

**MYBUS TRACKING MOBILE APPLICATION SYSTEM**

**AZWANA BINTI AHMAD**

**UNIVERSITI TEKNIKAL MALAYSIA MELAKA**

**BORANG PENGESAHAN STATUS TESIS\***

JUDUL: MYBUS TRACKING MOBILE APPLICATION SYSTEM

SESI PENGAJIAN: 2014/2015

SAYA AZWANA BINTI AHMAD

mengaku membenarkan tesis (PSM) ini disimpan di Perpustakaan Fakulti Teknologi Maklumat dan Komunikasi dengan syarat-syarat kegunaan seperti berikut:

1. Tesis dan projek adalah hakmilik Universiti Teknikal Malaysia Melaka.
2. Perpustakaan Fakulti Teknologi Maklumat dan Komunikasi dibenarkan membuat salinan untuk tujuan pengajian sahaja.
3. Perpustakaan Fakulti Teknologi Maklumat dan Komunikasi dibenarkan membuat salinan tesis ini sebagai bahan pertukaran antara institusi pengajian tinggi.
4. **\*\*Sila tandakan (/)**

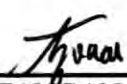
SULIT


(Mengandungi maklumat yang berdarjah keselamatan atau kepentingan Malaysia seperti yang termaktub di dalam AKTA RAHSIA RASMI 1972)

TERHAD

(Mengandungi maklumat TERHAD yang telah ditentukan oleh organisasi/badan di mana penyelidikan dijalankan)

TIDAK TERHAD

  
\_\_\_\_\_  
(TANDATANGAN PENULIS)  
Alamat tetap: 39, JALAN 02 20, 02019  
IMPAN, BUKIT KATIL,  
75450, MELAKA

  
\_\_\_\_\_  
(TANDATANGAN PENYELIA)  
**ROSMIZA WAHIDA BINTI ABDULLAH**  
*Pensyarah*  
Fakulti Teknologi Maklumat dan Komunikasi  
Universiti Teknikal Malaysia Melaka (UTeM)

Tarikh: 1/9/2015

Tarikh: 1/9/2015

Catatan: \*Tesis bermaksud sebagai Laporan Akhir Projek Sarjana Muda (PSM)

**\*\*Jika tesis ini SULIT atau TERHAD, sila lampirkan surat daripada pihak berkuasa**

**MYBUS TRACKING MOBILE APPLICATION SYSTEM**

**AZWANA BINTI AHMAD**

**The report is submitted in partial fulfillment of the requirements for the Bachelor of  
Computer Science (System Development) with Honour**

**FACULTY OF INFORMATION AND COMMUNICATION TECHNOLOGY  
UNIVERSITI TEKNIKAL MALAYSIA MELAKA**

**2015**

## DECLARATION

I hereby declare that this project report entitle  
**MYBUS TRACKING MOBILE APPLICATION SYSTEM**


is my original works and not copy from any resources except a few parts that were  
mention in references section.

STUDENT:

  
\_\_\_\_\_  
(AZWANA BINTI AHMAD)

DATE: 3 SEPTEMBER 2015

SUPERVISOR:

  
\_\_\_\_\_  
(ROSMIZA WAHIDA BINTI  
ABDULLAH)

DATE: 3 SEPTEMBER 2015

## **DEDICATION**

To my beloved parents which is my mother, Zaliha Binti Abd.Hamid and my father, Ahmad Bin Yusof, both of whom gave me the foundation of something they had never enjoyed. With the love they gave makes me feel more stronger to face a world with many challenges.

## **ACKNOWLEDGEMENT**

First, I would like to thank to my supervisor of this project, Puan Rosmiza Wahida binti Abdullah for the valuable guidance and advice. She inspired me greatly to work in this project. Her willingness to motivate me contributed tremendously to my project. I also would like to thank her for showing me some example that related to the topic of my project.

Secondly, i would like to thank the authority of UniversitiTeknikal Malaysia Melaka for providing me with a good environment and facilities to complete this project.

Finally, an honorable mention goes to my families and friends for their understandings and supports on me in completing this project. Without helps of the particular that mentioned above, I would face many difficulties while completing this project.

## **ABSTRACT**

MyBus Tracking is a system that provides the information about public bus in Malacca. The information is display in android mobile application, which is convenient and effectively to use. The target user for this system is a person's that use public transportation to travel to destination. This system has three user, which is administrator, driver and passenger. Each user has a different functionality, admin can manage all the data about the bus, staff and route by using web-based provided. Meanwhile, driver can choose and navigate route by using android mobile phone that has been installed in the bus. Passenger can view the dynamic route to discover the location of the bus and estimate the arrival of bus at certain checkpoint. . The methodology used in this system is Object-Oriented Analysis and Design (OOAD). The system is a web-based and android mobile application.

## ABSTRAK

MyBus Tracking adalah sistem yang menyediakan informasi tentang bus awam yang didapati di negeri Melaka. Informasi dipaparkan dalam aplikasi telefon mudah alih dimana ianya mudah dan berkesan untuk digunakan. Sasaran pengguna untuk sistem ini adalah untuk orang awam yang menggunakan perkhidmatan kenderaan awam untuk ke tempat destinasi. Sistem ini mempunyai tiga pengguna iaitu pentadbir, pemandu bas dan pengguna bus awam. Setiap pengguna mempunyai fungsi yang berbeza, pentadbir boleh menguruskan semua data berkenaan dengan bus, kakitangan dan laluan bus menggunakan web yang disediakan. Sementara itu, pemandu bas boleh memilih dan megawal laluan menggunakan telefon mudah alih yang dipasangkan dalam bus. Pengguna bus pula boleh memerhatikan laluan bus yang dinamik untuk mengetahui lokasi sebenar bus dan menjangka kedatangan bus di setiap lokasi. Metodologi yang digunakan untuk sistem ini adalah analisis objek-orientasi dan reka bentuk (OOAD). Sistem ini adalah web dan telefon mudah alih android.



## TABLE OF CONTENTS

CHAPTER	SUBJECT	PAGE
	DECLARATION	
	DEDICATION	
	ACKNOWLEDGEMENTS	
	ABSTRACT	
	ABSTRAK	
	TABLE OF CONTENTS	
	LIST OF TABLES	
	LIST OF FIGURES	
CHAPTER I	INTRODUCTION	
	1.1 Introduction	1
	1.2 Problem Statement	2
	1.3 Objectives	3
	1.4 Scope	4
	1.5 Project Significant	4
	1.6 Expected Output	5
	1.7 Conclusion	6
CHAPTER II	LITERATURE REVIEW AND PROJECT METHODOLOGY	
	2.1 Introduction	7
	2.2 Fact and findings	8
	2.2.1 Domain	8
	2.2.2 Existing System	10
	2.3 Project Methodology	11
	2.4 Project Requirements	13
	2.5 Project Schedule and Milestones	14
	2.6 Conclusion	15
CHAPTER III	ANALYSIS	

	3.1 Introduction	16
	3.2 Problem analysis	17
	3.3 Requirement analysis	22
	3.3.1 Data Requirement	22
	3.3.2 Functional Requirement	24
	3.3.3 Non-functional Requirement	33
	3.3.4 Other Requirement	34
	3.4 Conclusion	35
<b>CHAPTER IV</b>	<b>DESIGN</b>	
	4.1 Introduction	36
	4.2 High-level Design	37
	4.2.1 System Architecture	37
	4.2.2 User Interface Design	38
	4.2.2.1 Navigation Design	38
	4.2.2.2 Input Design	41
	4.2.2.3 Output Design	46
	4.2.3 Database Design	48
	4.3 Detailed design	50
	4.3.1 Software design	50
	4.3.2 Physical Database Design	50
	4.4 Conclusion	54
<b>CHAPTER V</b>	<b>IMPLEMENTATION</b>	
	5.1. Introduction	55
	5.2 Software Development Environment setup	56
	5.3 Software Configuration Management	58
	5.3.1. Configuration environment setup	58
	5.3.2. Installation of the application	59
	5.3.3. Version Control Procedure	60
	5.4 Implementation Status	61
	5.5 Conclusion	63

<b>CHAPTER VI</b>	<b>TESTING</b>	
	6.1. Introduction	64
	6.2. Test Plan	65
	6.2.1. Test Organization	65
	6.2.2. Test Environment	65
	6.2.3. Test Schedule	67
	6.3. Test Strategy	68
	6.3.1. Classes of tests	69
	6.4. Test Design	71
	6.4.1. Test Description	71
	6.4.2. Test Data	85
	6.5. Test Results and Analysis	99
	6.6. Conclusion	117
<b>CHAPTER VII</b>	<b>CONCLUSION</b>	
	7.1. Observation on Weaknesses and Strengths	118
	7.1.1. Strengths	118
	7.1.2. Weaknesses	119
	7.2. Propositions for Improvement	119
	7.3. Project Contribution	119
	7.4. Conclusion	120

## LIST OF TABLES

<b>TABLE</b>	<b>TITLE</b>	<b>PAGE</b>
2.1	Differentiate of existing system and new system	10
2.2	List of software requirement tools	13
2.3	List of hardware requirement tools	13
3.1	Data requirement of bus	22
3.2	Data requirement table of checkpoint	22
3.3	Data requirement table of location	23
3.4	Data Requirement table of route	23
3.5	Data Requirement table of staff	24
5.1	Environment Implementation	56
5.2	Steps to install MyBus Apps in future	59
5.3	Version control of MyBus	60
5.4	Implementation table.	61
6.1	Software requirement tools	65
6.2	Hardware requirement tools	65
6.3	Test description of crime visualization	58
6.4	Test description of login and logout	59
6.5	Test description of add new staff	59
6.6	Test description of manage staff	60
6.7	Test description of manage color	61
6.8	Test description of add new crime	61
6.9	Test description of manage crime	62
6.10	Test description of manage category	63
6.11	Test data of crime visualization	64
6.12	Test data of login and logout	65
6.13	Test data of add new staff	65
6.14	Test data of manage staff	66
6.15	Test data of manage color	67
6.16	Test data of add new crime	68

<b>6.17</b>	Test data of manage crime	<b>69</b>
<b>6.18</b>	Test data of manage category	<b>70</b>
<b>6.19</b>	Test result of crime visualization	<b>71</b>
<b>6.20</b>	Test result of login and logout	<b>72</b>
<b>6.21</b>	Test result of add new staff	<b>73</b>
<b>6.22</b>	Test result of manage staff	<b>74</b>
<b>6.23</b>	Test result of manage color	<b>76</b>
<b>6.24</b>	Test result of add new crime	<b>77</b>
<b>6.25</b>	Test result of manage crime	<b>79</b>
<b>6.26</b>	Test result of manage crime category	<b>81</b>
<b>6.27</b>	Function of add location	<b>92</b>
<b>6.28</b>	Function of edit location	<b>93</b>
<b>6.29</b>	Function of delete location	<b>94</b>
<b>6.30</b>	Function of add route	<b>94</b>
<b>6.31</b>	Function of bus driver	<b>95</b>
<b>6.32</b>	Function of select route	<b>96</b>
<b>6.33</b>	Function of manage selected route	<b>97</b>
<b>6.34</b>	Function of view map and route	<b>98</b>
<b>6.35</b>	Function of verify login	<b>99</b>
<b>6.36</b>	Function of logout	<b>100</b>
<b>6.37</b>	Function of add staff	<b>101</b>
<b>6.38</b>	Function of edit staff	<b>103</b>
<b>6.39</b>	Function of delete staff	<b>105</b>
<b>6.40</b>	Function of add bus	<b>106</b>
<b>6.41</b>	Function of edit bus	<b>107</b>
<b>6.42</b>	Function of delete bus	<b>108</b>
<b>6.43</b>	Function of add location	<b>109</b>
<b>6.44</b>	Function of edit location	<b>110</b>
<b>6.45</b>	Function of delete location	<b>111</b>
<b>6.46</b>	Function of add route	<b>112</b>
<b>6.47</b>	Function of verify login for bus driver	<b>113</b>
<b>6.48</b>	Function of choose route	<b>114</b>

<b>6.49</b>	<b>Function of manage selected route</b>	<b>115</b>
<b>6.50</b>	<b>Function of view maps and bus detail</b>	<b>116</b>

## LIST OF FIGURES

<b>FIGURE</b>	<b>TITLE</b>	<b>PAGE</b>
<b>1</b>	List of Android version.	<b>9</b>
<b>2</b>	List of android version with specification	<b>9</b>
<b>3</b>	Flows of Object-Oriented Methodology	<b>11</b>
<b>4</b>	Planning and Analysis gantt chart	<b>14</b>
<b>5</b>	Design gantt chart	<b>14</b>
<b>6</b>	Development gantt chart	<b>14</b>
<b>7</b>	Menu list of Panorama Melaka Webpage	<b>17</b>
<b>8</b>	List of Panorama Melaka route.	<b>18</b>
<b>9</b>	Searching tools to find route	<b>18</b>
<b>10</b>	See Details button below route	<b>19</b>
<b>11</b>	Details of route.	<b>19</b>
<b>12</b>	The flowchart of the current system for taking panorama buses in Melaka	<b>20</b>
<b>13</b>	Use Case diagram of MyBus Tracker system	<b>33</b>
<b>14</b>	Multilayered architecture for My Bus Tracker system	<b>38</b>
<b>15</b>	The navigation flow of Admin in MyBus Tracking system	<b>39</b>
<b>16</b>	The navigation flows of Driver/Bus in MyBus Tracking System	<b>40</b>
<b>17</b>	The navigation flows of User/Passenger in MyBus Tracking System.	<b>40</b>
<b>18</b>	Staff Add form at Admin Web-Based	<b>41</b>

<b>19</b>	<b>Bus Add form at Admin Web-Based</b>	<b>42</b>
<b>20</b>	<b>Location Add form at Admin Web-Based</b>	<b>42</b>
<b>21</b>	<b>Route add form at Admin Web-Based</b>	<b>43</b>
<b>22</b>	<b>Manage Staff Form in admin system</b>	<b>44</b>
<b>23</b>	<b>Manage Bus Form in admin system</b>	<b>44</b>
<b>24</b>	<b>Manage Location Form in admin system</b>	<b>45</b>
<b>25</b>	<b>Driver can login page in Bus Mobile Application</b>	<b>45</b>
<b>26</b>	<b>Driver can choose available route in Bus Mobile Application</b>	<b>46</b>
<b>27</b>	<b>Route that will manage or navigate by the driver in Bus Mobile Application</b>	<b>46</b>
<b>28</b>	<b>List of Route in User/passenger mobile application</b>	<b>47</b>
<b>29</b>	<b>Details of bus route that include driver name and bus plat number.</b>	<b>47</b>
<b>30</b>	<b>Entity-Relationship diagram for MyBus Tracking System</b>	<b>49</b>
<b>31</b>	<b>Deployment Diagram of MyBus Tracking System.</b>	<b>57</b>
<b>32</b>	<b>The logo of WiFi and internet</b>	<b>66</b>



## **CHAPTER I**

### **INTRODUCTION**

#### **1.1 Introduction**

People nowadays still using the most convenient, famous public transport called Bus. There are many reason why people these era still using buses as a transport to the desire destination. Increase road safety, avoid traffic jam and low cost transportation are the example why people still using bus. But, there are also inconvenient about riding the bus that all people in Malacca encounter such as miss the bus. Sometimes user does not know the route of buses and what time does the bus will arrive at the bus stop. This also unsafe for user especially women and children to wait for the bus to arrive at the bus stop.

With this project, the problem that bus user encounter can be solved efficiently and effectively. This project is to create a system that facilitate user in using bus by giving them information about the bus. Most of the people these day using mobile application, so the system will be develop as a mobile application to ease user to check information about the bus. For the meantime, this system cover information about the bus in Malacca only.

## **1.2 Problem Statement**

1. User having problem to understand the information about the bus given in the websites.
  - The bus company currently provide information through website. In the website, it only shows the route of bus without knowing the location of the bus.
2. Time arrival of bus route provided sometimes does not accurate.
  - The arrival of buses at certain point or a bus stop sometimes is unpredictable because there might be some problems on the road such as accident, road repairing and road block.
3. There are not many source about bus information.
  - As nowadays, people not really using the bus as their main transport so, there are not many application and website provided about the bus. But there are still people that need the information about the bus as they still using the public bus such as people who does not own vehicle .

### **1.3 Project Objective**

My Bus Tracking System is able to provide tracking of bus locations and an estimated time of arrival. Therefore, passengers can plan their journey accordingly based on the information provided, even when they are on the move by using their mobile devices, such as smartphones or tablets. Moreover, the passengers' family members and friends are able to monitor the whereabouts of the buses whenever they are on a journey.

- 1. To help people understand information about the bus operation.**
  - The system will provide user-friendly interface where user easy to understand the content of the information about the bus.
  
- 2. To facilitate user to estimate the arrival time of bus.**
  - The system will provide a dynamic route where user will know the current and next destination of the bus.
  
- 3. To provide better, faster and accurate information about the bus.**

## **1.4 Project Scope**

The aim of this project is to develop an application on a mobile device running in Android platform which is provide relevant bus route information with bus location. Admin can manage staff, bus, location and route by using web-base provided while bus driver can manage route and user can view the list of bus route to know the location of the bus.

## **1.5 Project Significant**

By using this system, user can avoid from wasting their time waiting for buses to arrive at the bus stop. User can estimate the arrival of time and be more prepared. So, user does not have to wait for the bus to arrive at the bus stop for extra time.

User of the system also can easily get information about bus just by using their mobile phone. This mobile application also will save more time for people to get information. With a good interface integrated with Google maps, users can easily understand the location of the bus and the route.

It will also help the company of the bus to get more profit as the system have a chance to increase user of the public bus. It is also can improve the efficiency of the company to manage bus schedule and route.

## **1.6 Expected Output**

With this project, it can help people by making their life more convenient in estimating the arrival of bus. The rate of the traffic jam can be reduced and people can save their petrol and budget because taking bus is cheaper than spending our money on petrol.

User of the system also can easily get information about bus just by using their mobile phone. This mobile application also will save more time for people to get information. Bus route in the Google Map is easily understood by the user to acknowledge the current location of the bus.

## **1.7 Conclusion**

In this chapter, the introduction about the application that will be created during the project is listed out. The application is about the MyBus Tracking which is for helping people to get information about the bus location in Malacca.

MyBus Tracking Application system was able to provide tracking of bus locations, current traffic conditions, and an estimated time of arrival. Therefore, user can plan their journey accordingly based on the information provided, even when they are on the move by using their mobile devices, such as smartphones or tablets. Moreover, the user's family members and friends are able to monitor the whereabouts of the buses whenever they are on a journey.

In the next chapter, the methodology about this application will be listed out. The methodology is about how the application will be designed and created. There also will be some literature reviews about application or websites that have relation or connected to this new application.

## **CHAPTER II**

### **LITERATURE REVIEW AND PROJECT METHODOLOGY**

#### **2.1. Introduction**

For chapter 2, it focused on literature review and project methodology of this system. The literature review is focused on the research of existing system and new system to be developed. Moreover, Literature review help to convey the reader about the knowledge and also to established the ideas have been on a topic. It also shows the strength and weaknesses

Firstly, understanding the existing system is the crucial process in order to create a good system. Existing system help developer in understanding the problem and their weakness. From the problem and weakness, changes those into strength and objective for the new system to be develop. Meanwhile, project methodology will be implement in order to achieve an effective goal.

## 2.2. Facts and findings

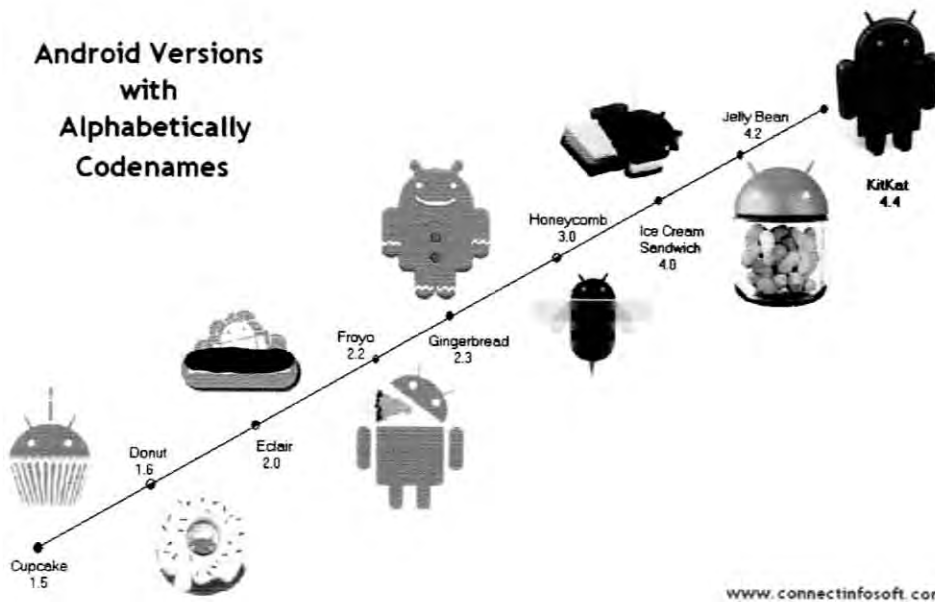
### 2.2.1. Domain

One of the main point of this system is for track the flow of the bus route using dynamic route. In the computer search, the term *Tracker* is referring to the word of *Tracking System* which is used for the observing of persons or objects on the move and supplying a timely ordered sequence of respective location data to a model [1]. Some people prefer dynamic route than static route to get information as it can be more effective and more accurate to deliver information about the bus.

Other main point of the system is to create a mobile application which mostly be used by the people nowadays. A mobile application is a computer program designed to run on smartphones, tablet computers and other mobile devices [2]. Just using mobile phone people can get fast information anywhere they want as long as they have internet connection. Tracking the bus by using mobile application is more convenient and effective way for user.

Mobile application also have many advantages as a system. Example of the advantages are portability and ease of development, deployment and maintenance, inherently multi-device, and mobile is a feature[3]. Using mobile application for this system will be more interesting and more convenient for these days.

Android is an operating system based on the linux kernel and designed primarily for touchscreen mobile devices such as smartphones and tablet computers. Android operating system had establish several version with creative and attractive name for each version.



**Figure 2.1: List of Android version.**

Android is a powerful Operating System supporting a large number of applications in Smart Phones. These applications make life more comfortable and advanced for the users. Hardware that support Android are mainly based on ARM architecture platform.

Android 1.1 Feb 2009	<ul style="list-style-type: none"> <li>• Support for saving attachments for MMS</li> <li>• Marquee in layouts</li> <li>• API changes</li> </ul>
Android 1.5 Cupcake April 2009	<ul style="list-style-type: none"> <li>• Bluetooth A2DP and AVRCP support</li> <li>• Uploading videos to YouTube and pictures to Picasa</li> </ul>
Android 1.6 Donut Sep 2009	<ul style="list-style-type: none"> <li>• WVGA screen resolution support</li> <li>• Google free turn by turn support</li> </ul>
Android 2.0/1 Eclair Oct 2009	<ul style="list-style-type: none"> <li>• HTML5 file support</li> <li>• Microsoft exchange server</li> <li>• Bluetooth 2.1</li> </ul>
Android 2.2 Froyo May 2010	<ul style="list-style-type: none"> <li>• USB tethering and Wi-Fi hotspot functionality</li> <li>• Adobe flash 10.1 support</li> </ul>
Android 2.3 Gingerbread Dec 2010	<ul style="list-style-type: none"> <li>• Multi touch software keyboard</li> <li>• Support for Extra Large screen sizes and resolution</li> </ul>
Android 3.0 Honeycomb May 2011	<ul style="list-style-type: none"> <li>• Optimized tablet support with a new user interface</li> <li>• 3D desktop</li> <li>• Video chat and Gtalk support</li> </ul>

**Figure 2.2 : List of android version with specification**