

**UMP E-SAMAN SYSTEM USING MOBILE**

**RAIHA NADIA BINTI MOHD ARIFFIN**

**BACHELOR OF COMPUTER SCIENCE**

**UNIVERSITI MALAYSIA PAHANG**



## **SUPERVISOR'S DECLARATION**

I hereby declare that I have checked this thesis and, in my opinion, this thesis is adequate in terms of scope and quality for the award of the degree of Bachelor of Computer Science (Computer Systems & Networking) with Honours.

---

Full Name : Assoc. Prof. Ts. Dr. Mohamad Fadli Zolkipli  
Position : Dean of Faculty of Computer Systems & Software Engineering  
Date : 30 May 2019



## **STUDENT'S DECLARATION**

I hereby declare that the work in this thesis is based on my original work except for quotations and citations which have been duly acknowledged. I also declare that it has not been previously or concurrently submitted for any other degree at Universiti Malaysia Pahang or any other institutions.

---

Full Name : Raiha Nadia Binti Mohd Ariffin

ID Number : Ca15017

Date : 30 May 2019

UMP E-SAMAN SYSTEM USING MOBILE

RAIHA NADIA BINTI MOHD ARIFFIN

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

Faculty of Computer Systems & Software Engineering

UNIVERSITI MALAYSIA PAHANG

MAY 2019

## **ACKNOWLEDGEMENTS**

In the name of Allah, the most beneficent, the most merciful. Praise be to Allah the ruler of the universe. May His blessings and mercy be upon the noble Prophet Muhammad and the Messengers. Together with family and friends, everything. I would like to express my sincere appreciation to all those who provided me the possibly to complete this report. A special gratitude I give to my supervisor Assoc. Prof. Ts. Dr. Mohamad Fadli Zolkipli whose gives the guidance and constant supervision as well as for providing necessary information regarding of the project. I also wanted to thank my family members, for the motivation and love especially to my parent, Mohd Ariffin Ahmad and Norazlen Abd Rahman who have supported me through mental and physical. Both keeping me a harmonious in the process of completing this thesis. Furthermore, special thanks to my friends, who help me gave suggestions and ideas about the system. Last but not least, I also wanted to thank to everybody that involved directly or indirectly in helping me in completing this thesis.

## **ABSTRAK**

Sistem UMP E-Saman Aplikasi Mudah Alih merupakan sistem aplikasi mudah alih yang mengendalikan sistem saman di Univerisiti Malaysia Pahang (UMP). Pengguna kepada sistem ini merupakan Pegawai Keselamatan UMP. Mereka akan menggunakan sistem ini untuk mengeluarkan saman ke atas kakitangan dan pelajar yang melakukan kesalahan lalulintas. Sistem ini akan mengimbas kod QR pada pelekat kenderaan UMP. Kod QR tersebut telah mempunyai data iaitu nama pelajar/nama kakitangan, nombor kad matrik/ID kakitangan dan nombor plat kenderaan. Bagi mereka yang tidak mempunyai pelekat kenderaan, sistem ini akan menyediakan pengguna, ruang untuk memasukkan plat kenderaan dan jenis kesalahan lalulintas yang dilakukan. Oleh itu, semua data akan terus dimasukkan ke dalam sistem pangkalan data. Oleh kerana teknologi mudah alih semakin pesat berkembang. Diharap aplikasi ini boleh digunakan dengan baik kerana sistem ini sangat mudah dan sesuai untuk generasi akan datang.

## **ABSTRACT**

UMP E-Saman System Using Mobile is mobile application system where it handles summon in the Universiti Malaysia Pahang (UMP). The user of this system will be UMP Security Officer. They will use this system to issuing the summons on staff and students that do traffic offence. This system will scan a QR code on the UMP vehicle sticker. The QR code itself will have data which is student name/staff name, matric number/Staff ID and car plate. For those who do not have vehicle sticker, the system will provide the user to key in the car plate and type of traffic offence. Hence, all the data will insert into a database system. Since the mobile technology is growing further. I think this application system will give a benefit towards the user which is UMP Security Officer. I hope this application can be used with satisfied as it is very convenience and suitable for upcoming generations.

## TABLE OF CONTENT

<b>DECLARATION</b>	
<b>TITLE PAGE</b>	
<b>ACKNOWLEDGEMENTS</b>	<b>ii</b>
<b>ABSTRAK</b>	<b>iii</b>
<b>ABSTRACT</b>	<b>iv</b>
<b>TABLE OF CONTENT</b>	<b>v</b>
<b>LIST OF TABLES</b>	<b>viii</b>
<b>LIST OF FIGURES</b>	<b>ix</b>
<b>CHAPTER 1 INTRODUCTION</b>	<b>1</b>
1.1 Overview	1
1.2 Background	1
1.3 Problem Statement	3
1.4 Goal and Objective	5
1.5 Scope	6
1.6 Methodology	7
1.7 Report Organization	9
<b>CHAPTER 2 LITERATURE REVIEW</b>	<b>10</b>
2.1 Overview	10
2.2 Summon System	10
2.3 Mobile device	13
2.4 Existing applications for Summon System	17
2.4.1 Summon system of Malaysia's Road Transport Department	17



2.4.2	Summon system of Kuala Lumpur City Hall (DBKL)	24
2.4.3	Summon system of Royal Malaysia Police Traffic	27
2.5	Comparison of Three Existing system	33
2.6	Conclusion	34
 <b>CHAPTER 3</b>		<b>35</b>
 METHODOLOGY		35
3.1	Overview	35
3.2	Introduction	35
3.3	Methodology	37
3.3.1	System Development Life Cycle (SDLC)	37
3.3.2	Context Diagram	40
3.3.3	Use Case Diagram	41
3.3.4	Dialogue Diagram	42
3.3.5	Modules	43
3.3.6	Proposed User Interface	45
3.4	Hardware and software	51
3.4.1	Hardware Requirement	51
3.4.2	Software Requirement	52
3.5	Gantt Chart	53
3.6	Implementation	53
 <b>CHAPTER 4</b>		<b>54</b>
 IMPLEMENTATION & RESULT		54
4.1	Overview	54
4.2	Implementation	55

4.2.1	Development Environment	55
4.2.2	System Functionality	56
4.2.3	Coding	62
4.3	Testing	73
4.3.1	Functional Testing	73
4.4	Result & Discussion	76
4.5	Advantages & Disadvantages	76
<b>CHAPTER 5</b>		<b>77</b>
CONCLUSION		77
5.1	Overview	77
5.2	Revisit Goal & Objective	77
5.3	Project Constraint	78
5.4	Future Work	79
<b>REFERENCES</b>		<b>80</b>
<b>APPENDICES</b>		
Appendix A Gantt Chart		83

## LIST OF TABLES

Table 2.1: Road penalties associated with KEJARA demerit points.	19
Table 2.2: PDRM Traffic summons rate for First Category Offence	27
Table 2.3: PDRM Traffic summons rate for Second Category Offence	28
Table 2.4: PDRM Traffic summons rate for Third Category Offence	29
Table 2.5: PDRM Traffic summons rate for Fourth Category Offence	30
Table 2.6: Comparison among three system	33
Table 3.1: Interface 1 of UMP E-Saman System Using Mobile	45
Table 3.2: Interface 2 of UMP E-Saman System Using Mobile	46
Table 3.3: Interface 3 of UMP E-Saman System Using Mobile	47
Table 3.4: Interface 4 of UMP E-Saman System Using Mobile	48
Table 3.5: Interface 5 of UMP E-Saman System Using Mobile	49
Table 3.6: Interface 6 of UMP E-Saman System Using Mobile	50
Table 3.7: Hardware Items	51
Table 3.8: Software Items	52
Table 4.1: Functional testing of the system	74
Table 4.2: System testing approval	75

## LIST OF FIGURES

Figure 1.1: Example of summon paper from UMP Security Department	4
Figure 1.2: System Development Life Cycle (SDLC) for UMP E-Saman System Using Mobile	7
Figure 1.3: Report Organization	9
Figure 2.1: Traffic compound rate in Malaysia	12
Figure 2.2: Windows tablet	13
Figure 2.3: Smartphone	14
Figure 2.4: Digital device ownership in Malaysia on January 2016	15
Figure 2.5: The rate of device ownership used to access the internet in Malaysia from October 2015 to January 2016	16
Figure 2.6: Example of summon paper from Malaysia's Road Transport Department	21
Figure 2.7: The AES Camera (JPJ, 2018)	22
Figure 2.8: Example of AES summon	23
Figure 2.9: Example of summon paper from Kuala Lumpur City Hall	26
Figure 2.10 The TruCam (PDRM Traffic, 2016)	31
Figure 2.11: Example of TruCam summon	32
Figure 3.1: Phases of SDLC (Greene, 2018)	38
Figure 3.2: Context Diagram for UMP E-Saman System Using Mobile	40
Figure 3.3: Use case diagram for UMP E-Saman System Using Mobile	41
Figure 3.4: Dialogue diagram	42
Figure 4.1: Login page	56
Figure 4.2: Authentication of database	57
Figure 4.3: Selection page	58
Figure 4.4: Scan page	59
Figure 4.5: Insert page	60
Figure 4.6: Logout page	61
Figure 4.7: Source code from app.module.ts	65
Figure 4.8: Source code from login.html	66
Figure 4.9: Source code from selection.html	67
Figure 4.10: Source code from scan.html	68
Figure 4.11: Source code from insert.html	71
Figure 4.12: Source code from logout.html	72

# **CHAPTER 1**

## **INTRODUCTION**

### **1.1 Overview**

In this chapter, it covers six subtopics. Subtopic 1.2 will describe the background of this project. Subtopic 1.3 will discuss about a problem statement. Subtopic 1.4 will explain about goal and objectives of this project. Subtopic 1.5 will describe about the scope of the project in terms of target system, target user and function. Subtopic 1.6 will define about method that are used in methodology. Hence, subtopic 1.7 will discuss on report organization for this project.

### **1.2 Background**

Nowadays, technology become a part of human life. Life has been made better and simpler with the existence of technology. As well as mobile technology that is used for cellular communication which is wireless such as smartphone or tablet computer. This era, we can assume almost every person have their own smartphone. Previously, smartphone was used to access email, pager and as a fax machine. But today, on 21<sup>st</sup> century smartphone can surf the web, snapping photos, updating social media status and most important can install an application which make a user have a better life.

Mobile technology gives many benefits which can access to modern mobile application and services that are made free for consumers as most of it are developed using open source software and operating system. It also provides the higher efficiency and productivity of employees where it is easy to manage and cost effectiveness to an organization. As a smartphone is example of mobile technology, it is a targeted influential device. It consists of the most advanced hardware and software technologies that exist in the world (Chung, 2018). It such a great impact in daily lives

This project focus on developing an application system for a mobile technology that is require mobility and simplicity to assist in daily activity. The tittle of this project is UMP E-Saman System Using Mobile. It focused on summons for any students or staffs who do a traffic mistake in Universiti Malaysia Pahang (UMP). The users of this system are UMP Security Officers which is from UMP Security Department. Before this, they have been using a manual way which is fill the summon form and give it to the offenders. Hence, this manual way might cause data loss, miss communication or the duplication of data.

Apart of that, this project provides a convenient and advance system. It will first scan a QR code from the UMP Sticker using smartphones or tablet computer. Next, the students or staff's data will be appeared in the screen system. UMP Security Officer just need to key in the type of traffic offence. As a submit button has been click, it will automatically insert the data into a database. The data that has been saved, can be used by the treasurer for tracking the offenders and make they pay their summons.

### **1.3 Problem Statement**

UMP Security Department are responsible for managing all security aspects inside the Universiti Malaysia Pahang. Their scope of work is about Road Traffic Discipline and the registration sticker for students' motor vehicles. The main responsibility of their work is related in enforcing traffic law towards staffs and students. Thus, the related activity for traffic law enforcement is a traffic summons. Traffic summons is given by the security officer towards staff and students who failed to obey the road traffic discipline. The road traffic discipline is including the obstructive parking, use of allocated parking bays, unregistered vehicle, vehicle not displaying UMP sticker, students not bringing their driving license and student card, etc.

Currently, UMP Security Department is using the manual system for traffic summons. Security officer will issue the summons on a piece of paper provided and put it on a car windscreen as to alert the traffic offender. Sometimes, the summon paper might loss because of incidents or human mistakes. Recorded a traffic offence on a summon paper is inefficient ways that is perishable and less practical for data recording. Besides, the data need to be key in manually into the computer system by referring the summon paper. This current system is less systematic and less effective as the employee of security department has to do recheck process. It might take several hours to complete all of it.

In addition, the security officer sometimes will clamp the vehicles that use of allocated parking bays or obstructive parking. There is a real case in Universiti Malaysia Pahang, which two students use of allocated parking bays for the staff. One of the cars are clamped and summon are being issued by the security officer. But there is nothing action has been taken for the other student car. This case is not fair for them. Might be the number of clamps is insufficient for a thousand of cars in Universiti Malaysia Pahang. Instead of that, other alternative should be considered by the UMP Security Department where making their system easier and more comfortable.

## REFERENCES

- Cambridge. (2018). *Definition of "Function"*. Retrieved from Cambridge Dictionary: <https://dictionary.cambridge.org/dictionary/english/function>
- Chung, J.-M. (2018). *Smartphone Emerging Technologies*. Retrieved from Coursera: <https://www.coursera.org/learn/smartphone-emerging-technologies>
- Collins. (2018). *Definition of Methodology*. Retrieved from Collins Dictionary: <https://www.collinsdictionary.com/dictionary/english/methodology>
- Community, I. (2013). *SDLC*. Retrieved from ETERNAL SUNSHINE OF THE IS MIND: <https://eternalsunshineoftheismind.wordpress.com/2013/02/10/the-most-traditional-method-of-software-development/>
- Corporation, I. (2014). *Preparing the target system*. Retrieved from IBM Knowledge Center: [https://www.ibm.com/support/knowledgecenter/en/SSLTBW\\_2.1.0/com.ibm.zos.v2r1.e0zb100/preptar.htm](https://www.ibm.com/support/knowledgecenter/en/SSLTBW_2.1.0/com.ibm.zos.v2r1.e0zb100/preptar.htm)
- DBKL. (2018, March 22). *Kuala Lumpur City Hall*. Retrieved from dbkl: [http://www.dbkl.gov.my/index.php?option=com\\_content&view=article&id=84&Itemid=276&lang=en](http://www.dbkl.gov.my/index.php?option=com_content&view=article&id=84&Itemid=276&lang=en)
- DBKL. (2018, March 30). *official portal of Kuala Lumpur City Hall*. Retrieved from dbkl.gov.my: [http://www.dbkl.gov.my/index.php?option=com\\_content&view=article&id=123&Itemid=184&lang=en](http://www.dbkl.gov.my/index.php?option=com_content&view=article&id=123&Itemid=184&lang=en)
- engadget. (2018). *Windows Tablet*. Retrieved from Windows tablet web site: <https://www.engadget.com/2014/01/05/lenovo-thinkpad-8/>
- Fakhroutdinov, K. (2018). *Use Case Diagram*. Retrieved from uml diagram: <https://www.uml-diagrams.org/use-case-diagrams.html>
- GCF. (2017). *Computer Basic : Mobile Devices*. Retrieved from Goodwill community Foundation Global: <https://www.gcflearnfree.org/computerbasics/mobile-devices/1/>
- GCF. (2017). *Mobile Devices*. Retrieved from Computer basics web site: <https://www.gcflearnfree.org/computerbasics/mobile-devices/1/>



- Greene, D. (2018). *Information system*. Retrieved from SlidePlayer.com:  
<http://slideplayer.com/slide/5269047/>
- Hassan, M. A. (2017, February 22). *Digital Device*. Retrieved from Blog Management UTM  
Web site: <https://blog.management.utm.my/ayyub/2017/02/22/digital-device-ownership-in-malaysia/>
- IGI. (2018). *About: what is a mobile device?* Retrieved from IGI Global Web site:  
<https://www.igi-global.com/dictionary/design-mobile-learning-museums/18836>
- JPJ. (2016, June 6). *JPJlink*. Retrieved from JPJlink.com:  
<https://www.jpjlink.com/home/2016/06/kejara-demerit-points-system/>
- JPJ. (2016, June 6). *JPJlink*. Retrieved from JPJlink.com:  
<https://www.jpjlink.com/home/2016/06/kejara-demerit-points-system/>
- JPJ. (2018, March 31). *Official portal of Road Transport Department Malaysia*. Retrieved from  
JPJ Web site: <http://www.jpj.gov.my/en/sejarah-jpj-malaysia>
- Malaysia Central. (2017). *PDRM traffic summon rate*. Retrieved from Malaysia Central Web  
site: <http://www.malaysiacentral.com/information-directory/pdrm-traffic-summons-rate-kadar-saman-trafik-pdrm/>
- PDRM. (2016). *Vision of PDRM*. Retrieved from PDRM Web site:  
<https://www.rmp.gov.my/infor-korporate/polis-diraja-malaysia/visi>
- PDRM Traffic. (2016). *PDRM Traffic*. Retrieved from JSPT Web site:  
[https://www.rmp.gov.my/infor-korporate/jabatan---jabatan/jabatan-siasatan-dan-penguatkuasaan-trafik-\(jspt\)](https://www.rmp.gov.my/infor-korporate/jabatan---jabatan/jabatan-siasatan-dan-penguatkuasaan-trafik-(jspt))
- Pierce, D. (2017, March 11). *Iphone Review*. Retrieved from Wired web site:  
<https://www.wired.com/2017/11/review-iphone-x/>
- Sad112712305. (2013). *SDLC*. Retrieved from eternalsunshine:  
<https://eternalsunshineoftheismind.wordpress.com/2013/02/13/system-development-life-cycle-sdlc/>
- TechTarget. (2018). *Mobile Computing*. Retrieved from Tech Target Web site:  
<https://searchmobilecomputing.techtarget.com/definition/wireless>

Tho, A. S. (2017, January 4). *Smartphones most popular devices*. Retrieved from The edge communication web site: <http://www.theedgemarkets.com/article/mcmc-smartphone-most-popular-device-malaysia-internet-access>

Tutorialspoint. (2018). *SDLC*. Retrieved from tutorialspoint :  
[https://www.tutorialspoint.com/sdlc/sdlc\\_overview.htm](https://www.tutorialspoint.com/sdlc/sdlc_overview.htm)

User, F. (2018). *SDLC*. Retrieved from Wikia web site:  
<http://databasemanagement.wikia.com/wiki/SDLC>

Viswanathan, P. (2017, October 10). *Characteristic of mobile devices*. Retrieved from Lifewire web site: <https://www.lifewire.com/what-is-a-mobile-device-2373355>

Wikimedia Foundation, I. (2018, April 4). *Target user*. Retrieved from Wikipedia:  
[https://en.wikipedia.org/wiki/User\\_\(system\)](https://en.wikipedia.org/wiki/User_(system))

Wikipedia. (2013). Retrieved from  
[https://en.wikipedia.org/wiki/Ionic\\_\(mobile\\_app\\_framework\)](https://en.wikipedia.org/wiki/Ionic_(mobile_app_framework))

Wikipedia. (2017, may 26). *Context Diagram*. Retrieved from wikipedai wb site:  
[https://en.wikipedia.org/wiki/System\\_context\\_diagram](https://en.wikipedia.org/wiki/System_context_diagram)