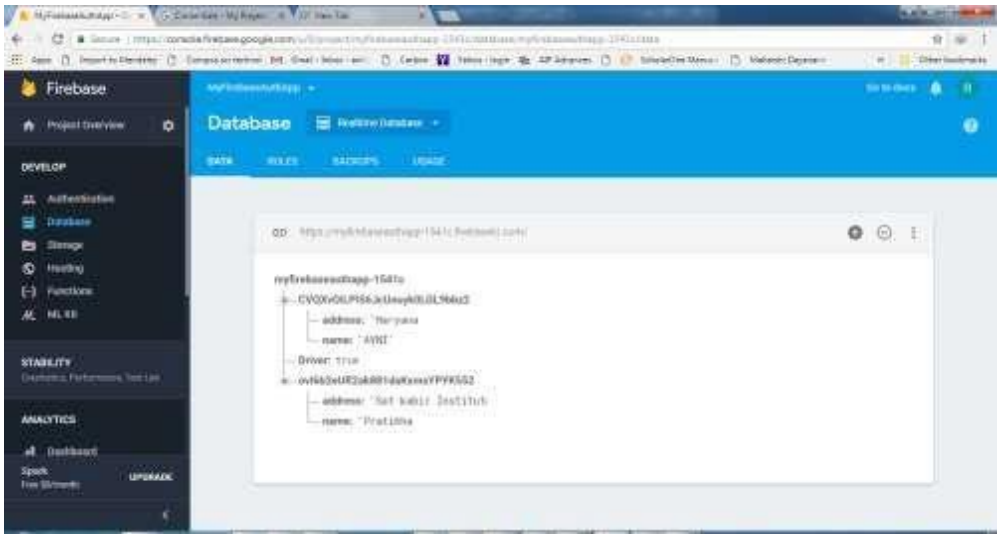

Figure 2.12: Information update in the database

2.1.9 Android Application for Taxi Management

(Ali, 2018) proposes an android applications are without a doubt an awfully helpful instrument for android clients. Android clients can access to a few Applications at the same time from one android gadget. Applications did not as it were evacuate the issue of communication but too fathomed a few issues in daily life such as following resources, keeping money data, media, instruction, sports and so on. The importance of applications for android gadgets cannot be disregarded. It brings several benefits for clients and proprietor of the app. In addition, the number of android clients is also in millions and developing all the time.

Android device can offer assistance us to track the past, current and moving area of an object. For instance, a individual who features a versatile gadget can be followed effortlessly with his phone or a car that has android Auto system. A car can be found in stopped or moving circumstance with the assistance of area following framework. The following location system makes a difference us to analyze the exercises of a individual or a few question to feel secure about it. For occurrence, in the event that a car is stopped for a long time so it can be caught on as nowhere to go, some issue with the car or driver is just busy around that location.

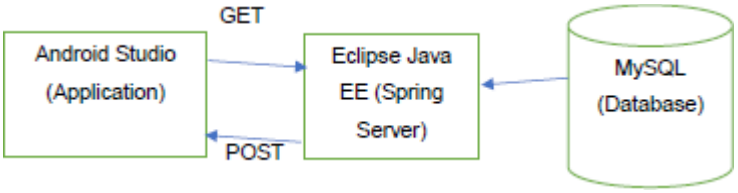

Figure 2.13: Main technologies required for developing application

2.1.10 An Android Application Controlled Video Surveillance Vehicle

(Dhikle, M. S., & Shahnasser, H. 2018) discussed that digital electronic maps are utilized to track the area in outdoor and indoor environment. Most of electronic maps are valuable for outdoor environment. There's no proficiency innovation for look the indoor area. Numerous smart-phones are utilized to track the area by electronic outline. The electronic maps may be the Google outline, GPS route, waze and offline GPS maps. These are as it were valuable for open air environment. Indoor based area following framework can be implemented by utilizing the Indoor Atlas Android SDK. It gives an API for engineers to form application for inside building route. This app too valuable for vision it have impeded people because the discourse acknowledgment for looked area conjointly include the occasion subtle elements in indoor based area following application. Using this app to discover the most limited way for desired area. Many university campus, shopping malls and association are exceptionally expansive, so the individuals are difficult to discover the area inside the shopping centers, college campus and organization. There's no successful highlights for finding the area inside the buildings. Within the application, using the indoor area based services is utilized to discover the current area of the portable clients. Indoor Area Based Services is the expansion of area based administrations. It is utilized for following the area interior the buildings or campus. Indoor Atlas android SDK is utilized for indoor navigation. The SDK offers the highlights just like the indoor positioning with higher exactness and getting floor level. In Indoor Atlas to track the specified area at that point upgrade the floor subtle elements for wanted area and after settling the course inside the buildings.

2.1.11 Comparative analysis of approches in developing Android applications using Xamarin technology

(Bartkiewicz & Dziedzic, 2018) introduced the appears examination of Xamarin innovation in two modes which is Xamarin Shapes and Xamarin Local, utilized for creating applications for portable gadgets with Android framework. Comparison concerns the number of created lines of code, execution of each portion and measure of introduced application and measure of apk establishment record. Examination was based on two indistinguishable applications made utilizing both approaches. As a result of the analysis the more effective approach for given reason has been indicated.

2.1.12 Android and web application for tracking employees

(Dholakia, Kaival, 2019) stated that the reason that this following framework serves is to keep track of the representatives of the company who have the nature of their work which includes a parcel of traveling to different areas on a day to day basis. It is an amalgamation of Android as well as a Web application. The representative is assumed to pass the area and picture as per the terms and conditions indicated to utilize the Android application. The internet application is utilized by the admin division to get to the data which would offer assistance them screen the area of the representative in a convenient way. The Android application is created utilizing Native Android on Android Studio whereas Visual Studio 2017 is being used for the working of the net application.

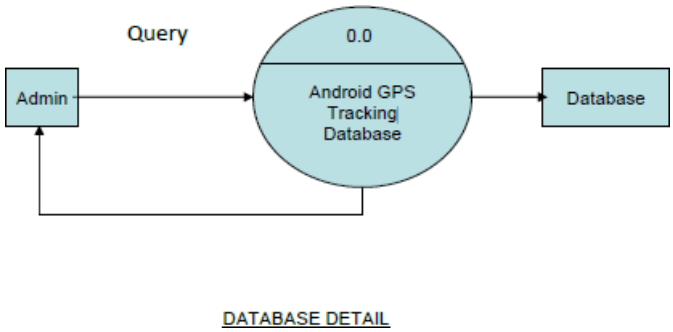

Figure 2.14: Level 0 Data flow diagram

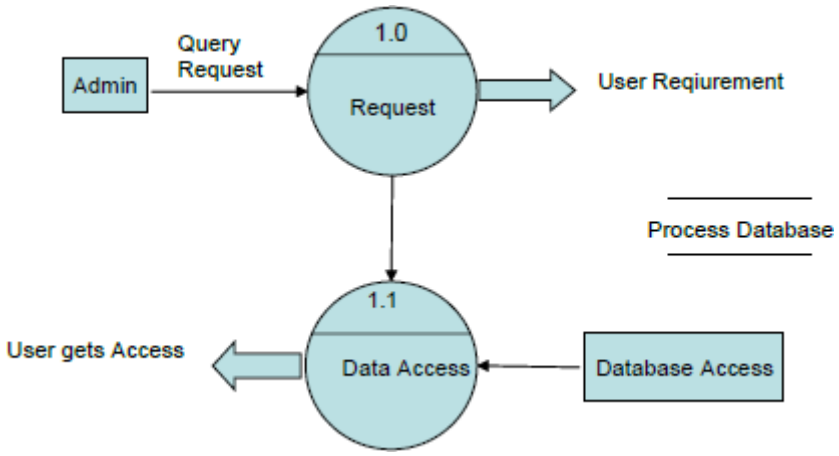

Figure 2.15: Level 1 Data flow diagram

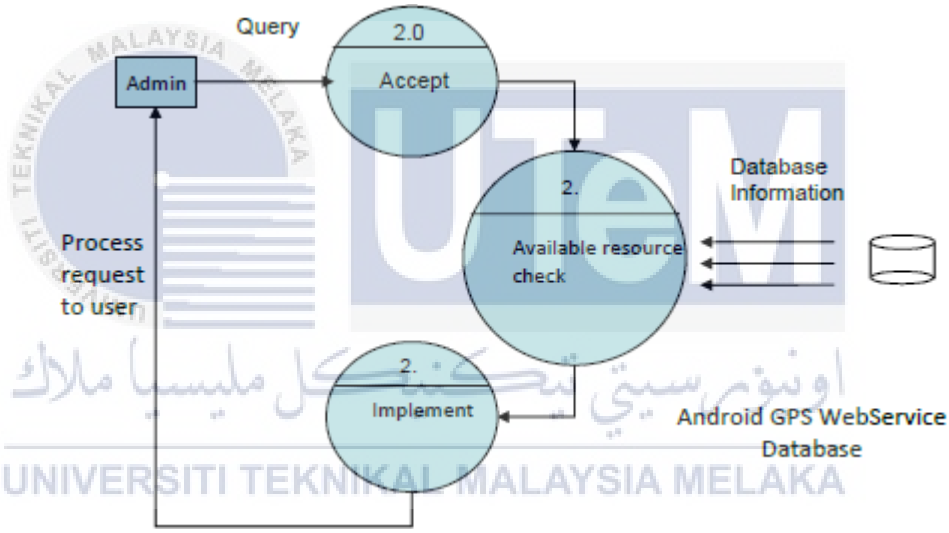

Figure 2.16: Level 2 Data flow diagram

2.1.13 Multiplatform application development for Android and Java

(Cheon, 2019) stated that computer program designers of nowadays are beneath expanding weight to back different stages, in specific versatile stages. In any case, creating a multiplatform application is troublesome and challenging due to an assortment of stage contrasts. It propose a local approach for creating a multiplatform application running on two comparative but distinctive stages, Java and Android. Address down to earth program building concerns credited to local multiplatform application improvement, from arrangement of apparatuses to computer program

plan and advancement prepare. Approach permits one to share 37%~40% of application code between the two stages as well as progressing the quality of the application.

2.1.14 Location Tracking System

(Selmanovic, Kirkbak, Selnæs, Darden, & Tuzovic, 2019) discussed a location tracking framework is given for following the area of a child or other person. The area following framework incorporates an area server and one or more area following gadgets. Communication conventions are given for communications between the area server and the area following gadgets. The communication conventions give a moo complexity and moo fetched arrangement for area following applications.

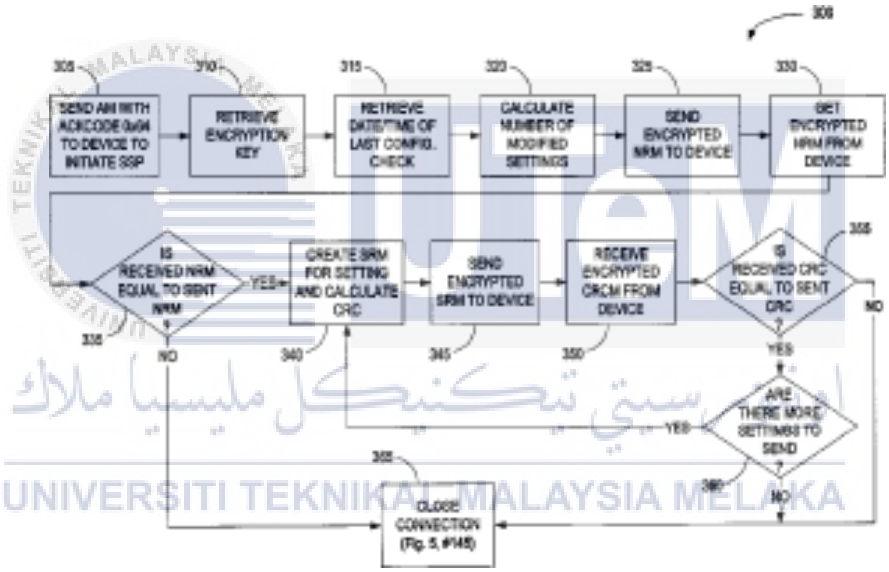

Figure 2.17: Location Tracking System Sheet

2.1.15 Method and system for tracking the delivery of an object to a specific location

(McQuade & Brinton, 2019) discussed a system and strategy for collecting object identification information from a majority of objects that associated with a vehicle during operation of the vehicle, where the vehicle interacts with particular objects at particular geological positions. A recognizable proof sensor is joined to a specific question that's to be conveyed to particular area. A record for the protest is produced, the record counting the recognizable proof of

the question, the position of the vehicle when the interaction between the object and th e vehicle happens, and the time of the interaction. The record too includes a particular target area for conveyance of the question. Exemplary interactions incorporate loading/unloading a question from the vehicle. The record may moreover incorporate additional information around a parameter of the protest (such as the object's weight, volume, or temperature). A caution is sent to a driver of the vehicle when he approaches a area that's adjacent to the delivery area of the vehicle.

2.1.16 GPS Tracker Application in Manufacturing Companies Based on Android

(Rifqi, 2019) proposed GPS innovation is commonly used at this time, since GPS is now a required feature on a smartphone, as it can help in everyday life, such as illustration, to a place that has never visited and does not know how to get there, with GPS it actually goes to a place and does not need to be stressed about getting misplaced. In addition, at this time the GPS can be used for different needs, one of them offers delivery assistance to know the closest distance from the current position to the following destination. It is made on the Android stage using the Kotlin programming dialect by executing the Haversine Calculation and uses the Google Maps API as a Virtual Maps provider. This app connects to the server database and receives information such as the car's current location, the delivery destination generated by the API and appears in the form of JSON Format, thereby enabling the customer to know the distance from the current position of all delivery goals so that it is meant to make it easier to decide the destination of the next delivery.

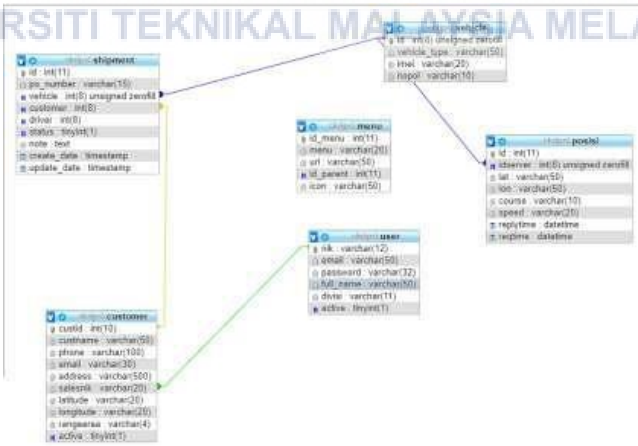

Figure 2.18: Database Design

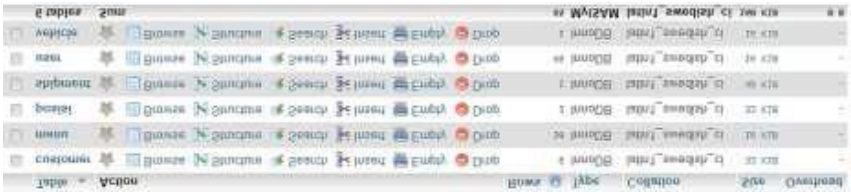

Figure 2.19: Database List

2.1.17 Vehicle location tracking systems and methods

(Rivera, Fox, & Grimwood, 2020) stated a vehicle area tracking framework comprises a plurality of transceivers, a coordinator, and a plurality of identification labels. The majority of identification labels are coupled to a fleet of vehicles to be followed. The handsets degree the quality of a flag transmitted by an identification tag coupled to a vehicle and communicate the measured signal quality to the coordinator. The indoor vehicle area following framework gauges the area of the vehicle based on the measured signal quality. The tracking systems and strategies described in this may be executed on an outdoor part, within a structure, or in a facility that combines indoor and outdoor parking. A vehicle area following framework may contain a majority of transceivers, a coordinator, and a plurality of identification labels. The majority of identification labels are coupled to a fleet of vehicles to be followed. The handsets are situated insidethe stopping structure and/or stopping part and degree the quality of a signal radiated by an identification tag coupled to a vehicle. The transceivers communicate the measured signal quality to the coordinator as example a central hub, and the coordinator gauges the area of the vehicle based on the measured signal quality.

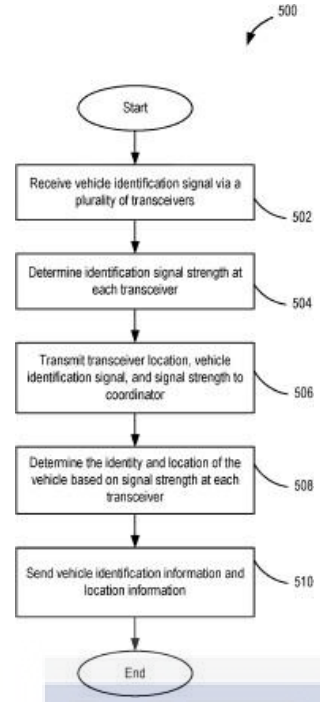

Figure 2.20: Flowchart location system tracking

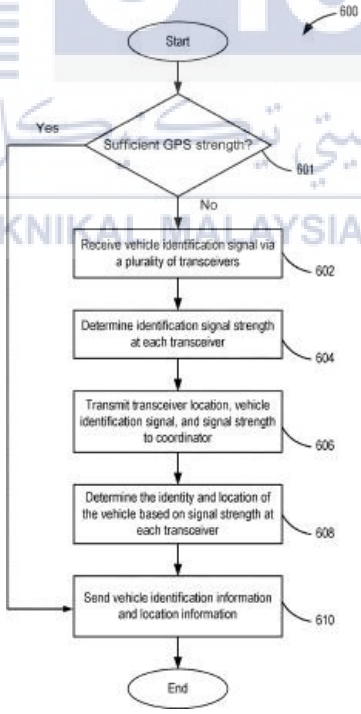

Figure 2.21: Flowchart location system tracking

2.2 Summary Table

No	Title of Project	Author	Source	Findings
1.	Real time Google map and Arduino based vehicle tracking system	Rahman, Mou, Tara, & Sarkar, 2016	-GPS, GSM and Arduino	Genuine time Google outline and Arduino based vehicle tracking.
2.	College Bus Tracking Android Application using GPS	Kumar, Aishwarya, & Mounika, 2016	-Google Map, Global System for Mobile communication/GPRS, SMS and Database	Enables the client to discover out the transport location information so that the client does not get delayed.
3.	Real-time and offline location tracking using passive RFID technologies	Rehman, S. 2017	-Radio Frequency Identification	Depends on the putting away and remotely recovering of information utilizing devices.
4.	Smart Bus Tracking and Management System Using IoT	Sridevi, Jeevitha, Kavitha, Sathya, & Narmadha ,2017	-Android App, GPS, Database and Arduino Uno microcontroller	Tracks a bus and gathers the distance to each station along its route.
5.	Ecommerce Order Tracking System	Tuhin, 2018	-Visual Studio Code, Atom and Sublime Text3	Where customers can buy products by fulfilling all the requirements using the website and after purchasing or placing order users can be able to track order through the application.
6.	Development of Android Based Real Location Tracking App	Sharma, P., Sachdeva, R., & Sharma, R. 2018	-Database and android application	App that will distinguish the client area effectively.

7.	Android Application for Taxi Management	Ali, 2018	-MySQL, Android Studio and Eclipse Java EE(Spring Server)	A car is stopped for a long time so it can be caught on as nowhere to go, some issue with the car or driver is just busy around that location.
8.	Android and web application for tracking employees	Dholakia, Kaival, 2019	-Web Application, Android Studio and GPS	Tracking of the representatives of the company who have the nature of their work which includes a parcel of traveling to different areas on a day to day basis.
9.	GPS Tracker Application in Manufacturing Companies Based on Android	Rifqi , 2019	-GPS,Google Maps API and database	Database is connected on the server and gets information.
10.	Vehicle location tracking systems and methods	Rivera, Fox, & Grimwood, 2020	-GPS, Identification tag	A vehicle area following framework may contain a majority of transceivers, a coordinator, and a plurality of identification labels

Table 1: Summary research for previous related work

2.3 Conclusion

All the summary from the previous project based on the research had been explained in this chapter. In this chapter, it very practical and important for the researcher to develop and do improvement about the previous projects that are related. However from the previous study, it also can help the students to get more knowledge about how to implement the projects.

CHAPTER 3

METHODOLOGY

This chapter will explain and discuss the methodology and approaches of this projects. In this chapter, elaboration will be done on the flow charts of projects, the software and hardware that are used, how the process are work and lastly about how to development and apply the projects.

3.0 INTRODUCTION

The research of this project is about the delivery man tracking location application. This project will create by using Xamarin software and related to the project. This application will help the delivery man to provide better delivery management application to avoid miscommunication for delivery received by users. The function of this project is enabled for the user to get information about their delivery. This system can only be used for the user are only compatible with this application.

3.1 PROCESS FLOW CHART

A flowchart is a type of diagram that can describe a method of workflow. It will show the process about how the projects is working and functioning. A flowchart can also be defined as a diagrammatic representation of an algorithm, a step-by-step approach to solving a task. The flowchart shows the steps as boxes of various kinds, and their order by connecting the boxes with arrows. The function of delivery man location tracking application will show in figure below.

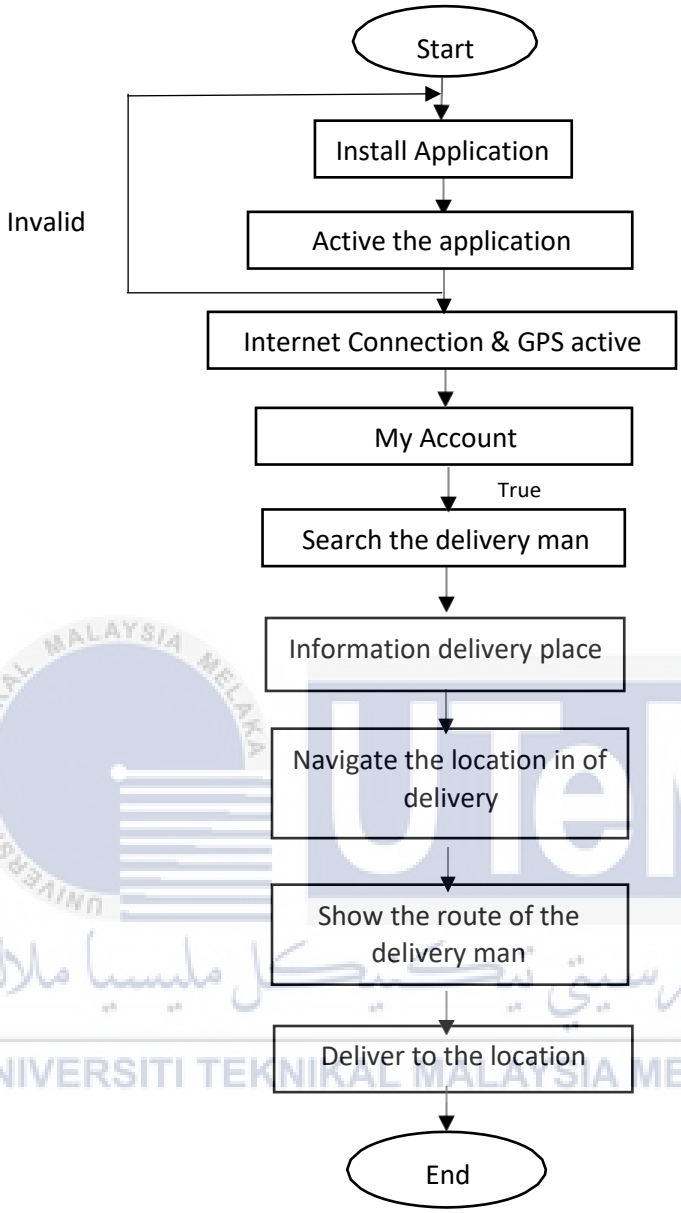

Figure 3.1: Flow Charts of Delivery man location tracking application

3.2 SOFTWARE DEVELOPMENT

This project use Xamarin software. This software will help to develop the projects of delivery man tracking location application. All the explanation about the software development will be explain and discussed.

3.2.1 Xamarin Software

Xamarin is an open-source platform that can develop modern, high-performance iOS, Android and Windows application by using .NET. Xamarin is an abstraction layer that manages the communication of shared code with platform code underlying it. Xamarin runs in a managed environment which provides conveniences such as memory allocation and garbage collection. Xamarin allows developers to distribute an average of 90 per cent of their application across platforms. This pattern allows developers to write all of their business logic in one language (or reuse existing application code) while attaining platform native output, look, and feel. Xamarin applications can be written to PC or Mac and compiled into native application packages such as the .apk file for Android or the .ipa file for IOS.

First, Xamarin is present in certain forms of Xamarin. Forms to operate is a standardized, complete programming interface for all frameworks. Xamarin also supports Wearable Devices. The Xamarin part store allows the installation of simple plugins to add more features to the apps. With most popular like Microsoft Azure, and many more, user easily integrate user application. The users can also add popular methods of authentication. And plugins are also available to add billing support and other features. Finally, Xamarin provides full access for the iOS, watchOS, and tvOS SDKs. Apps on NET. Build user interfaces with our built-in designer, or add the others to clients Xcode app using our application. Take benefit of APIs such as Touch ID, ARKit, CoreML and load more from C.

Figure 3.2: Xamarin Software

3.2.2 Xamarin.Forms

Xamarin.Forms is a feature of Xamarin software, a mobile development application that provides tools and libraries for creating mobile apps on the .NET developer platform. Xamarin.Forms is a cross-platform Microsoft open source project for developing .NET iOS, Android, & Windows apps from a single shared codebase. Then, Xamarin.Forms built in pages, layouts, and controls to build and design mobile apps from a single API that is highly extensible. Subclass any control to customize behavior or define controls, layouts, pages, and cells. Xamarin.Forms is a complete application framework that contains everything to create mobile applications, rather than just a cross-platform UI library. This involves cross-platform navigation, animation APIs, message core and dependency support.

3.3 Propose Application

The propose application that are required to developed and implement of this project is using Xamarin software and create a simulator for mobile applications (Android) by using Microsoft Visual Studio (2019). From this application, the user enable to access the details information about the delivery man location. The users can find the information about the delivery status through the application.

This application will help to reduce time and energy that are required for the user to deliver or receive through an android application by tracking the locations of delivery man. It will create each of module that can be used in library by using the Xamarin Software and simulation of mobile application which is Android application.

3.3.1 User Interface

This user interface is use for the users especially for customers to access all the information of delivery man location and select the place that are require. The user will see the interface of the application. The user will find three different places of delivery in the application. Every user should have install the correct application and can enter the application. The smartphone of user need GPS to through the application. Furthermore, it may easy for users to find and access every delivery location by using theapplication.

3.3.2 Google Map Module

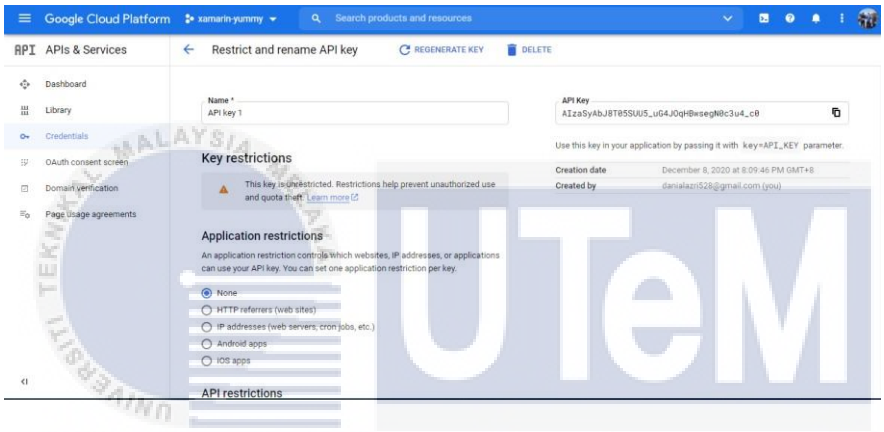

Figure 3.3.2.1: The Google Cloud Platform

This module is use to create an API key to active the application. The API key need in the application is to start using the Google Maps Platform. The API key is a unique identifier that authenticates requests associated with application for usage and billing purposes. This application must have at least one API key associated with the application. Restricting API keys adds security to this application by ensuring only authorized requests are made with API key.

3.3.4 Map SDK For Android

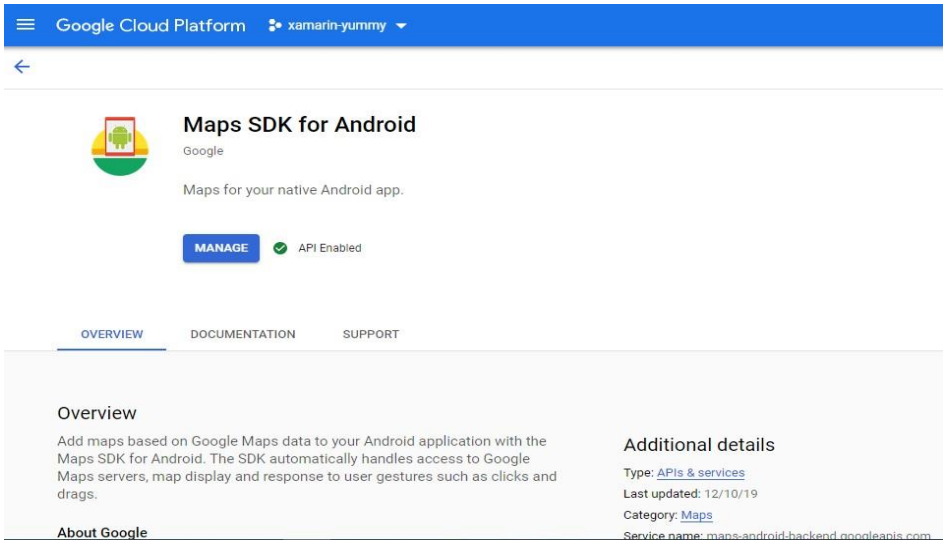

Figure 3.3.4.1: Enable Maps SDK for Android

With the Maps SDK for Android, the application can add maps based on Google Maps data to the application. The API automatically handles access to Google Maps servers, data downloading, map display, and response to map gestures. This application can also use API calls to add markers, polygons, and overlays to a basic map, and to change the user's view of a particular map area. These objects provide additional information for map locations, and allow user interaction with the map.

3.3.5 Delivery Interface

This interface is use to show about the status of delivery that are available. This interface will help the users to know about the delivery man location that are available through the application.

In addition, this interface will help the delivery to manage about the status that are available in application. Therefore, it is easily and help the delivery to arrange new delivery according to their category. This interface also can tracking the location of delivery man.

3.4 Block Diagram of Projects

A block diagram is a diagram of a mechanism in which blocks are linked and shown by the lines-connected blocks to display the block relationships**.** This diagram usually presented about the process of electronic design, hardware design, and software design. However, this project is develop and implement by using software only.

In this project, there are includes 3 process which is input, controller, and output. All the process is presented about the interface that are required to develop the application of delivery man location tracking. The first part is about processing of inputs.

Then, next part is about the controller. The controller that are using is to manage the delivery man system are GPS. The user need to active the GPS to using this application. When the GPS is active, the application will show the delivery man location. By the time for user interface, is manage by users or customers. Last but not least is about output process. The output process is use to navigate the status location of delivery man through the applications.

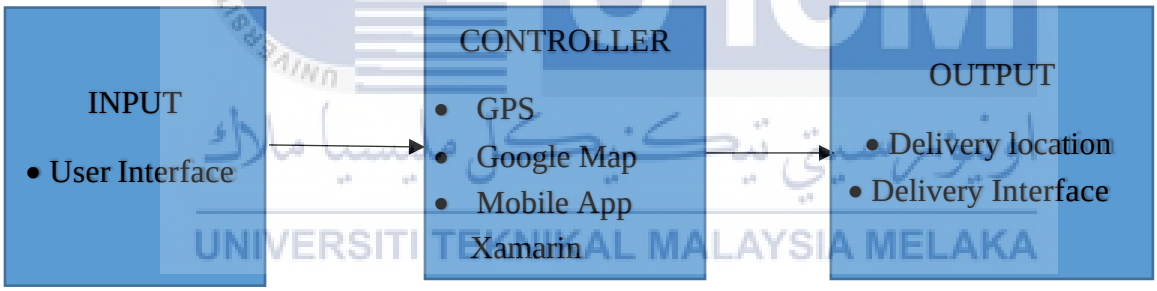

Figure 3.4.1: Block diagram process for delivery man location tracking application

3.5 Project Work Plan

A work plan represents the formal road map for a project. To developing and implement this project will be two semesters which is about 30 weeks. It needs to create a Gantt chart that are used for planning about the times that are required for developing the application. A Gantt chart is a type of chart that are used for summarized and update about all the progress of project activity during Bachelor Degree Project 1 and Bachelor Degree Project 2. The Gantt chart of this project will be presented and shown in Table 2 and Table 3.

Table 2: Gantt Chart For PSM 1

PROJECT ACTIVITY	Academic Week of Semester 1														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
PSM 1 Briefing and Meet Supervisor								S							
Preparation of proposal								E							
Selection and Register Title Project								M							
PSM 1 Briefing (Literature Review)								E							
PSM 1 Briefing (Abstract & Methodology)								S							
Find necessary articles and information								T							
Discuss planning of the implementation project								E							
Preparation draft report for PSM 1 (chapter 1- 3)								R							
Submit a draft report to supervisor for review															
Doing research to implement into the projects															
Gather initial idea and applying in simulation															
Design initial simulation (Extra)								B							
Submit a final draft report PSM 1 to supervisor								R							
PSM 1 Final Report Submission to supervisor								E							
Preparation Slide PSM 1								A							
PSM 1 Online Slide Presentation								K							

Table 3: Gantt Chart For PSM 2

PROJECT ACTIVITY	Academic Week of Semester 2														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
PSM 2 Online Briefing by JK PSM								S							
Preparation of project								E							
Selection software needed								M							
PSM 2 Online Briefing (Result & Discussion)								E							
PSM 2 Online Briefing (Conclusion & Future Recommendation)								S							
Online Meeting With Supervisor								T							
Designing the application project (Emulator)								E							
Preparation draft report for PSM 2 (chapter 4- 5)								R							
Create Survey to make as analysis															
Gather coding and applying in software															
Run the application simulation								B							
Finalize the report								R							
Submit a final draft report to supervisor								E							
Submit a final report PSM 2 to panel								A							
Video Demo Presentation & Slide PSM 2								K							

3.6 Summary

This part is describe about the process and method that has been used for development application delivery man location tracking. In addition, the researcher also can clarified about the software of any kind that is used in this development.

Then, this chapter help to cover the researcher to get more approach and the methodology on this project. Moreover, the process on this system can be view in the flowchart where it shows about the details project. Next, software part had been explained the researcher about the development that are used to give a better understanding and perform as a reference to develop this project. Last but not least, the work cycle was clearly written out in a way in which the researchers had instruction for completing the project.

CHAPTER 4

RESULTS AND DISCUSSIONS

4.1 Introduction

In this chapter, there is about explanation about the softwareconfiguration that are used to developed the delivery man location tracking application and results that are obtained from the application. The softwarethat are used to develop the application is Microsoft Visual Studio 2019. In Microsoft Visual Studio 2019 software, this application will create by using Mobile App (Xamarin). Mobile App (Xamarin) is the software that are develop the application by using mobile android and iOS but this application only build in Android. This application is required GPS that build in the smartphone and internet connection before using it.

4.2 Software Configuration

This part is explained about the experiment results for the applications of delivery man location tracking that has been done to build the projects. This software is developed for the purpose that are used to tracking the locations of delivery man. Furthermore, this application was developed by using Xamarin mobile application (Android).

4.3 Configuration For The Application

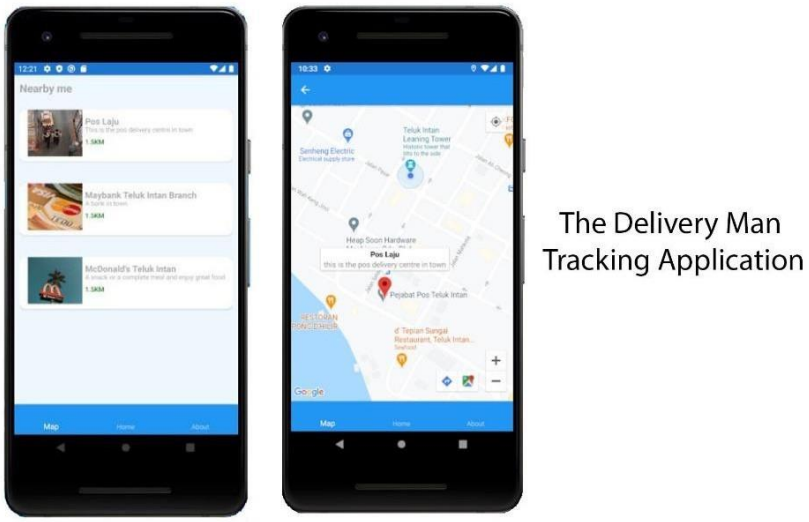

Figure 4.3.1: The Delivery Man Tracking Application

Figure 4.3.1 shows the delivery man location tracking application that had been developed and built by using Xamarin software

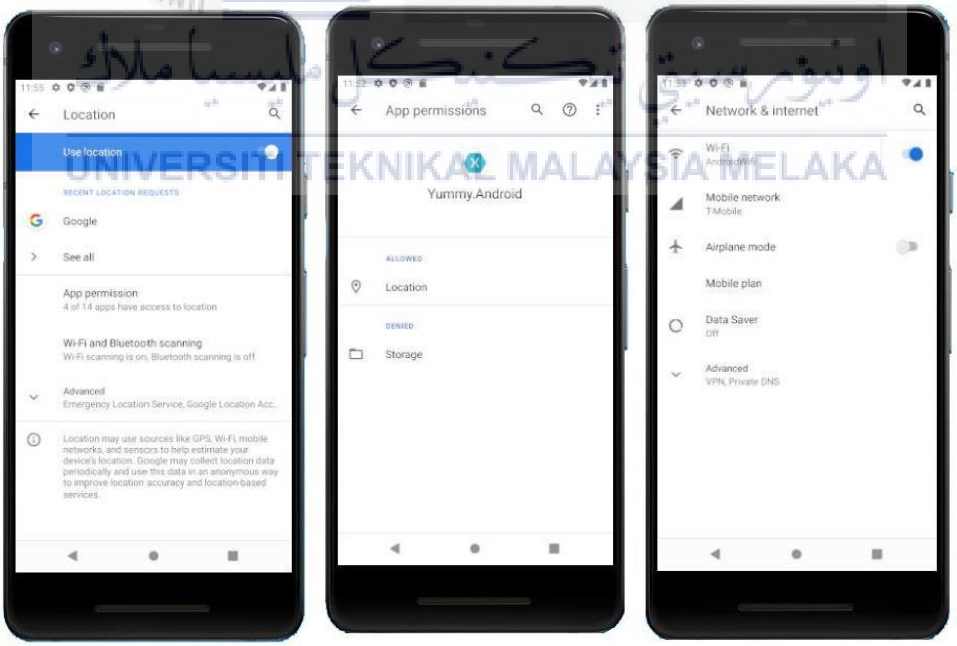

Figure 4.3.2: Active The Location, Permission & Network At The Smartphone

Figure 4.3.2 is show about the activation the location (GPS), permission and network at the smartphone. The users need to active the location which is GPS in the smartphone to use the application. Furthermore, users also need to active the permission application about the location in the setting of the smartphone. Users need have Wireless Fidelity (Wi-fi) or active mobile network to using this application.

Figure 4.3.3: User Interface of Delivery Man Location Tracking

Figure 4.3.3 is shown about the User interface of delivery man location tracking application. The interface will show three places which is Pos Laju, Maybank Teluk Intan Branch and Mc'Donald Teluk Intan. This place always been delivered by the delivery man.

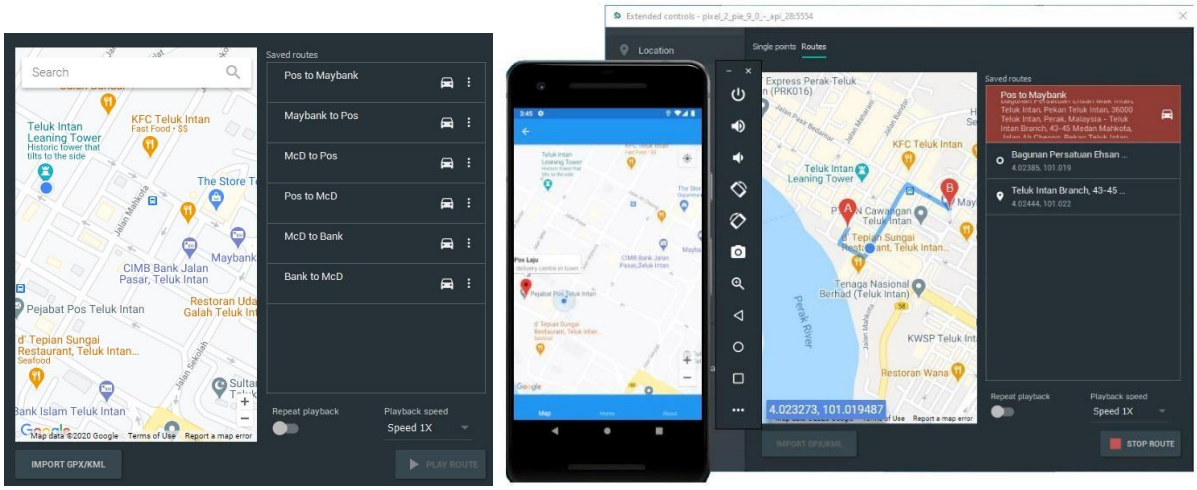

Figure 4.3.4: Delivery Man Start To Deliver To The Location

Figure 4.3.4 is shown about the delivery man start to deliver to the destination. The figure shows the route of Pos Laju to Maybank Teluk Intan branch. The route will start when delivery man taking the parcel. The users smartphone will see the blue pin which is delivery man is taking the parcel and red pin is the location of the parcel that need to deliver

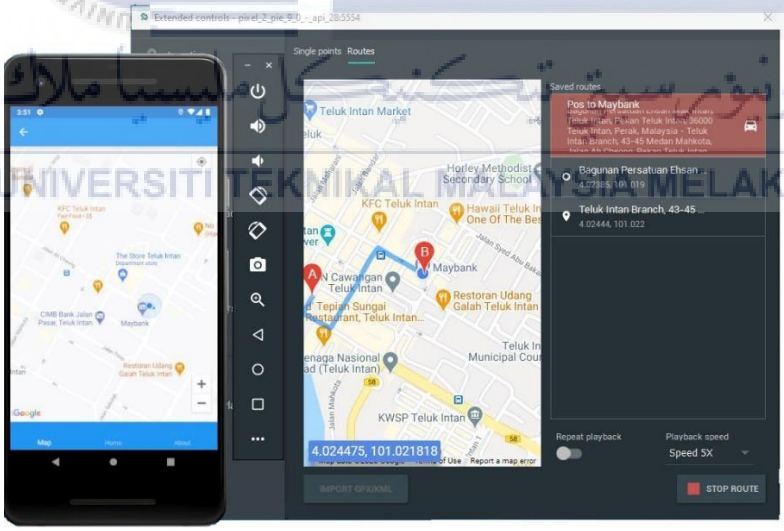

Figure 4.3.5: The Parcel Already Been Delivered

Figure 4.3.5 is about the parcel already been delivered to the location, this delivery interface is used as output for the application. The function of this part is the users can detect and give the information about the position pin of delivery man by using this application.

4.4 Analysis Result For Development Application

This section will be explained based on survey obtained from google form which was limited to 30 respondents only. In this section, the finding for the application is discussed further. The results obtained is based on the delivery man tracking location application. This survey consists of 10 questions about the project of the development delivery man location tracking application.

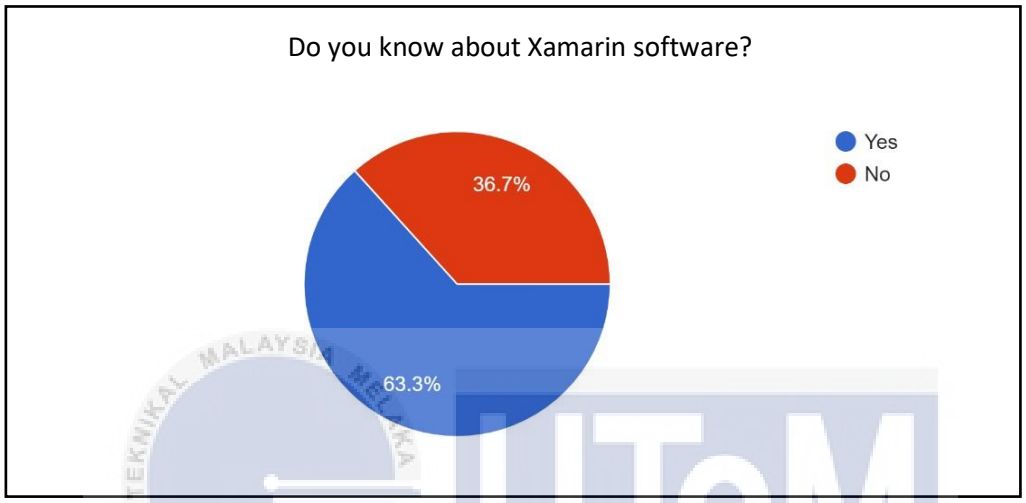

Figure 4.4.1: Pie chart responses about Xamarin Software

Out of 30 respondents, 63.3% of them knew about Xamarin software while the rest 36.7% respondents have no idea about Xamarin software. Most of respondents have learnt about Xamarin software during their studies, thus we can see the result of the survey for this question is 'Yes'.

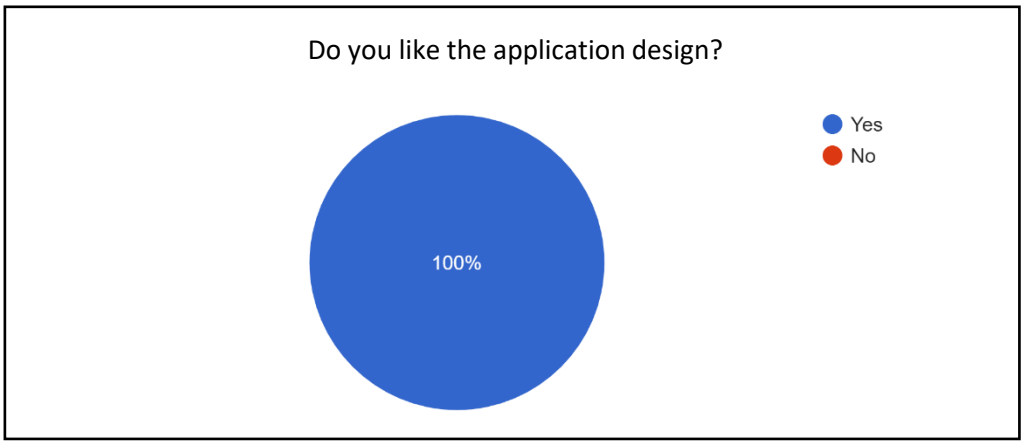

Figure 4.4.2: Pie chart responses about application design

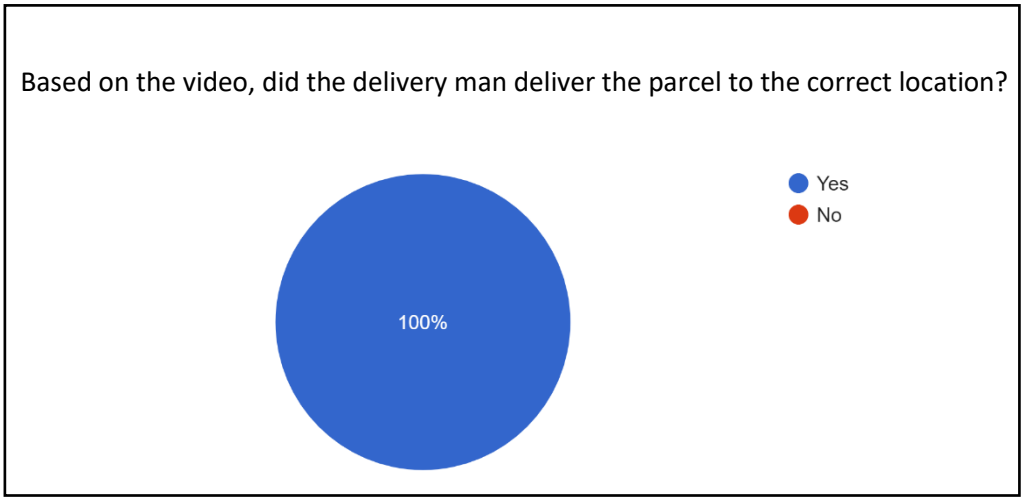

Figure 4.4.3: Pie chart responses about the delivery location

Figure 4.4.2 Pie chart responses about the delivery man deliver the parcel to the correct location. Based on Figure 4.4.3, all respondents like the application design and agreed if the delivery man deliver the parcel to the correct location. In my opinion, the design is simple which gave a quick understanding to respondents. In the video, the respondents can clearly see the delivery man delivered to the correct place.

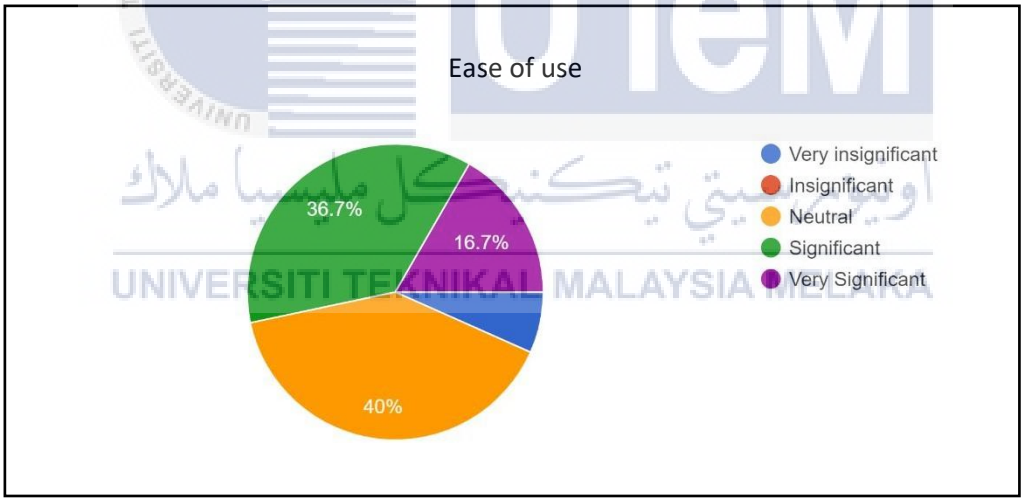

Figure 4.4.4: Pie chart responses about ease of use

From the pie chart above, majority of the respondents found it neutral for ease of use. 36.7% of the respondents found it significant while 16.7% of them found it very significant. Minority of the respondents found it very insignificant for the usability. Since the design is simple, it already ease the respondents to use the application.

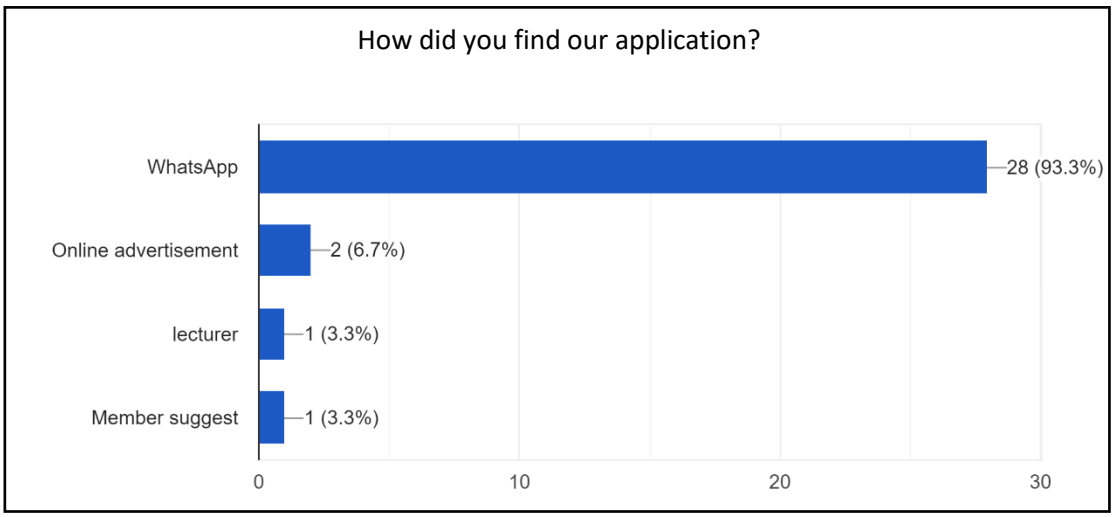

Figure 4.4.5: Pie chart responses about how did application find out

The bar chart shows majority of the respondents found about the application through WhatsApp while 6.7% of them found it on online advertisement. Those who found about this application through lecturer and member's suggestion have same number of percentage which is 3.3%.

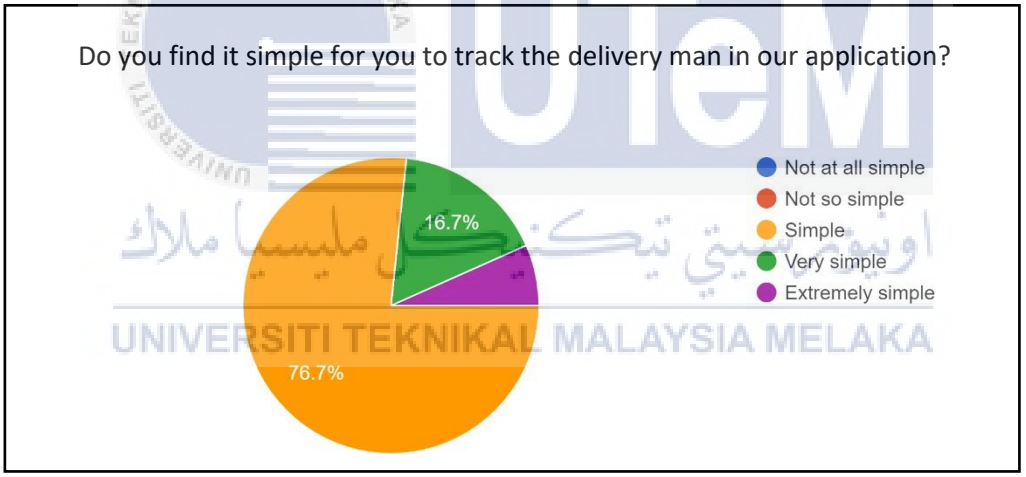

Figure 4.4.6: Pie chart responses about track the delivery man

Most of the respondents found it simple for them to track the delivery man from the application. 16.7% of the respondents found it very simple while 6.7% of them found it extremely simple for tracking option. As the design is easy and understandable, none of them had to face difficulties to track the delivery man in the application.

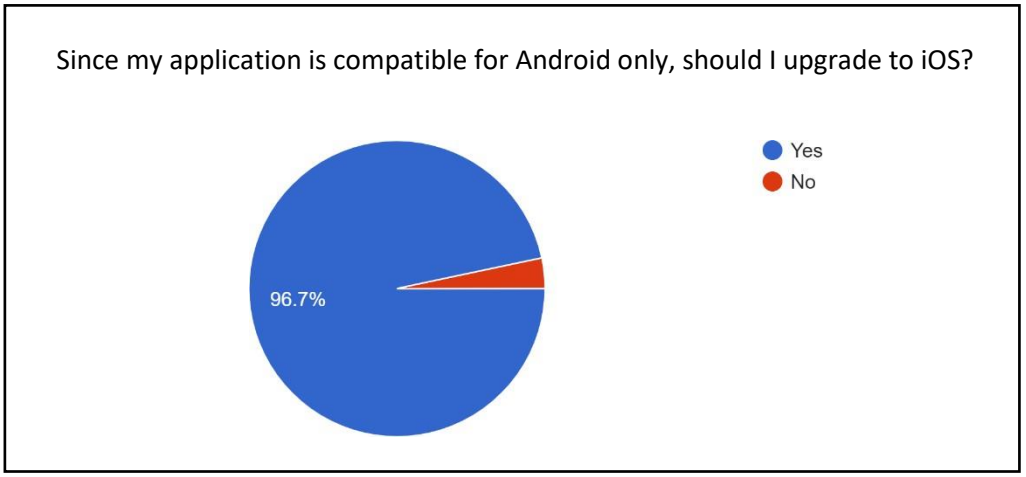

Figure 4.4.7: Pie chart responses about should the application upgrade to iOS

96.7% of the respondents agreed to upgrade the application to iOS while 3.3% did not agree and wanted this application to compatible only for Android. As iOS is popular among the young generations, thus respondents want the application to be available on iOS too.

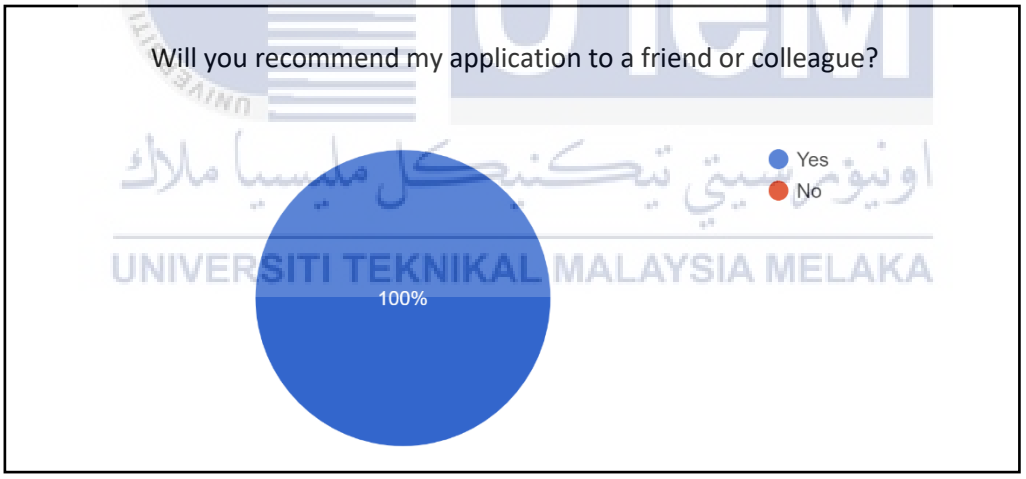

Figure 4.4.8: Pie chart responses about recommend the application

All 30 respondents be the same option which is they will recommend the application to a friend or colleague. This application gave a lot of benefits as it is very user-friendly to everyone. In my opinion, the respondents want to recommend the application to their friends or colleagues as it gave a really quick understanding.

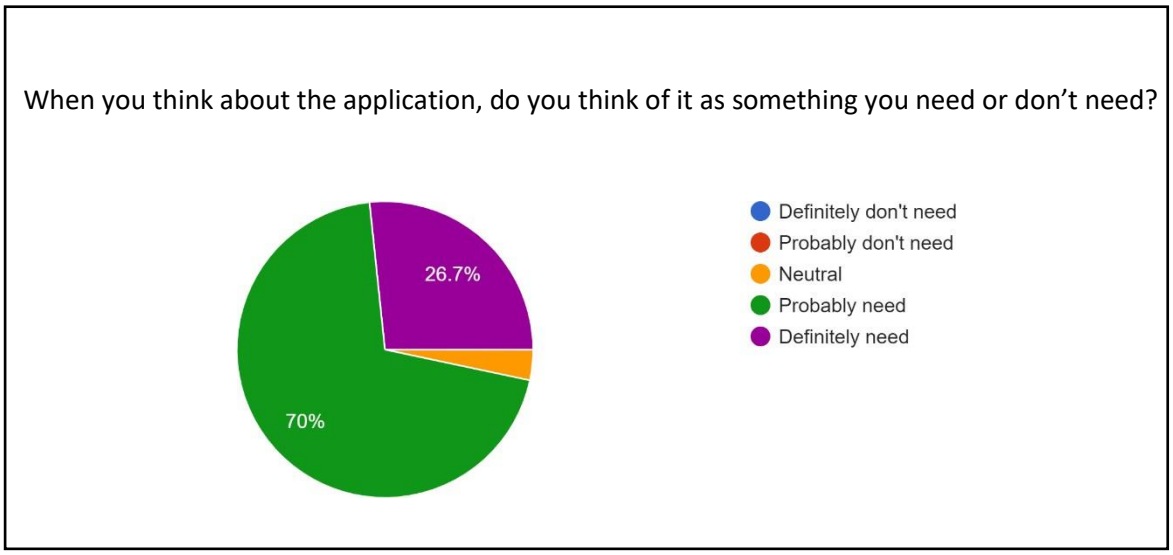

Figure 4.4.9: Pie chart responses about the need of the application

70% of the respondents probably need this application while 26.7% of them definitely need this application on their devices. 3.3% found it neutral. As there is COVID-19 outbreak in this world, most of respondents prefer to use delivery applications rather than driving on own to get the things that respondents want. Thus, delivery application is very important and is a need for the people.

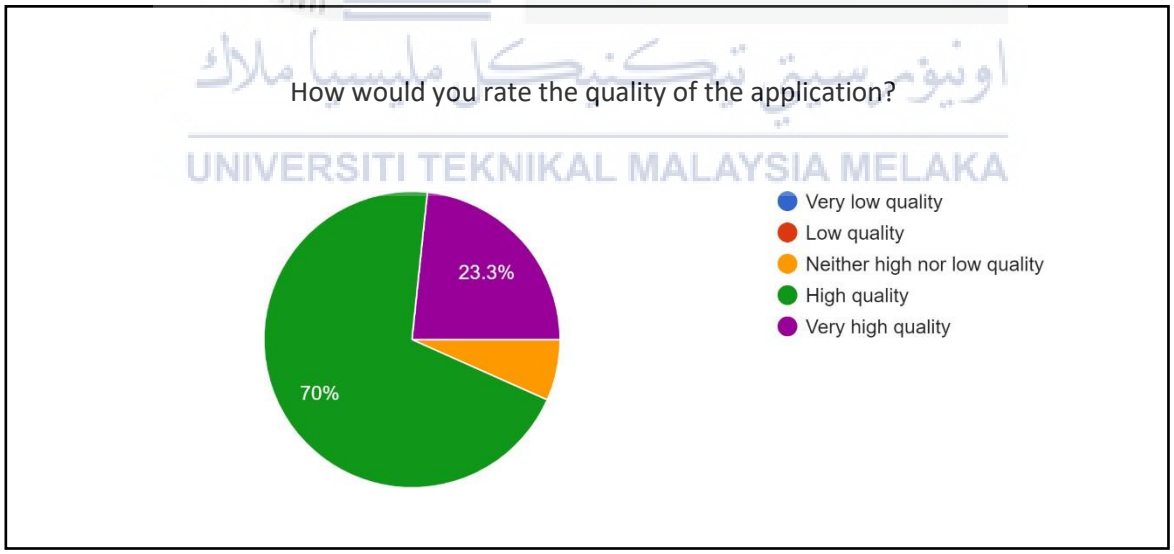

Figure 4.4.10: Pie chart responses about the quality of application

Most of the respondents rated high quality for the application while 23.3% found it a very high-quality application. 6.7% rated neutral which is neither high nor low quality. None of the respondents rated low or very low quality which means the quality of the application has reach the user satisfaction.

4.5 Summary

The summary of this chapter is explained about the result and discussion about the project of “Development of Delivery Man Location Tracking Application using Xamarin Software”. In this chapter, the researcher explained about the interfaces of the application delivery man location tracking application using Mobile Application Xamarin. This application was developed and implement by using Xamarin Software by using Mobile Xamarin and Google Map Module.

Furthermore, the analysis result for this application, the researcher make survey by using the google form. The purpose of this survey is to ask about the opinions from the users about development of delivery man location tracking application for the future services. Last but not least, based on the survey analysis from the google form, many respondents give positive feedback on the development of application.

CHAPTER 5

CONCLUSION & FUTURE WORK

5.1 Conclusion

The applications of “Delivery Man Location Tracking Application” is a project that have been developed by using Microsoft Visual Studio 2019 for the mobile applications which is Android. Two main objectives has achieved which are wants to be achieve for this project which is to develop an application for delivery man tracking system using Android platform. Then, to analyse the application developed in term of its functionality.

Nowadays, the user having problem to find the location of delivery man. Because of that, it can make the users wasting time and hard to find out information about the delivery man location. This project can help the users to find the location of delivery man by using the mobile application which is Android.

The function of this application is when the user search the delivery man, this application can be able to tracking the delivery man location area. Furthermore, this application can detect the position of delivery man.

5.2 Future Work

There is still another future work that can be implemented to this application. This future work is required more research that can add more functionality to the applications of delivery man tracking location. The future work are included these following criteria.

i. Upgrade to iOS system

The recommendation for the future work about this application can be upgrade by using the iOS system. This operating system can use in mobile applications for example iPhone or iPad. The iOS is a mobile operating system which is created and developed by Apple. The iOS users can easily to use this application to track the location of delivery man for the future works.

ii. User's Information

This application can add more functionality such as add in the ability to reschedule delivery time next time, when the users is not available to receive the parcel.

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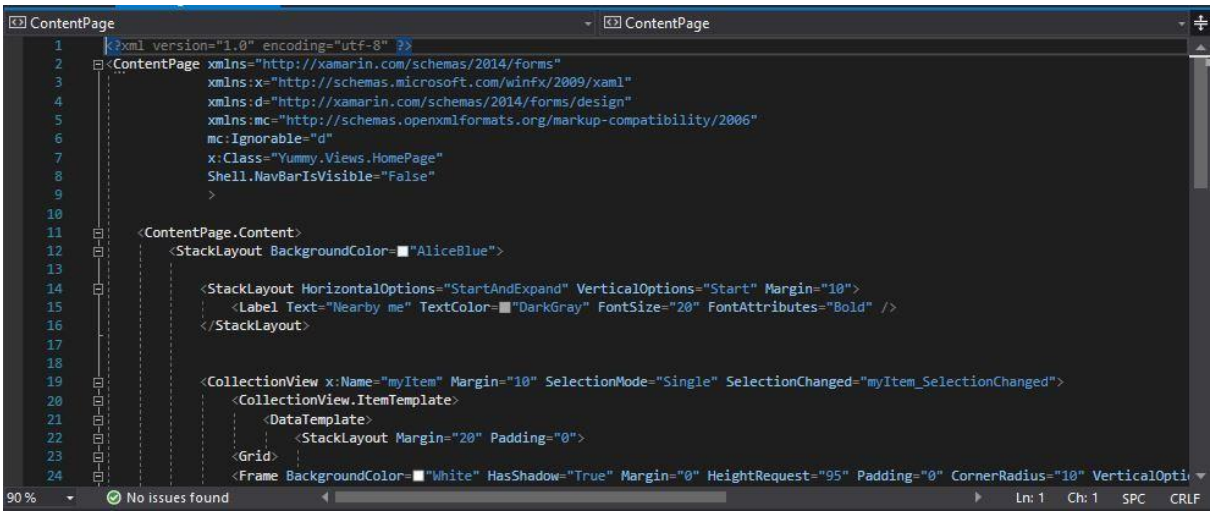
APPENDIX



```
<?xml version="1.0" encoding="utf-8" ?>
<ContentPage xmlns="http://xamarin.com/schemas/2014/forms"
             xmlns:x="http://schemas.microsoft.com/winfx/2009/xaml"
             xmlns:d="http://xamarin.com/schemas/2014/forms/design"
             xmlns:mc="http://schemas.openxmlformats.org/markup-compatibility/2006"
             mc:Ignorable="d"
             x:Class="Yummy.Views.HomePage"
             Shell.NavBarIsVisible="False"
             >

    <ContentPage.Content>
        <StackLayout BackgroundColor="AliceBlue">

            <StackLayout HorizontalOptions="StartAndExpand" VerticalOptions="Start" Margin="10">
                <Label Text="Nearby me" TextColor="DarkGray" FontSize="20" FontAttributes="Bold" />
            </StackLayout>


            <CollectionView x:Name="myItem" Margin="10" SelectionMode="Single" SelectionChanged="myItem_SelectionChanged">
                <CollectionView.ItemTemplate>
                    <DataTemplate>
                        <StackLayout Margin="20" Padding="0">
                    <Grid>
                    <Frame BackgroundColor="White" HasShadow="True" Margin="0" HeightRequest="95" Padding="0" CornerRadius="10" VerticalOpti
```

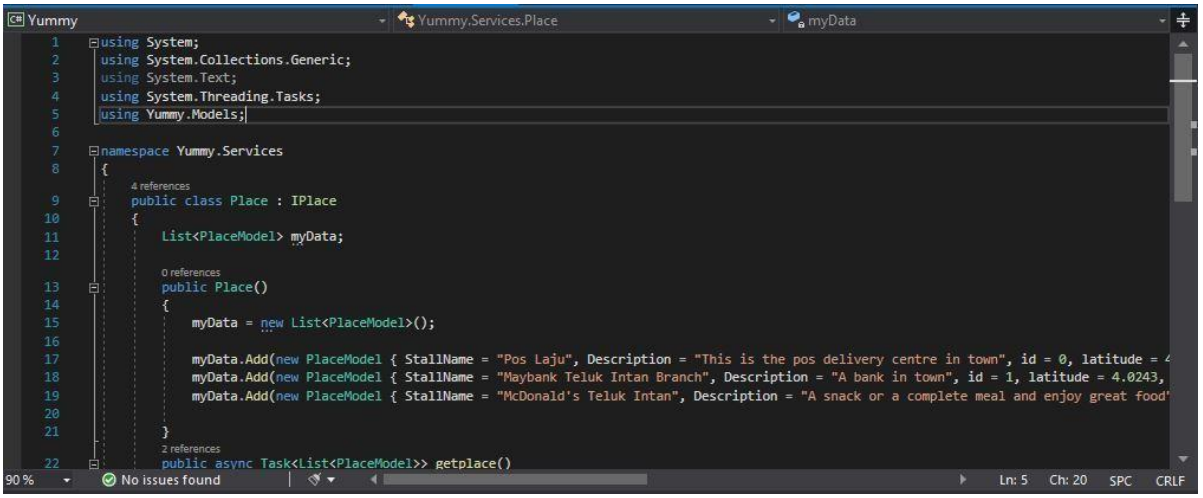
```
                        <StackLayout Padding="0" Margin="20,10,5,5">
                            <Label Text="{Binding StallName}" Margin="100,0,-10,0" TextColor="DarkGray" FontSize="16" FontAttributes="Bo
                            <Label Text="{Binding Description}" Margin="100,-10,-10,0" TextColor="DarkGray" FontSize="12" FontAttributes
                            <Label Text="1.5KM" Margin="100,0,-10,0" TextColor="ForestGreen" FontSize="12" FontAttributes="Bold"/>
                        </StackLayout>
                    </Frame>
                    <StackLayout Margin="15,-25,0,0">
                        <Frame BackgroundColor="Blue" HasShadow="True" Margin="0" HeightRequest="100" WidthRequest="100" Padding="0" Ver
                            <Image Source="{Binding ImageUrl}" Aspect="AspectFill" />
                        </Frame>

                    </StackLayout>

                    </Grid>

                </StackLayout>
                    </DataTemplate>
                </CollectionView.ItemTemplate>

            </CollectionView>
```

```
using System;
using System.Collections.Generic;
using System.Text;
using System.Threading.Tasks;
using Yummy.Models;

namespace Yummy.Services
{
    4 references
    public class Place : IPlace
    {
        List<PlaceModel> myData;

        0 references
        public Place()
        {
            myData = new List<PlaceModel>();

            myData.Add(new PlaceModel { StallName = "Pos Laju", Description = "This is the pos delivery centre in town", id = 0, latitude = 4
            myData.Add(new PlaceModel { StallName = "Maybank Teluk Intan Branch", Description = "A bank in town", id = 1, latitude = 4.0243,
            myData.Add(new PlaceModel { StallName = "McDonald's Teluk Intan", Description = "A snack or a complete meal and enjoy great food"

        }
        2 references
        public async Task<List<PlaceModel>> getplace()
```