UNIVERSITI TEKNIKAL MALAYSIA MELAKA

SUMMONS SYSTEM USING RF (RADIO FREQUENCY) AND ARDUINO SYSTEM

This report submitted in accordance with requirement of the University Technical Malaysia Melaka (UTeM) for the Bachelor of Electronics Engineering Technology (Telecommunications) with Honours.

by

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BORANG PENGESAHAN STATUS LAPORAN PROJEK SARJANA MUDA

TAJUK: **SUMMONS SYSTEM USING RF (RADIO FREQUENCY) AND ARDUINO SYSTEM**

SESI PENGAJIAN: **2016/17 Semester 1**

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I hereby, declared this report entitled "Summons System" is the results of my own research except as cited in references.

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APPROVAL

This report is submitted to the Faculty of Engineering Technology of UTeM as a partial fulfillment of the requirements for the degree of Bachelor of Electronics Engineering Technology (Telecommunications) with Honours. The member of the supervisory is as follow:

……

(Project Supervisor)

ABSTRAK

Projek ini merupakan salah satu sistem automatik untuk mengawal bilangan saman yang ada dikalangan pelajar di Fakulti Teknologi Kejuruteraan ia merupakan satu ciptaan baru yang boleh diguna pakai oleh semua badan beruniform yang berkaitan dengan disiplin lalu lintas. Ciptaan ini adalah sebagai penambahbaikan mengenai sistem saman di fakulti dan akan memberi impak kepada para pelajar. Kita juga sering maklum dengan segelintir pelajar yang sambil lewa meletakkan kereta ditempat yang tidak sepatutnya, dengan adanya sistem saman ini akan dapat menangani masalah yang dihadapi. Ciptaan ini akan menggunakan penggabungan diantara perisian dan perkakasan. Projek ini adalah untuk memupuk disiplin terhadap pelajar dan boleh diperbetulkan lagi.

ABSTRACT

Summons System is one of the automated system to control the number of suits existing among the students in the faculty of engineering technology, it is a new invention that can be used by all uniformed bodies relating to traffic discipline. This invention is an improvement of the system of summons on the faculty and will have an impact on students. We also often be informed by some students who casually put their vehicles in place that should not be park, a system of this summons will able to handle the problem. This invention uses a combination of software and hardware applications. The project is to foster the discipline of students and may be corrected.

DEDICATIONS

To my beloved parents

MOHD JAMIL BIN JALIT

SARIMAH BINTI HAJI MAT NORDIN

Who are always praying and support for my success, always be at my side and always loving me with full of their hearts.

Special dedicated to my supervisor

MR ABDUL HALIM BIN DAHALAN

ACKNOWLEDGEMENTS

Alhamdulillah, I am thankful to the Almighty for His grace for me to successfully complete the project report. Hopefully, the efforts are blessed by Him. Appreciation and gratitude addressed to Mr Abdul Halim Bin Dahalan, as the supervisor of this project has been a lot of help and guidance, attention, encouragement and advices in implementing this project. Thank you also to both beloved person my father Mohd Jamil Bin Jalit and my mother Sarimah Binti Hj. Mat Nordin who is always faithful and give moral support and sacrifice a lot of time and energy during the period of study and also while preparing the thesis for this project. Thanks to project counterparts and other partners for their cooperation partners to give ideas and help a bit in the project and generating reports. Finally, I would also like to thank the University Technical Malaysia Melaka has given me the opportunity to further their studies to degree level. To fellow soldier thanks to the contribution given idea. Thanks to all that are involved directly and indirectly to the success of the project and the production of these report. Good service and knowledge that poured pleasure of Allah SWT. Before resigning I ask for forgiveness and apologize to anyone if you have the wrong on my mistakes. Surely all that is good from Allah and sickness it is from lack of me.

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LIST OF ABBREVIATIONS, SYMBOLS AND NOMENCLATURE

GPS	-	Global Positioning System
GSM	-	Global System for Mobile communications
GUI	-	Graphic User Interfaces
LPR	-	License Plate Recognition
MySQL	-	My Structured Query Language
NA	-	Network Analyzer
RF	-	Radio Frequency
SA	-	Spectrum Analyzer
SMS	-	Short Message Service
PC	-	Personal Computer
VHF	-	Very High Frequency
Wi-Fi	-	Wireless Fidelity

CHAPTER 1
INTRODUCTION

1.0 Introduction

This Chapter is to explain the overall of starting the system which consists of the objectives, problem statement and more to be determined and applied for the project which is “Summons System”.

1.1 Background

What is a summons? The suit is when you receive a notice from the authorities above an offence. If the authorities find you made a mistake, they will issue a summons to fine you as teaching. In the road transport act 1987 mentioned here are "If a police officer, traffic wardens or road transport officer has reasonable grounds to believe that any person guilty of an offence against this Act, he may, in lieu of making an application to the Court to get a summons, forthwith deliver to that person a notice in the prescribed form that the person ordered to appear before a magistrate's Court near having jurisdiction tried the offence at the time and date specified in the notice".

Summons usually provide the date for you to resolve it. In accordance with section 35, 36 and 37 of the criminal Event Code (Criminal Procedure Code) a summons must be handed over personally by showing the original summons and a copy of the submission to the name that the summons addressed. He added, the original

should be signed as proof of receiving the summons. But there are different kinds of traffic offences, which may be subject to a lawsuit, especially parking offences. As we know, the University also applied the concept of this summons to avoid car park struggle between students and staff. The authority is empowered to issue a summons for parking offences in the area of the University are known as auxiliary police. They are given the task to control the placement of cars so that the orderly and unobtrusive traffic so they also have the authority to issue a summons for anyone who contravenes the offence.

However, the police cannot control placement assistance car for learning and working hours in the University area. To control errors and payment summons for this car park, a project will do to help the police help in managing the summons to the person who is at fault by using the system of Arduino application and RF (Radio Frequency).

1.2 Project Objectives

The objectives of this project are

i. To study of summons system in the faculty
ii. To develop a system of radio frequency and arduino software
iii. To understand performance of summon system

1.3 Problem Statement

Nowadays, many student are hardly want to pay summons of parking offence. It is because the place for paying summons is far from the faculty. Although rates payment summons was increased, there are still have an individuals who take junk about this error. This is the reason why payment summons in the university system is not effective because they do not want to pay the summons. So this project is selected

to help the University's auxiliary police to control the payment summons for offences by creating a vehicles park payment system summons more effective.

1.4 Scope of Study

The scope of this project is to study and develop a summons system in the faculty engineering technology using Radio Frequency and Arduino. Furthermore, this project is to guarantee that the output at the end of this system can be done as the objectives. It is also, to know the performance of the summons system whether it can be run in the real situation or not.

1.5 Limitation

The limitations of the study for this system are based on the analysis that be done in this system. There are analysis that able to develop this system which are range of the distances and frequency used in this system. Those limitation is need to make sure this project is in the right track. Where the range of distance are based on the transmitting signal of radio frequency. Analysis of ranges has detect the ranges of transmitting radio frequency signal can go till 100metres. Limitation for the frequency set are based on the detect using the spectrum analyser. This means that, this project are based on the limitation of detecting signal and frequency based on the ranges.

CHAPTER 2
LITERATURE REVIEW

2.0 Introduction

This Chapter is literature review will be continuously carried to study past and current research work. Some very important issues and data have to be studied, reviewed, determined and applied for the project which is "Summons System".

2.1 Journals Related

2.1.1 Design and Development of Summons Traffic System in UiTM (Rapiza Binti Miswan, 2006).

Introduction

This venture is building up a model on summons movement framework in UiTM that is Security Department. The understudy as of now confronted an issue on checking their summons status, it is possible that they have a summons or not. This trouble can overcome by utilizing SMS (Short Message Service) innovation, since they can check their summons by means of their cell phone. To keep up any data, this model known as standalone that comprise of site page which is getting to by staff. Likewise, to overhauled staff record additionally should be possible by executives. Other than that, the understudy additionally

can communicate something specific then demand to the staff and staff will answer it. For the improvement procedure, this framework were incorporates by a few programming bundles and programming dialects that reasonable for the advancement procedure. It is trust that this venture would trigger thoughts and offer advantages to significant individuals.

Security Department serves the security service to all resident in the campus. They will issue the summons or compound to anybody who disobey the traffic regulation in the campus. Misplace, lost or forgot the summons are the problem that arise by the offender. They need to go to the Security Department to check their summons status and it will take long time. So, by developing the summons check status system, it will settle this problem. In the summons check status system, it will allow the user to check their summons status whether they have the summons or not. User can check it via SMS (Short Message Service).

Proposed method

SMS with GSM

According to Puneet Gupta, the delivery of alphanumeric messages to mobile phones over wireless networks known as SMS. The length of the message is fixed that no longer than 160 characters. SMS is recently use for the purpose of data retrieval and enquiry then the result will be lookup from a database and returned to the sender via SMS.

SMS actually is the short messaging service for GSM because it is present on most other digital cellular networks and tends to operate in a similar fashion on each network. SMS is also enables in 2-way short messages to be sent between GSM subscribers. Using gateways, it also possible to interchange messages with other systems such as the web, internet and email. This means SMS is essentially a messaging transport service to enable reliable 2-way messaging.

MySQL

MySQL is a multithreaded, multi-user, SQL Database Management System (DBMS) with more than six million installations. MySQL is a small database server. It is suits for small and medium applications. MySQL databases have a standard setup because there are made up of a database, in which are contained tables. Each of these tables have different fields and quite separate. Each table contains records which are made up of fields even though it is part of one database.

Ozeki Message Server 6 - SMS SERVER

SMS Server is a flexible SMS Gateway application and powerful which enables user to send and receive SMS messages to mobile devices or the user computer. It has an excellent internal architecture to use user interface. To transmit and receive the messages use a GSM mobile phone that attached to the PC with a phone-to-PC data cable or IP SMS technology. Ozeki Message Server are works on Microsoft Windows XP, 2000, 2003 operating systems.

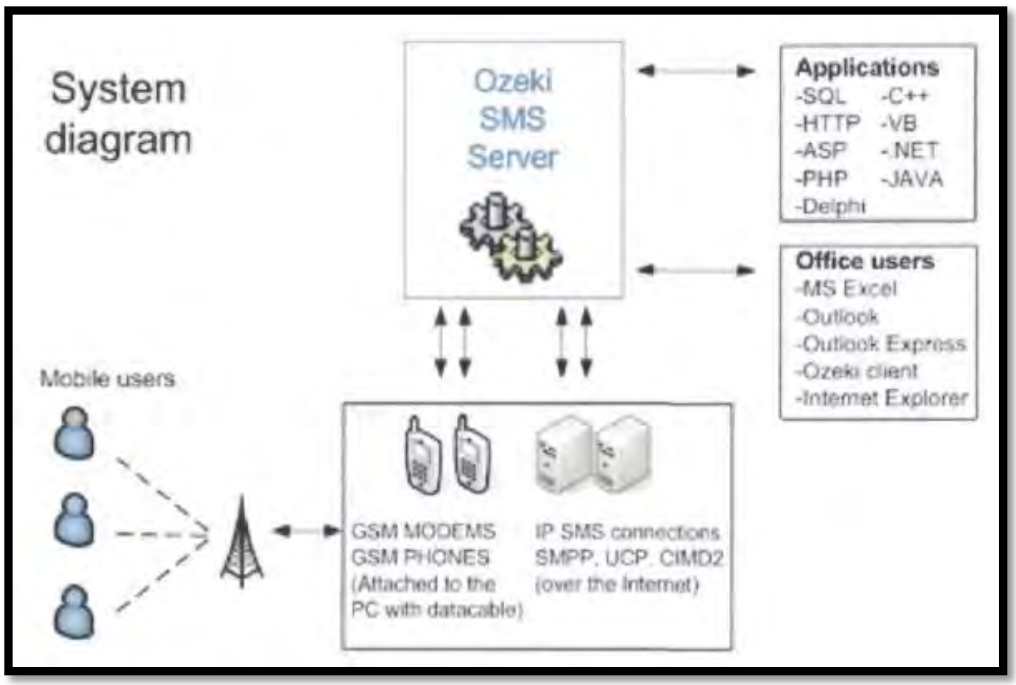

Figure 2.1: System of the Ozeki SMS Server

Result

This project identified several literature reviews that related to summons system by using SMS to check summons status. Most of the literatures on traffic system are reporting and research that summons traffic system provide a service that include checking summons status using SMS. It is easy to checking and exchange information by the student where it will build relationship between the student and security department.

2.1.2 Automatic Traffic Summon System (A.M. Aibinu, A.A. Saleh, A. Mohamad)

Introduction

The advancing of transportation throughout the years, from the times of camels and stallions to the advancement and arrangements of engine vehicles, bikes, planes and all other renaissance travel innovation, has empowered individuals to get to their goal quicker and effortlessly. The natural straightforwardness inferable from these frameworks has viably permitted the masses to grasp and need these frameworks. In any case, this longing for versatility and profitability comes at an expanded cost to guarantee security. Because of the viability of street transportation plans, there has been an unfaltering increment in the utilization of our streets and the volume of street transportation systems vehicles and cruisers. This straightforwardly construes a requirement for successful and productive control, to guarantee wellbeing on our streets. To satisfy this need, different sorts of innovation, for example, street activity observation, security, and following framework have been created. Be that as it may, these inventive advances are for the most part not for individual utilize. Thusly, the aftermath gadgets made are chiefly fixed. As of late, License Plate Recognition (LPR) has had enormous effect in the offer to guarantee wellbeing while taking into consideration most extreme utilization of portability elements furthermore guaranteeing efficiency.

Notwithstanding, the effectively illustrated issue of stability of the street observation framework likewise influences this framework. We however inquire about another gadget outline that takes care of the fixed status issue. This gadget would be utilized by street activity administration organizations to handle and oversee street manhandle and abuse by street clients. Utilizing the old arrangement of the activity summon, movement policeman should record down the movement summons into activity booklet one for record and another for the summoned individual. At that point the information of all summon must be physically entered in the database. This is wasteful and tedious. ANPR is a technique that is to a great extent utilized as a part of the new innovation of ITS (1ntelligent Transport Systems) and AVI (programmed vehicle distinguishing proof). ANPR is an approach to recover the data on the tag. In the approach, a camera catches the picture of an auto and a PC procedures the picture and perceives the data on the plate by applying different picture preparing and optical example acknowledgment systems.

This venture concentrates more on the picture handling calculation for use in Optical Character Recognition (OCR) utilizing MATLAB and the utilization of GPS for information exchange. OCR calculation is utilized for acknowledgment of permit number of a vehicle from the picture of the tag caught by the camera. This exploration was conveyed in Malaysia along these lines, Malaysian plate number framework was utilized for the testing with the outline and improvement of better street transportation framework. The blend of these is proposed to take into consideration versatility and efficiency as well as guarantee security and wellbeing. The outline and advancement of LPR frameworks is relied on Optical Character Recognition (OCR), to take into account the precise discovery and elucidation of tag numbers and letters. The objective of Optical Character Recognition (OCR) is to group optical examples in a given picture frequently in a computerized picture comparing to alphanumeric or different characters. The procedure of OCR includes a few stages; the fundamental strides are: division, highlight extraction, and grouping.

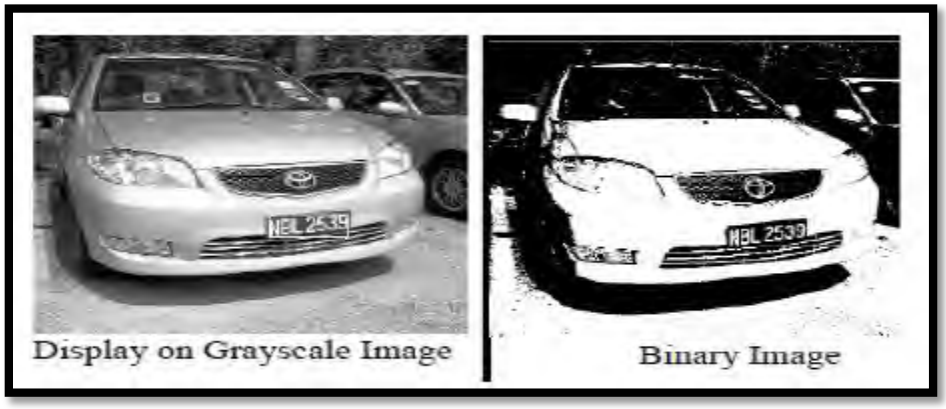

Figure 2.2: Example of the encryption image

Proposed method

GPS and LPR

The automatic traffic summon device can be broken down broadly into two main subcomponents: the image processing subcomponent and the GPS subcomponent. The part that responsible of the license plate number acquisition is image processing and the part that concerned with data transfer from and to the database is GPS. The block diagram fig 3.1, shows an overview of the system with its main components.

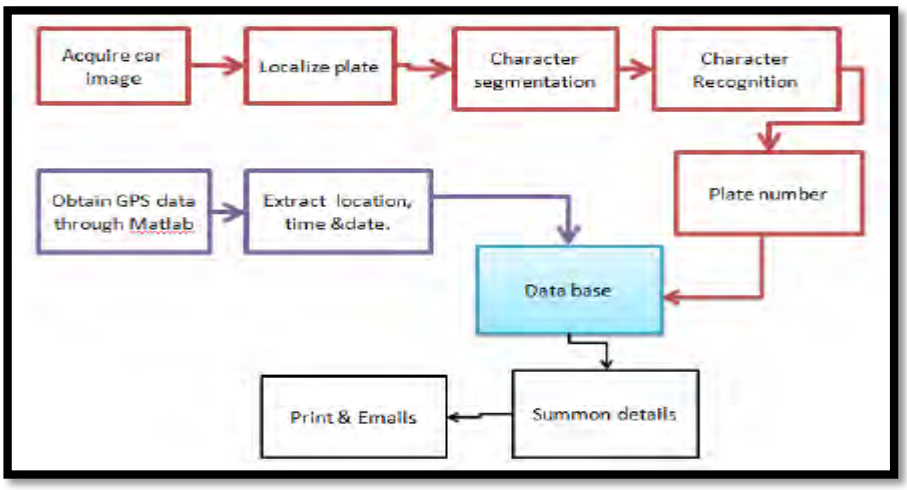

Figure 2.3: Block diagram of the system for GPS and LPR