Security Notification Summon System (SNSS)

by

Nur Fadzilah Hussin

Dissertation submitted in partial fulfilment of
the requirements for the
Bachelor of Technology (Hons)
(Business Information System)

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CERTIFICATION OF APPROVAL

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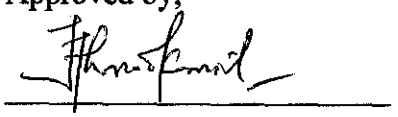
Approved by,



(Dr Ahmad Kamil Mahmood)

UNIVERSITI TEKNOLOGI PETRONAS

TRONOH, PERAK

Jun 2006

CERTIFICATION OF ORIGINALITY

This is to certify that I am responsible for the work submitted in this project, that the original work is my own except as specified in the references and acknowledgements, and that the original work contained herein have not been undertaken or done by unspecified sources or persons.

NUR FADZILAH HUSSIN

ABSTRACT

This project will develop an SMS delivery mechanism for the security department to notify students of summon dues. The introduction explains the usage of notification technology in various areas and industries. The background of study highlights the background of the project being studied and its purposes. Problems statement indicates several defects and difficulties which arouse the implementation of this project. These problems are occurred in existing system which needs to be reduced and eliminated. The objective of this project is mainly to notify the students about their overdue summons using the SMS technology. This project is also to enhance the UTP existing summon system to a web based system. The scope of this project will cover the implementation of SMS notification technology for the summon system and the development of system GUI and database using web programming languages. Methodology used is the Waterfall Model which is suitable for time duration of the project and each phase can be approved before the next phase starts. The findings describe the result obtained from survey and interview during requirements and analysis specification phase. There are two types of models to depict the data gathering. While the result and discussion explain the end result and feedback received from conducting user testing with the users. A brief discussion on graphical user interface of the system module together with the website screenshots are also illustrated. The text reference for the web programming is Internet & World Wide Web by H.M. Deitel, P.J. Deitel and T.R. Neito together with few conference papers and electronic sources.

ACKNOWLEDGEMENTS

I would like to take this opportunity to express my highly appreciation and gratitude to many people whose expertise, advice, and encouragement contributed immensely towards the completion of my Final Year Project namely Security Notification Summon System . These people, individual and parties have giving a tremendous commitments and assistance in helping me to achieve the objectives and complete my project successfully.

First of all, I would like to thank my supervisor, Dr Ahmad Kamil Mahmood for the time he spent in providing me guidance and good advices throughout my final year project. Thanks to University Technology of Petronas in general and the Information Resource Center management staffs specifically for their helping hands in assisting me in conducting and finding good research material.

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Lastly, I would never forget and thanks too my family, all the lecturers involved and all my friends who have been giving me continuously support from the beginning of this project until its completion.

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ABBREVIATIONS

1.	UTP	University Technology of PETRONAS
2.	SNSS	Security Notification Summon System
3.	GUI	Graphical User Interface
4.	SMS	Short Message Service
5.	IM	Instant Message
6.	MS	Mobile Station
7.	PC	Personal Computer
8.	GSM	Global System for Mobile
9.	GPRS	General Packet Radio Service
10.	TDMA	Time Division Multiple Access
11.	CDMA	Code Division Multiple Access
12.	SMSC	Short Message Service Center
13.	SMPP	Short Message Peer to Peer Protocol
14.	HTTP	Hyper Text Transport Protocol
15.	UCP/EMI	Universal Computer Protocol/External Machine Interface

CHAPTER 1
INTRODUCTION

Notification systems attempt to deliver current, important information to users in an efficient and effective manner without causing unwanted distraction ongoing tasks. Generally known notification systems include instant messaging tools, system load monitors, user and system updates and email alerts. Nowadays notification system is widely used in most company and business operation such as hospital, manufacturing based company and military. Notifying and alerting users are significantly important for certain cases such as to remind users of incoming email messages and emergency. One of the most infamous notification systems that are widely used is The Communicator Notification System [1]. It is a high-speed notification system that capable of notifying the residents of a potential threat to public safety in a matter of minutes. Besides providing emergency notifications, it also notifies residents of lost children, endangered adults, or criminal activity in their neighborhoods. There are numerous benefits of using the notification system including rapid availability of important, access to nearly instantaneous communication, and heightened awareness of the availability of personal contacts and information.

In order to enable the notification system works and notify users, several technologies are used or implemented in the system. For instance, e-mail, short message services (SMS) and instant message (IM). Commonly, organizations like to utilize email and SMS as the technologies to notify its employees in daily business. SMS is the most technology used by people nowadays. They use it to notify a mobile phone owner of a voicemail message and alert a driver of the address of the next pickup. Others used by organization are such as to notifying their salesperson of an inquiry and contact to call and warning service person of the time and place of their next call.

SMS stands for Short Message Service which enables people to send and receive text messages to and from mobile phones. SMS is rapidly becoming more common in the enterprise environment because it offers significant advantages in supporting key

business processes. In addition, almost every consumer has a mobile phone making SMS an ideal marketing and communication tool for business-to-consumer organizations. SMS is a relatively simple messaging system provided by the mobile phone networks. Although services based on SMS have been feasible for many years, the recent mobile phone penetration and large scale adoption of the existing services by users have made the SMS services even more attractive to service providers. Many SMS messages are alerts of one kind or another, used to notify the recipient of an event. These of type messages usually require follow-on action other than sending a reply using SMS. Alerts can be followed up by a variety of actions whereby these may includes SMS replies of one form or another.

SMS also can be used as a data transport mechanism such as in banking. Automated Teller Machine (ATM) and Internet are less costly than transactions completed at branch office. However Internet transactions are even cheaper than ATM transactions. Therefore, enabling wireless subscribers by using SMS to check their balances, transfer funds between accounts, pay bills and credit cards is valuable, not only for the subscriber but also for financial institutions.

Moreover, entertainment applications are also excellent drivers of SMS usage. For instance simple short message exchanges between two parties ("texting") or between multiple participants ("chat"). Wireless Web browsing using SMS allows the users to search for information without the physical restrictions of a PC. For this example, students certainly appreciate not having to go to the computer lab or cyber café to check email or find out what the required course need to be taken for next semester.

Some of the benefits of SMS are the delivery of notifications and alerts guaranteed of message delivery, reliable, low-cost communication mechanism for concise information, ability to screen messages and return calls in a selective way, and increased subscriber productivity. Besides, messages are delivered immediately when recipient's phone is turned on. Overall, SMS is particularly good for pushing out information to mobile phone users and for fast alert or quick-shot pull system.

1.1 Background of Study – University Technology of PETRONAS as the case study.

This project is to enable the SMS based notification technology to be operated in a web based system whereby a user can send messages to others by just entering few characters in the system and send to respective students. Similar to the existing email notification of book dues and fines, this SMS based notification system will ensure notification reaches students immediately without requiring security officer to search for particular students through various steps. Using existing mobile pervasive technology, the UTP security department can improve its services and work performances by being able to reach out to students anytime and anywhere.

The purpose of utilizing this technology is because SMS is popular among students which they cannot live without it. The handsets currently used are the students' own mobile phones. From the campus survey it is obviously found that 96% of the student population owns a mobile phone and 4% have no mobile phone. Thus, the enhancements of the existing UTP summon system with the additional of SMS notification function, the potential to interact with student would be satisfactorily and effective.

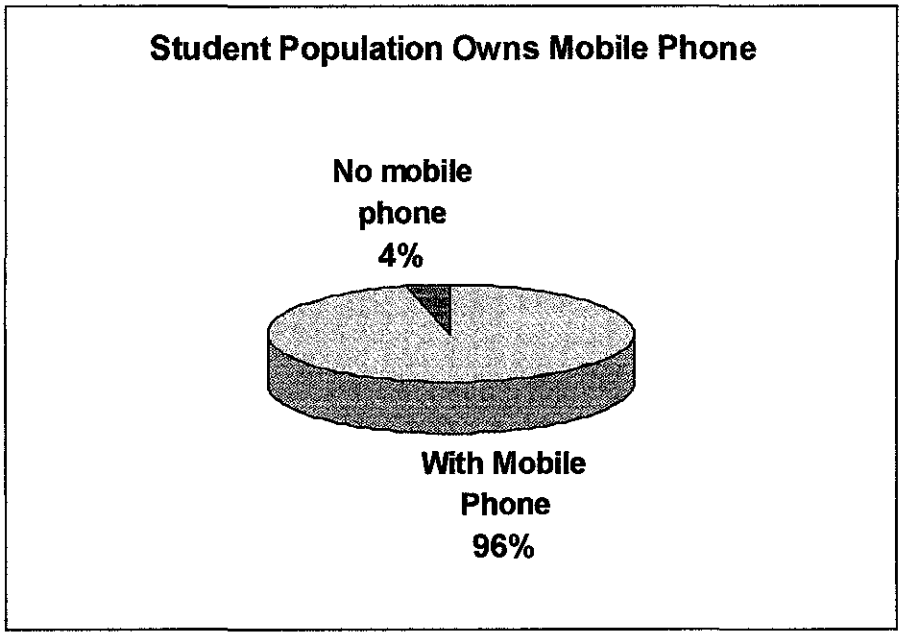

Figure 1 Student Population Owns Mobile Phone

1.2 Problem Statement

This project is derived from the need to improve and enhance the performance of UTP existing summon system. Besides safeguarding the university environment and communities, the security officers are responsible to summon the students whom are unethical and break university regulations. When a student is being summoned, all the student details will be recorded in a receipt book. Using receipt book is inefficient as it leads to human error such as misplaced or loss. Later the records are transferred into a standalone system which is Microsoft Excel. Currently UTP security department using Microsoft Excel to add new record, delete record and store all the students summon details. However, this standalone system is inefficient as it allows the officers to access at one place in which an officer has to save the files in order to work on other computers. In addition, the system does not have a notification function that can alert students to pay the summons. If the student cannot be traced, this will lead the security officer to hunt the students through the Student Metric Card Unit to find the student details. After the details are obtained, the security officer will give them to the Student Support Services for further actions. Furthermore, the students have to check their current summons manually at the security department. He or she has to give their student ID and the security officer will check for them. Students can know the result after few days. Seeing this flow, it is time consuming and high cost which is very ineffective.

1.3 Objective and Scope of study

The objectives of these projects being studied are:

- To enhance the existing summon system in which currently UTP summon system is only a list of records in Microsoft Excel. This can be accomplished by designing and developing a web based system with interactive graphical user interface (GUI). By just one clicking on any button, the task can be done quickly likewise user can have better interaction with the system.

- To alert the user of overdue summons. With this function, overdue summons would not be neglected instead they can be settled fast without involving too much time and costs. For instance, when a security officer clicks the Traffic or Other Summon pages to view list of summons, he or she will be alerted with 'Overdue' wording in red color which is next to the summon record. Seeing this, the user will straightway click 'Send SMS' link to send notification messages to the students.

- To notify the students about their overdue summons. This is the main idea and function of this system which can be achieved through the implementation of SMS technology. Currently, security department has to notify the students by giving the details to Student Support Services Unit. The unit then will alert the students about the overdue summons. In addition, things can be worst when a particular student cannot be tracked due to lack of details which forces the officer to refer to the Metric Card Unit . With this function, the security department can notify the students quickly, anytime and anywhere besides reducing time and man power.

Listed below are the scopes of study of the project:-

- Perform a complete study on system architecture and SMS implementation in order to identify the required hardware and software. For instance, which SMS gateway will be used in order to send and receive short messages over GSM digital cellular telephone network.

- Perform a study on enhancing the performance of existing system which includes the development of interactive graphical user interface and functions. In this study, the project will be concentrated on web programming languages; such as PHP and MySQL.

Based on the objective and scope of study this project is relevant in term of exploring new type of technology which is SMS that plays a major role in the global world. It is reasonable for this project to be completed in time as it involves lots of study and research. The final outcome expected from the project is also will be useful for other students in order to enable them venture in web based projects for the future.

1.4 Project Timeline

This project timeline consist of six(6) main tasks. Within each task, a list of activities that needs to be carried out is included. All of the tasks are based on Waterfall methodology used in this project. For the details of tasks, refer to Appendix A.

CHAPTER 2
LITERATURE REVIEW

As part of the project research, an exploration and study is carried out to examine other's related works. The purpose the research is done to fulfill the project's objective and to gather information that can support steps that have been taken in order to complete the project.

2.1 Introduction to Notification System

Notification process enables people to plan notifications in advance by creating lists of people, devices and notification sequence for any number of anticipated scenarios. Message delivery is automated via configurable templates and can be activated from the web, VRU, speech recognition, or an operator. The idea of using notification technology for this project have been supported by the facts that it can alert, able to contact each necessary resource automatically via one or more communication devices, providing each individual with information and late instructions on when and how to respond.

2.2 Short Message Service (Concept, Architecture and Tools)

2.2.1 Introduction to Short Message Service (SMS)

To understand short message service better, it is necessary for every developer to understand the definition of SMS. The definition will help developer to understand the short message service concept in a general thus make it easier for development purposes. Definition by International Engineering Consortium [2]:- "Short Message Service (SMS) is a globally accepted wireless service that enables the transmission of alphanumeric message between mobile subscribers and external systems such as electronic mail, paging and voice mail systems."

From the above definition it can be clearly seen that SMS is a technology widely used by people and applied in various types of application and industry. It is a service for sending messages of up to 160 characters to mobile phones that use Global System for Mobile (GSM) communication. SMS is a network function used for sending text messages to and from Mobile Station (MS). It has been operational since 1992 and nowadays is the most successful wireless service. It is used mainly for terminal-to-terminal messages but there are more and more SMS applications such as weather forecasts, personalized SMS services for sort and financial [5]. SMS messages do not require the mobile phone to be active and within range and will be held for a number of days until the phone is active and within range. SMS messages are transmitted within the same cell or to anyone with roaming service capability. They can also be sent to digital phones from a Web site equipped with PC Link or from one digital phone to another. Mobile users prefer message services making them one of the fastest developed shares in mobile industry.

2.2.2 Benefits of SMS

SMS offers lots of benefits to organization and people when it is implemented and used extensively. The benefits of SMS to subscribers center on convenience, flexibility, and seamless integration of messaging services and data access. From this perspective, the primary benefit is the ability to use the handset as an extension of the computer. SMS also eliminates the need for separate devices for messaging because services can be integrated into a single wireless device—the mobile terminal. These benefits normally depend on the applications that the service provider offers. At a minimum, SMS benefits include delivery of notification and alert, guaranteed message deliver, reliable, low-cost communication mechanism for concise information, increased subscriber productivity and able to screen messages and return calls in a selective way.

2.2.3 SMS Architecture

Basically, SMS is a mechanism of delivery of short messages over the mobile networks. It is a store and forward way of transmitting messages to and from mobiles. The message (text only) from the sending mobile is stored in a central short message center (SMSC) which then forwards it to the destination mobile.

2.2.4 Approaches to send SMS from a PC/Computer

SMS messages are supported by GSM, TDMA and CDMA based mobile phone networks currently in use. SMS was initially designed to support limited-size messages, mostly notifications and numeric or alphanumeric pages [3]. Besides using mobile phones to transmit short messages to and from mobile phones, it is also possible to send SMS messages from a website. According to Simon Buckingham, the first short messages were successfully sent in December 1992 from a personal computer (PC) to a mobile phone on the Vodafone network in U.K. [4]. There are two ways to send SMS messages from a computer / PC to a mobile phone:-

1) By connecting a mobile phone or GSM/GPRS modem to a computer / PC. Then use the computer / PC and AT commands to instruct the mobile phone or GSM/GPRS modem to send SMS messages. In order to send SMS messages from an application, a source code like C, C++, Java or Visual Basic have to be written for connecting to and sending AT commands to the mobile phones or GSM/GPRS modem [6] . However, using this method users incur several disadvantages. Such as user has to learn on how to use AT commands and SMS transmission is low. When SMS messaging application becomes well-liked, it has to handle a larger amount of SMS traffic and thus the mobile phone or GSM/GPRS modem will disable to take the load.

2) By connecting the computer / PC to the SMS center (SMSC) or SMS gateway of a wireless carrier or SMS service provider. Then send SMS messages using a protocol / interface supported by the SMSC or SMS gateway. SMS gateway provider is an SMS service provider that provides an SMS gateway for its users to send SMS messages. On the service provider's website, it provides detail information about their SMS connectivity service. Such as the cost of service, network coverage, protocols supported, and developer's guide. The advantage of SMS connectivity services of SMS service providers is that their network coverage is very good.

Comparing both approaches; this project is determined to apply the second approach to send SMS from the website which is by connecting the computer/PC to the SMS Gateway or SMS service provider. This is because the SMS configuration is easy and the gateway is less cost.

2.2.5 (Short Message Service Center) SMSC

SMSC is short for "Short Message Service Center," and is the machine(s) within a wireless service provider's network that provides the routing of all SMS or text messages. Much like an email server, the SMSC handles large volumes of messages sent between two mobile phones or a mobile phone and a software application. The SMSC is software resides in the operators network and manages the processes including queuing the messages, billing the sender and returning receipts if necessary. Many operators now offer web based interfaces to their SMSC so short messages can be sent to any mobile phone from the web [5].

Once a message is sent, it is received by a SMSC which must then direct it to the appropriate mobile device. To do this, the SMSC sends a SMS Request to the home location register (HLR) to find the roaming customer. Once the HLR receives the request, it will respond to the SMSC with the subscriber's status.

When the subscriber accessed his device, the HLR sends a SMS Notification to the SMSC and SMSC will attempt delivery. An SMSC connection can consist of one or more of the following:

- GSM Modem

  A GSM modem or phone connected to a PC serial port (or to a USB port with an appropriate modem driver).
- SMPP (Short Message Peer to Peer Protocol)

  A TCP/IP connection over the internet or a private network to a service that supports v3.3 or v3.4 of the SMPP protocol.
- UCP/EMI (Universal Computer Protocol / External Machine Interface)

  A TCP/IP connection over the internet or a private network to a service that supports v3.5 or v4.0 of the UCP/EMI protocol.
- HTTP (Hyper Text Transport Protocol, e.g., the standard protocol for the "web")

  A TCP/IP connection over the internet or private network to a service that accepts SMS messages via an HTTP "GET" based protocol. (This protocol allows you to chain multiple Now SMS/MMS Gateways together.)

2.2.6 SMS Required Tools

To develop a website with SMS function, there are three (3) elements required namely a GSM Modem, an SMS Gateway and SMS protocol that will be used. As mentioned earlier, this project will apply the second approach thus it only needs three elements.

- **GSM Modem**

  A GSM modem can be an external modem device, such as the Wavecom FASTRACK Modem [8]. A GSM SIM card can be inserted into these modems, and connects the modem to an available serial port on a computer. Besides, a GSM modem also can be a PC Card installed in a notebook computer, such as the Nokia Card Phone. Others could also be a standard GSM mobile phone with

the appropriate cable and software driver to connect to a serial port on a computer (if the laptop consist infrared, there is no need a cable).

Phones such as the Nokia 7110 with a DLR-3 cable, or various Sony Ericsson phones, are often used for this purpose. This is because these long messages are actually sent as separate SMS messages, and the phone attempts to reassemble the message before forwarding via the modem interface. As for this project a standard GSM mobile phone will be used in order to enable system to send SMS to the students.

- **SMS Gateway**

  According to Bryce Norwood (2003) [9], the easiest way to send SMS and MMS message is through the gateway that is connected to the web menu interface. SMS Gateway is a 32 Bit Windows utility that enables to send and receive text and binary 'Short Messages' over GSM digital cellular telephone networks. The package consists of both an interactive messaging application, and a stand-alone messaging gateway to other Windows applications through the use of DDE, OLE and Command Line Interface. SMS Gateway also supports POP3 for message transmission and SMTP for message reception, so it may be used in almost any environment without need for custom development [5].

  One of the gateways that is being used is the NowSMS/MMS gateway. NowSMS/MMS gateway is an extremely powerful and multi-functional content delivery solution for SMS and MMS messaging. NowSMS is a fast track to deploying and developing SMS, MMS, WAP Push and OTA solutions. It is an affordable solution for development, testing and full production systems. NowSMS can manage simultaneous connections to one or more SMSCs, supporting the major SMSC protocols, including SMPP, HTTP, UCP/EMI and GSM modems. [10].

- **SMS Protocol**

  In order to send SMS messages to the mobile phones, there must be a protocol/interface that is supported by the SMS gateway. Different SMS gateway providers have different protocols. Such SMSC protocols including SMPP, UCP/EMI, CIMD2, HTTP and/or GSM modems. Since the website is developed using the PHP language, the HTTP protocol is used. According to Farheen Rehman (2005) [7], it is feasible to send SMS using GET and POST HTTP methods in PHP. Using HTTP basically means the use of forms, except that these will be submitted automatically as opposed to manually.

CHAPTER 3
METHODOLOGY

3.1 Procedure Identification

In order to complete this project, Waterfall Model is proposed. The selection of this methodology is because it is suitable with the time duration of the project, each phase can be approved before the next phase starts and it emphasize planning and good requirement. Besides it is simple and easy to use and higher chance of success over the waterfall model due to the development of test plans early on during the life cycle.
Phases of this methodology are as follows:

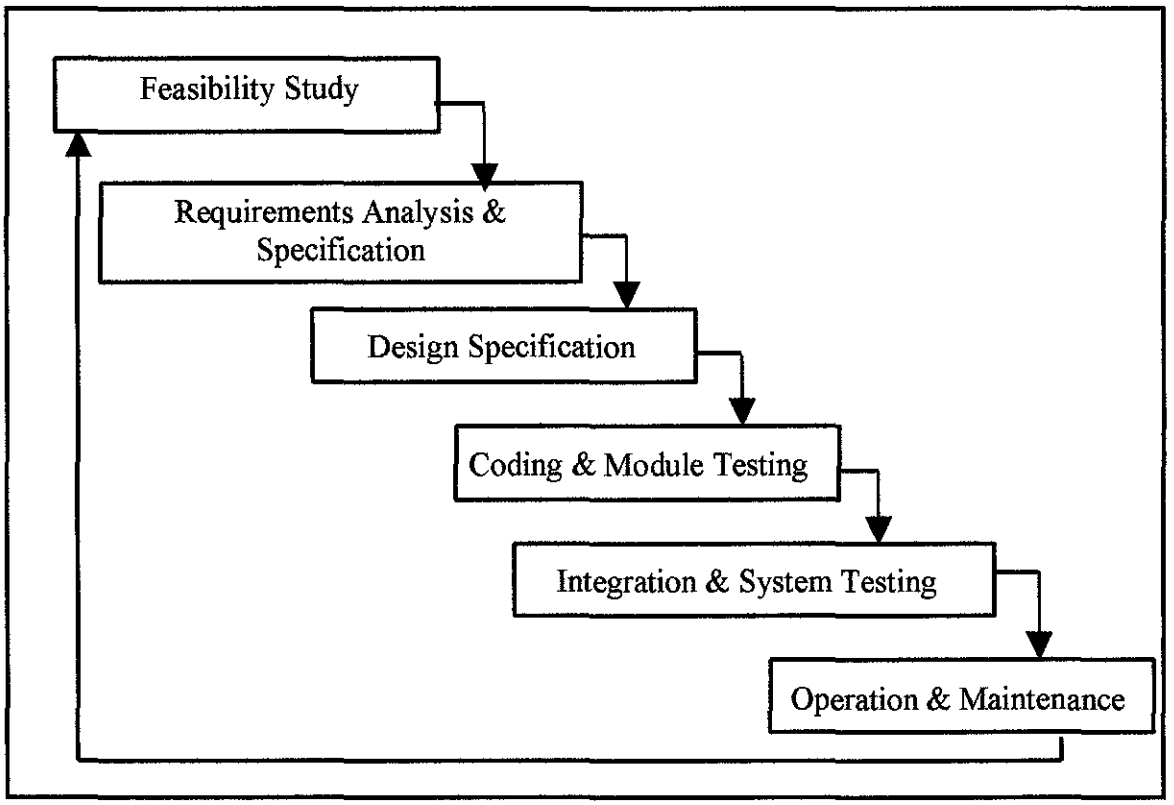

Figure 2 Waterfall Model

Feasibility Study

At this first stage, the project is to be determined whether developing the project is financially worthwhile and technically reasonable. Based on previous study, UTP Summon Notification System is technically reasonable to develop upon request from the security officer to ease the summon management because the existing system does not have the notification function and interactive interface. Apart from that, it is financially worthwhile as the tools to develop the system are already provided and there is no cost related to the gateway as it is a freeware.

Requirements Analysis and Specification

During this phase, the requirement of the project will be identifying the exact requirements of the customer, find out and resolve any inconsistencies and incompleteness in the requirements. Requirement gathering from end user whom is then security officer will be done at this stage through interviews and discussions. All collected data will be analyzed and documented to clearly understand what the client wants. Besides, there is a need to understand the SMS notification technology how it works and implemented in the system.

Design Specification

Design phase will involve transformation of requirements specification into a form suitable for implementation in some programming language. There will be identifying all the functions to be performed and data flow among the functions which are the steps made by the user as he or she log into the system. This can be carried out by designing a use case diagram (functional model) to see the interaction between security officer with system and student.

Coding and module testing

This phase will see the translation of logical design into source code. Each module of the design is coded and unit tested. The unit will be tested independently to see if the individual modules work correctly. In this project, the system GUI and its functionalities will be coded based on the logical design as mentioned earlier and tested independently and if the test succeed, the project proceeds with the development of SMS notification.

Integration and system testing

After all the modules are successfully tested independently and integrated, the system testing is carried out. This is to ensure that the developed system functions according to its requirements as specified in the documentation. In this project case, the integration of SMS notification and system functionalities will be tested and ensure whether the whole system functions as have been expected.

Operation and Maintenance

The maintenance phase refers to the correction of errors which were not discovered during the product development phases, improve the implementation of the system and enhance the functionalities of the system. The final phase will cover the presentation of the project to the group of panels whereby the system will be operated according to the flow. In addition, it also comprises of handover the project to the university, besides report preparation and submission.

3.2 Tools/equipment required

These tools are important for the development of this project. SMS Gateway is a freeware and downloaded from the internet.

3.2.1 Hardware requirement:

- Workstation PC
- GSM Modem (Nokia 6600)

3.2.2 Software requirement:

- Programming language (HTML, PHP, etc)
- XAMPP (Apache Web Server and MySQL Database)
- Macromedia Dreamweaver MX
- Adobe Photoshop CS
- NowSMS Gateway

CHAPTER 4
RESULTS AND DISCUSSION

4.1 Findings

Number of findings have been obtained and had contributed a lot to the development of the system. In the following section, some of the selected figures are shown to illustrate the result which have been acquired and described from survey during the requirements and analysis specification phase. These data and results are collected from the interview with user and two types of object oriented modeling have been constructed. These models are the use case and sequence diagrams.

4.1.1 Functional Model (Use Case Diagram)

The use case defines the basic business process the system needs to handle. It also represents the functions of a system which system must support from the user's point of view. Basically, there are five (5) main functions or modules. Namely, the Login, Student Profile, Traffic Summon, Other Summon and Send SMS. These modules are part of the Administrator and User sites. There is also a site for student which consists of Search module. Each module consists of few functionalities. The details of each functionality will be described later in next few sections. The actors are the external entity that interacts with the system. As for this system, the actors are the security officer and student. An administrator can be the security officer. Stated below are the figures that show the use case for Security Notification Summon System (SNSS).

1) Login and Logout Modules

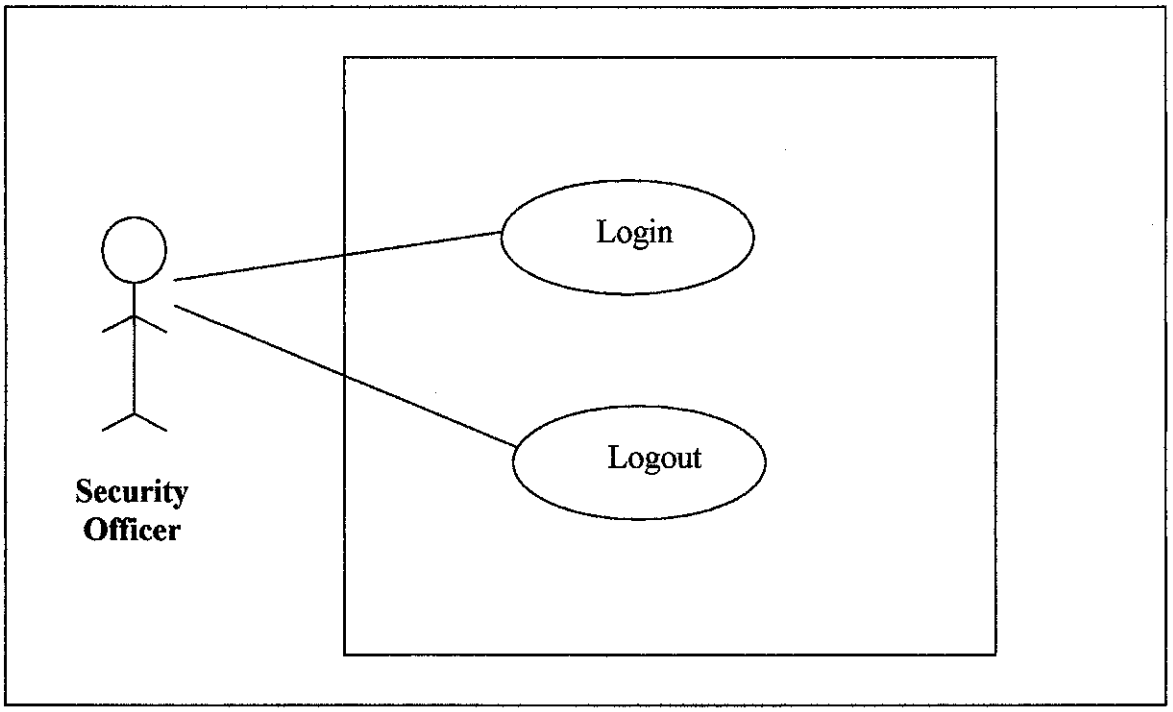

Figure 3 Use Case: Login and Logout Modules

- Description for "Login"

  Security officers enters their username and password when login into the system. There will be two user logins for this system which are the administrator and the user. Both persons can be the security officers.

- Description for "Logout"

  Both administrator and user can click the "Logout" link to logout from the system.

2) Student Profile Module : Administrator

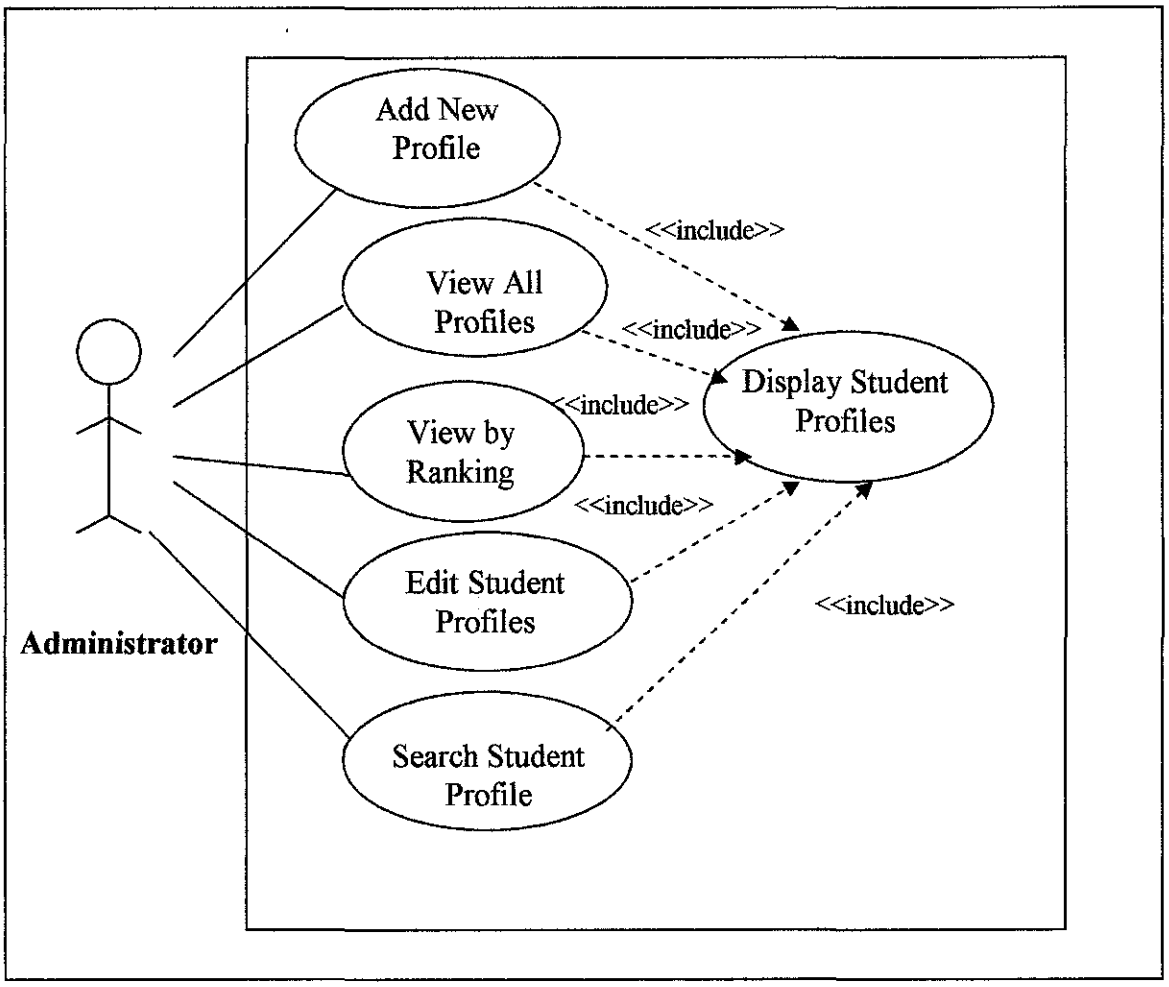

Figure 4 Use Case: Student Profile Module - Administrator

- Description for "Add New Profile"

  Administrator enters the student's details such as Student Id, Name, Programme, Batch, Residential College, Email, Phone No, Plat No and Vehicle.

- Description for "View All Profiles"

  An administrator can view the recorded student profiles. All details about the students together with the recorded summons will be displayed.

- Description for "View by Ranking"

  This function lets the administrator to view student details by ranking. The ranking include 'Severe case', 'Average case' and 'Cannot be traced'.

- Description for "Edit Student Profiles"

  Administrator can edit the existing student profile if there is any new information need to be added or item needs to be modified.

- Description for "Search Student Profile"

  This function enables the administrator to search a particular student profile.
  A Student ID need to be entered in order to search for a profile.

- Description for "Display Student Profiles"

  The above actions will trigger out this use case "Display Student Profiles. It will displays all the details about the student including their record summons.

3) Student Profile Module : Security Officer

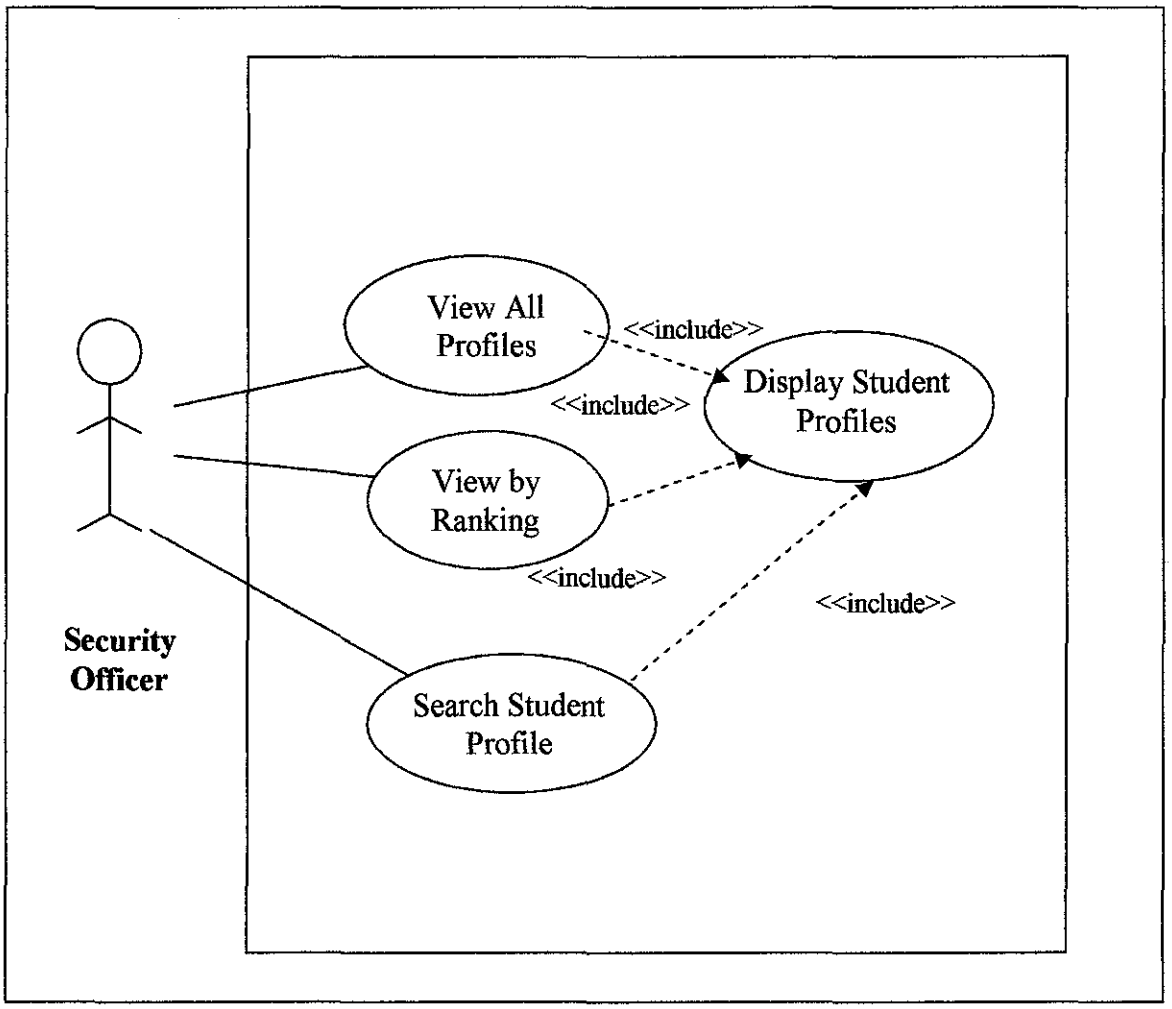

Figure 5 Use Case: Student Profile Module – Security Officer

- Description for "View All Profiles"

  The security officer can view the recorded student profiles. All student details and summon record will be displayed.

- Description for "View by Ranking"

  This function lets the security officer to view student details by ranking. The ranking include 'Severe case', 'Average case' and 'Cannot be traced'.

- Description for "Search Student Profile"

  This function enables the security officer to search a particular student profile. A Student ID needs to be entered in order to search for a profile.

- Description for "Display Student Profiles"

  The above actions will trigger out this use case "Display Student Profiles. It will displays all the details about the student including their record summons.

4) Traffic Summon Module and Other Summon Module

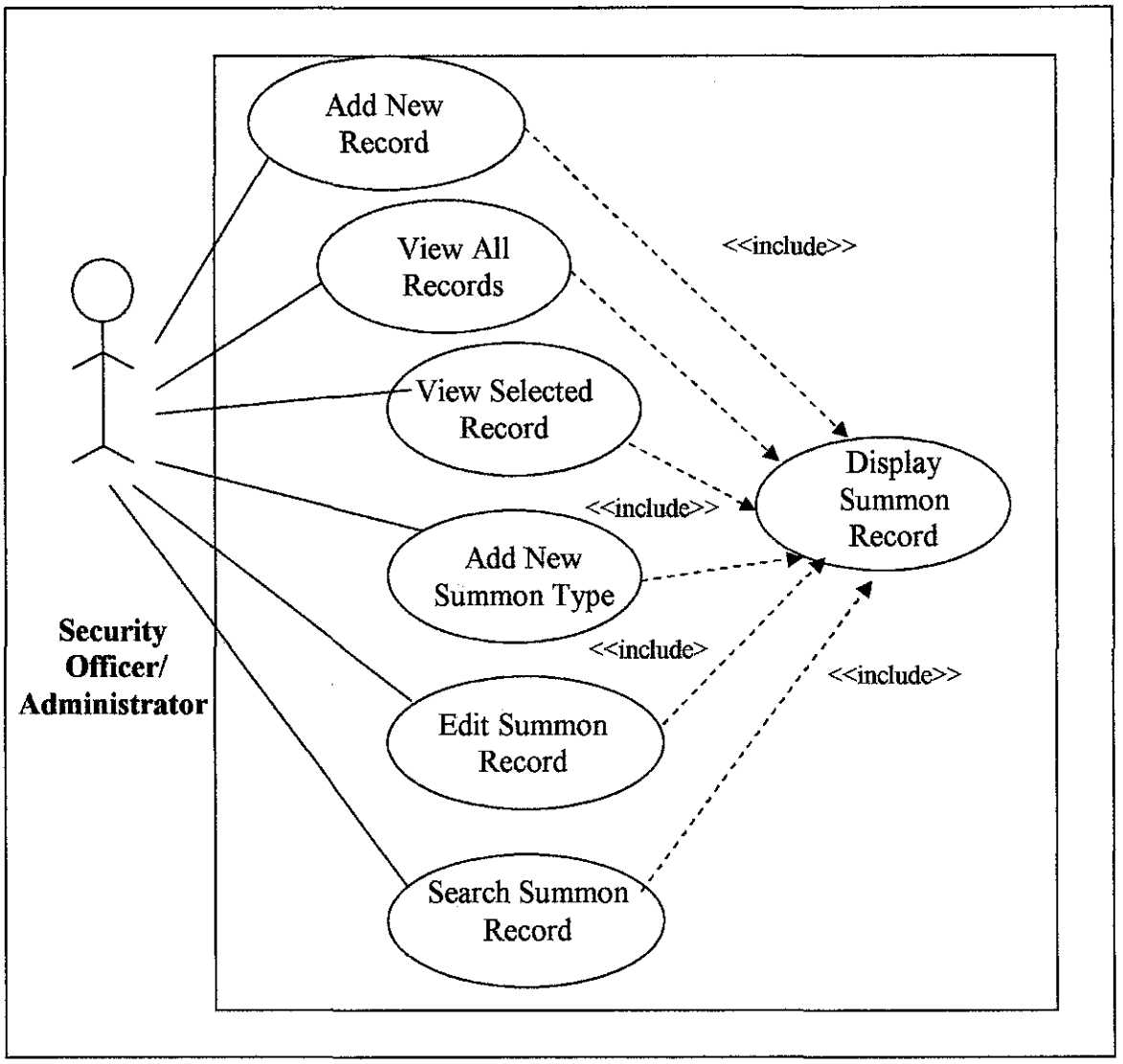

Figure 6 Use Case: Traffic and Other Summon Module

The summons module consists of two type of summon. Namely, the Traffic Summon and Other Summon. Traffic Summon is a type of summon that comprises of traffic details. Such as, the Receipt No, Plat No, Vehicle, Date Out, Due Date, Summons, Location, Compound, Status and Last Notified. Examples of traffic summon type are 'Parking at no entry area, 'High Speed', 'Does not follow the roundabout', etc. While Other Summon is a behavior summons, namely 'No Metric Card', 'Long Hair',

Inappropriate Outfit'. The items in the Other Summon include the Receipt No, Student ID, Residential College, Compound, Status and Last Notified. In this module, both user and administrator have the same roles.

- Description for "Add New Record"

  This function let the security officer to add new summon record for a student.

- Description for "View All Records"

  Security officer can view all the summon details. If the security officer wants to view the student details of a particular summon record, he or she can click the 'View Record' link.

- Description for "View Selected Record"

  This function lets the user to view student summon records based on the record status. The record status includes the 'Paid' and 'Overdue'.

- Description for "Edit Summon Record"

  Security officer can edit the existing summon record if there is any new details need to be added or modified.

- Description for "Add New Summon Type"

  This function is for the administrator only. If UTP makes a new regulation, then the administrator can add the latest regulation by click the link 'Add New Summon'. This function is included in the Traffic and Other Summon.

- Description for "Search Summon Record"

  This function enables the security officer to search a specified summon record. User just has to enter the Receipt Number or Plat No (for Traffic Summon) in order to search the records.

- Description for "Display Summon Record"

  The above actions will trigger out this use case "Display Summon Record. Each of the above action has different view of "Display Summon Record" in terms of table columns.

5) Send SMS Module

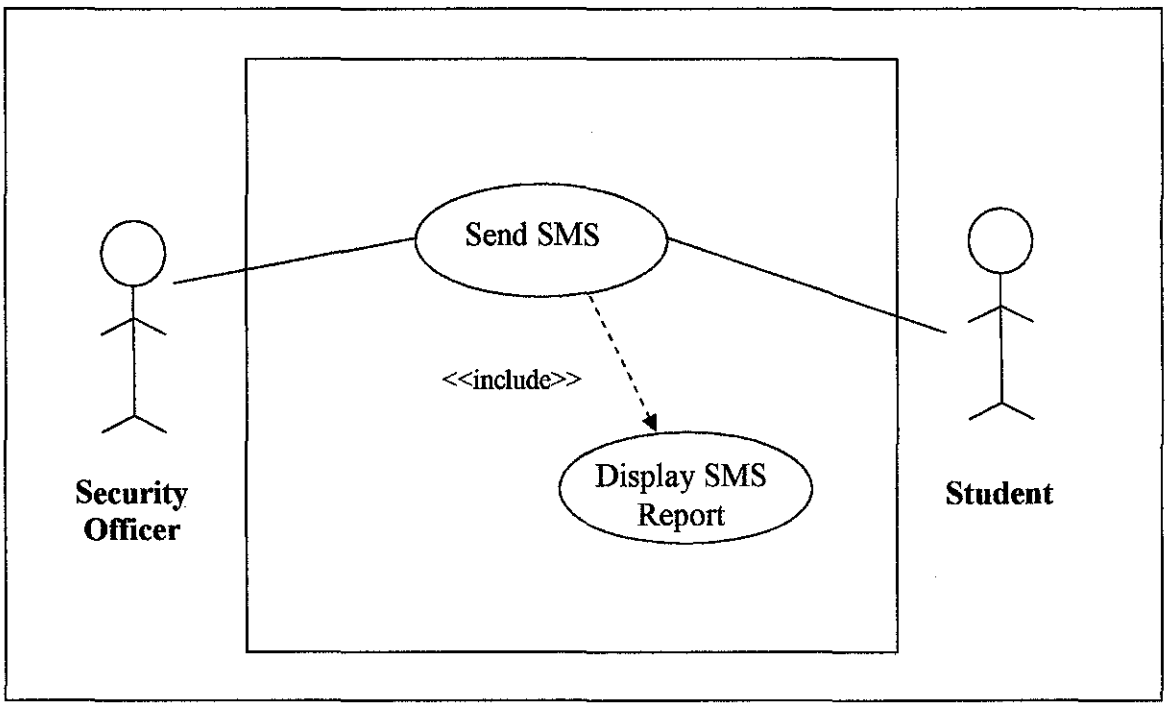

Figure 7 Use Case: Send SMS Module

- Description for "Send SMS"

  Security officer choose the student's phone number from the database. Next, he or she enter the SMS messages and click the button 'Send'. The student will be notified.

- Description for "Display SMS Report"

  The above action will trigger out this action. It displays the SMS report when the SMS messages have been delivered to the respective student.

6) Student Search Summon Module

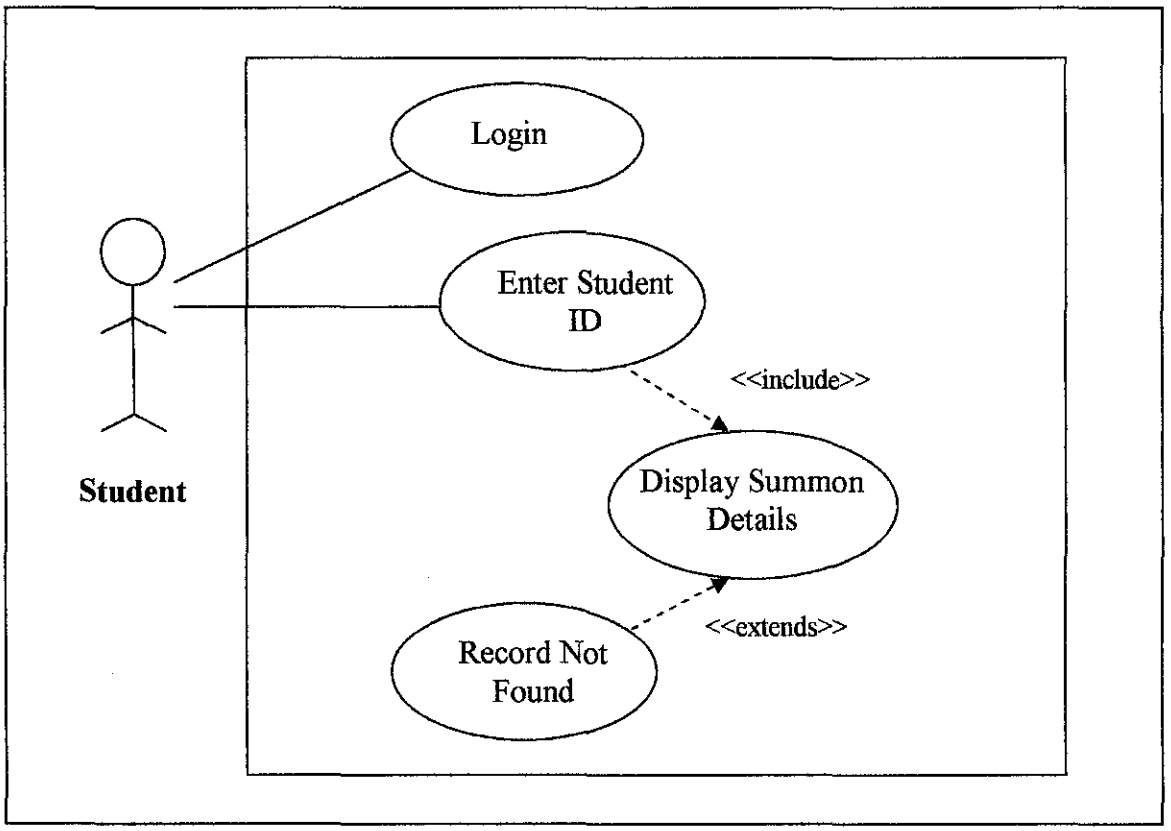

Figure 8 Use Case: Student Search Summon Module

- Description for "Login"

  Student has to login the system by entering his or her username and password. Then they will be directing to the view summon page.

- Description for "Enter Student ID"

  Students must enter their Student ID. Different student has different unique Student ID. Then the user click the button "Search" to display their summon records.

- Description for "Display Summon Details"

  The use case "Display Summon Details" will trigger out as soon as the student entered their ID. Student can know whether the summons have been paid or not and quantity of summons they have obtained.

- Description for "Record Not Found"

  In the use case "Record Not Found", if the system finds no match to the ID given, system displays an error message. This is because either the summon records do not exist or the ID does not match to the ID stored in the database.

4.1.2 Functional Model (Sequence Diagram)

Sequence diagram shows the processes that execute in sequence. It demonstrates the sequence of messages, which are exchanged among roles that implement the behavior of the system. Besides, it illustrates the flow of control across many objects that collaborate in the context of the system. The objects for this system are the main functionalities in each module. Likewise, the Security Officer and Student are also classified as the objects.

1) Login Module

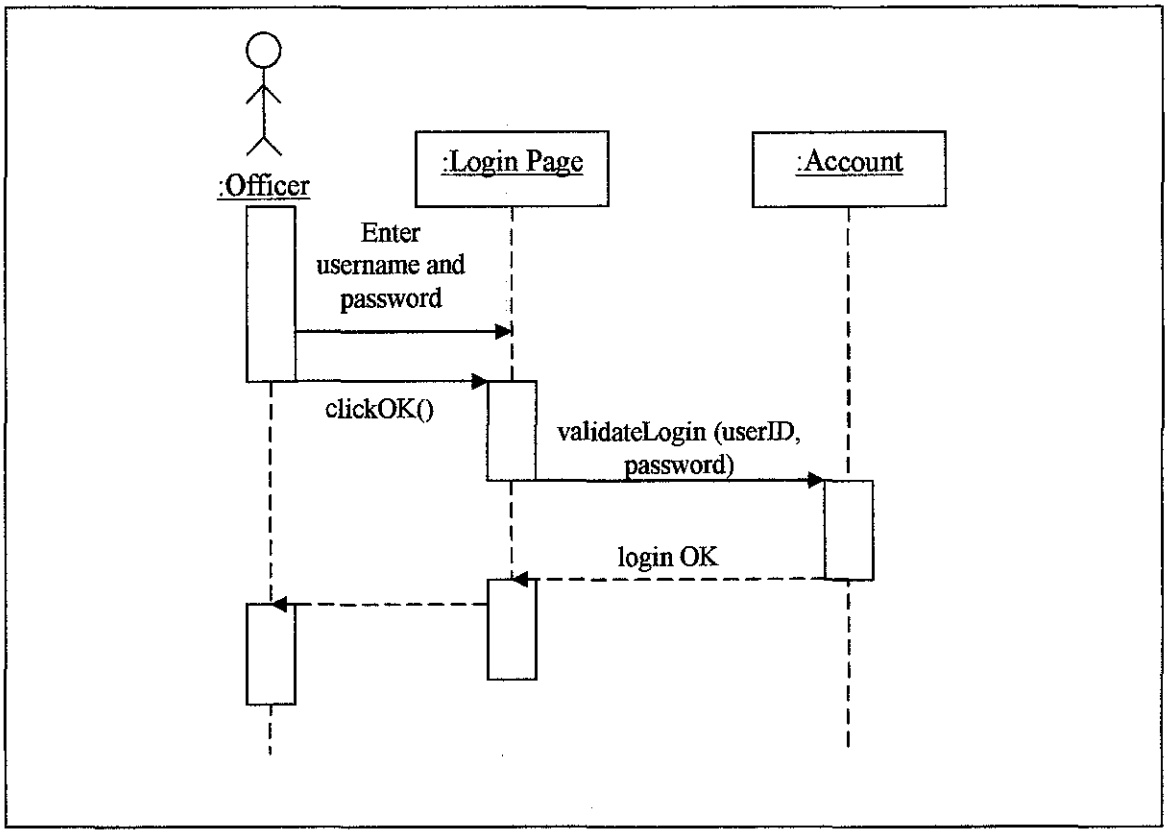

Figure 9 Sequence Diagram: Login Module

- Description:

  To access into the system, the Officer needs to enter their username and password in the given Login entry. The system will check whether the details entered are matched with the one in the login account database. If the login succeeds, user can access and direct to the next page. If the login failed, user will be asked to reenter the correct username and password. Basically the people who can access this system are user, student and administrator. Both user and administrator can be the security officer.

2) Student Profile Module

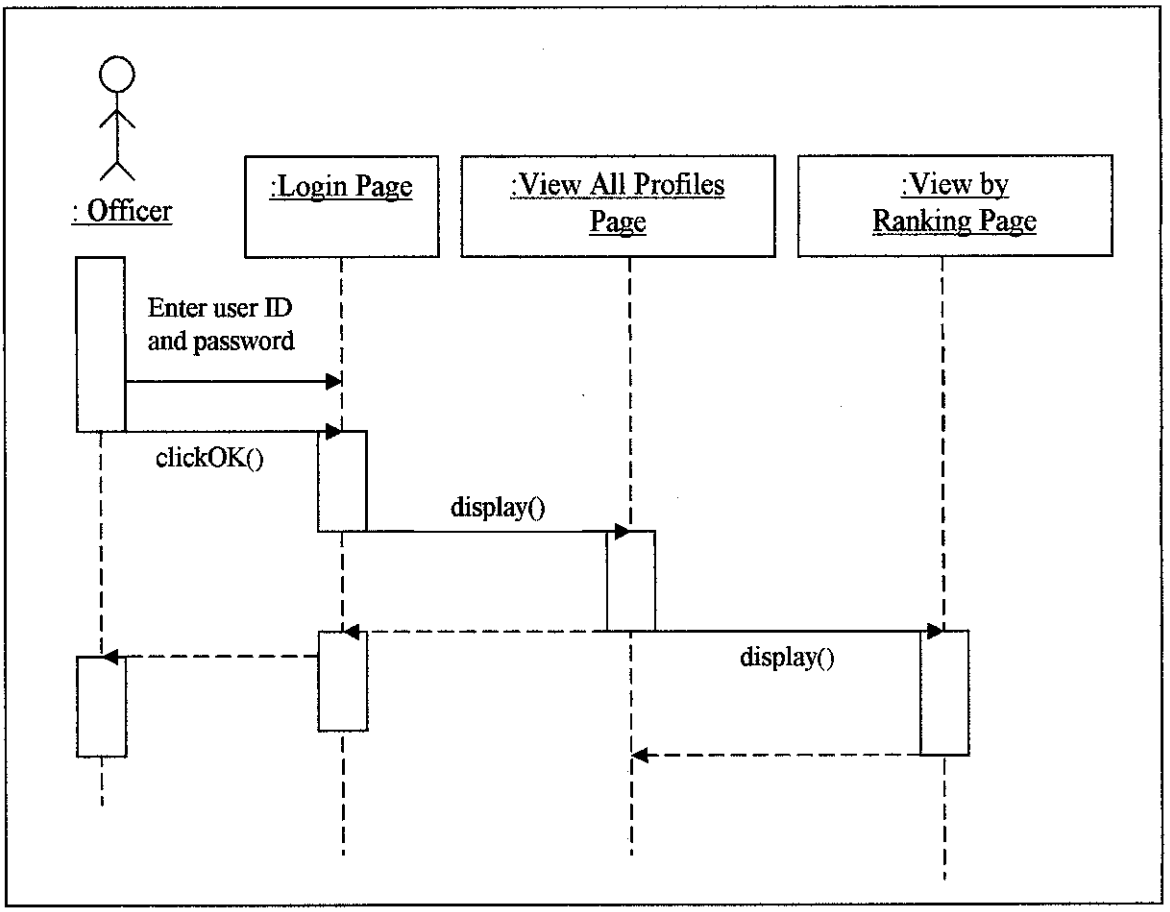

Figure 10(i) Sequence Diagram: Login, and View Profiles

- Description:

  Once the officer log into the system they are directed to the main page. If a user is accessing, then he/she will be directed to the "security officer" page. Meanwhile, the administrator will be lead to the "administrator page". User can choose any button navigation to start. As stated before, there are five (5) modules which are Login, Student Profile, Traffic Summon, Other Summon and Send SMS. In the above diagram, user can view all the student profiles and selected student profiles. View by Ranking lets the user to view the student profiles based on cases ranking.

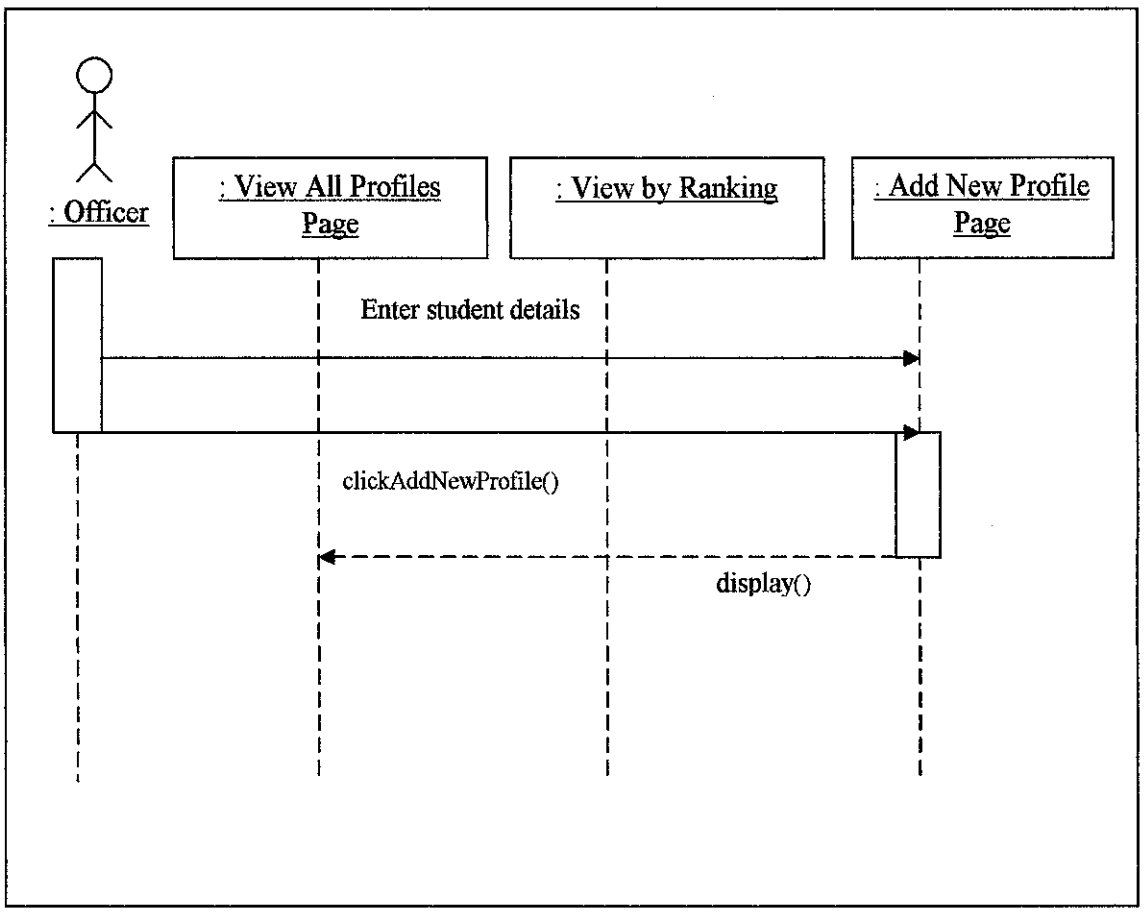

Figure 10(ii) Sequence Diagram: Add New Profile

- Description:

  Besides, View functionalities, there is also an Add function in the Student Profile Module. The officer (administrator only) can add new student profile in the Add New Profile Page. The details will be stored in the system database. The stored details are then can be viewed by clicking the link 'View All Profiles' or 'View by Ranking'.

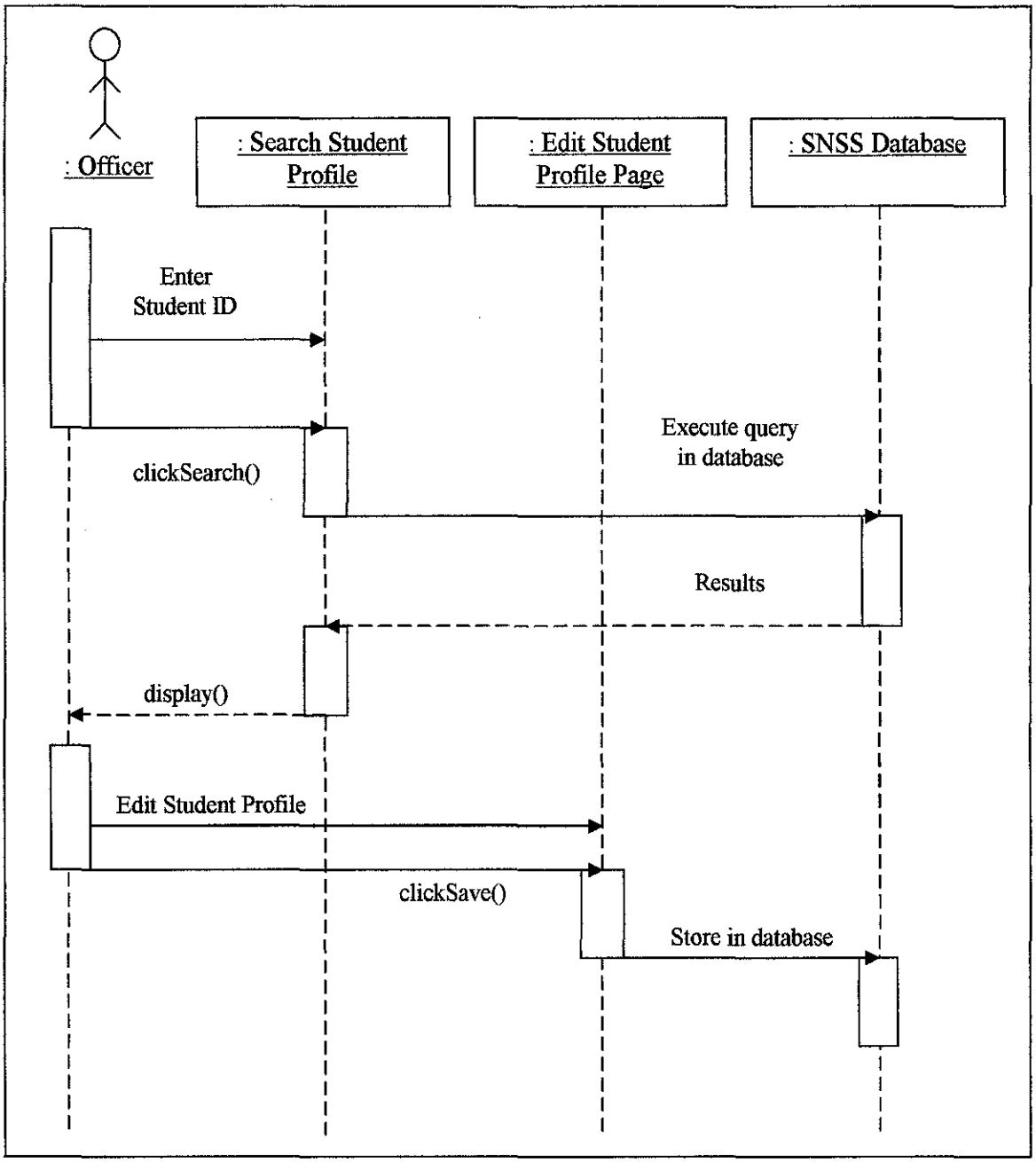

Figure 10(iii) Sequence Diagram: Search and Edit Student Profile

- Description:

  Next, there is a search and edit functions included in this module. The Officer can search specific student profile by just entering the student ID. It would then search the ID in the database and determine whether it is match or not. If ID is found, the results would be displayed.

Meanwhile, the officer (administrator only) can edit the student profile. The new details will be stored in the database when a 'Edit' button is clicked.

3) Traffic Summon Module and Other Summon Module

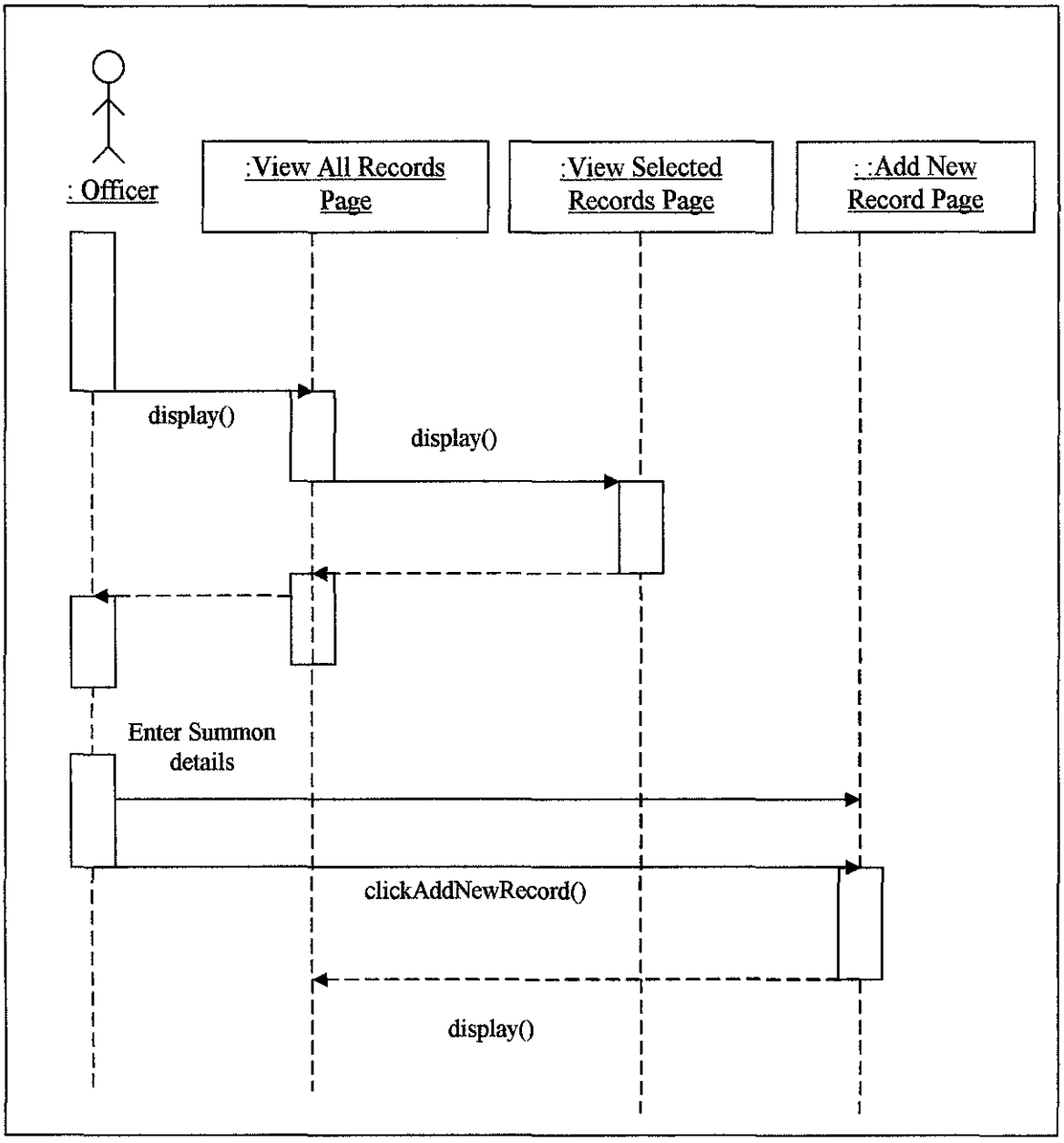

Figure 11(i) Sequence Diagram: View and Add New Record

- Description:

  In the above diagram, it shows that an officer can view the summon details by choosing the 'View All Records' and 'View Selected Records' links. 'View All Records' display all the summon records. Though the 'View Selected Records' display the chosen record based on record status either 'Paid' or 'Overdue.

  When officer add new record in the summons form entry, the details will be stored in the database.

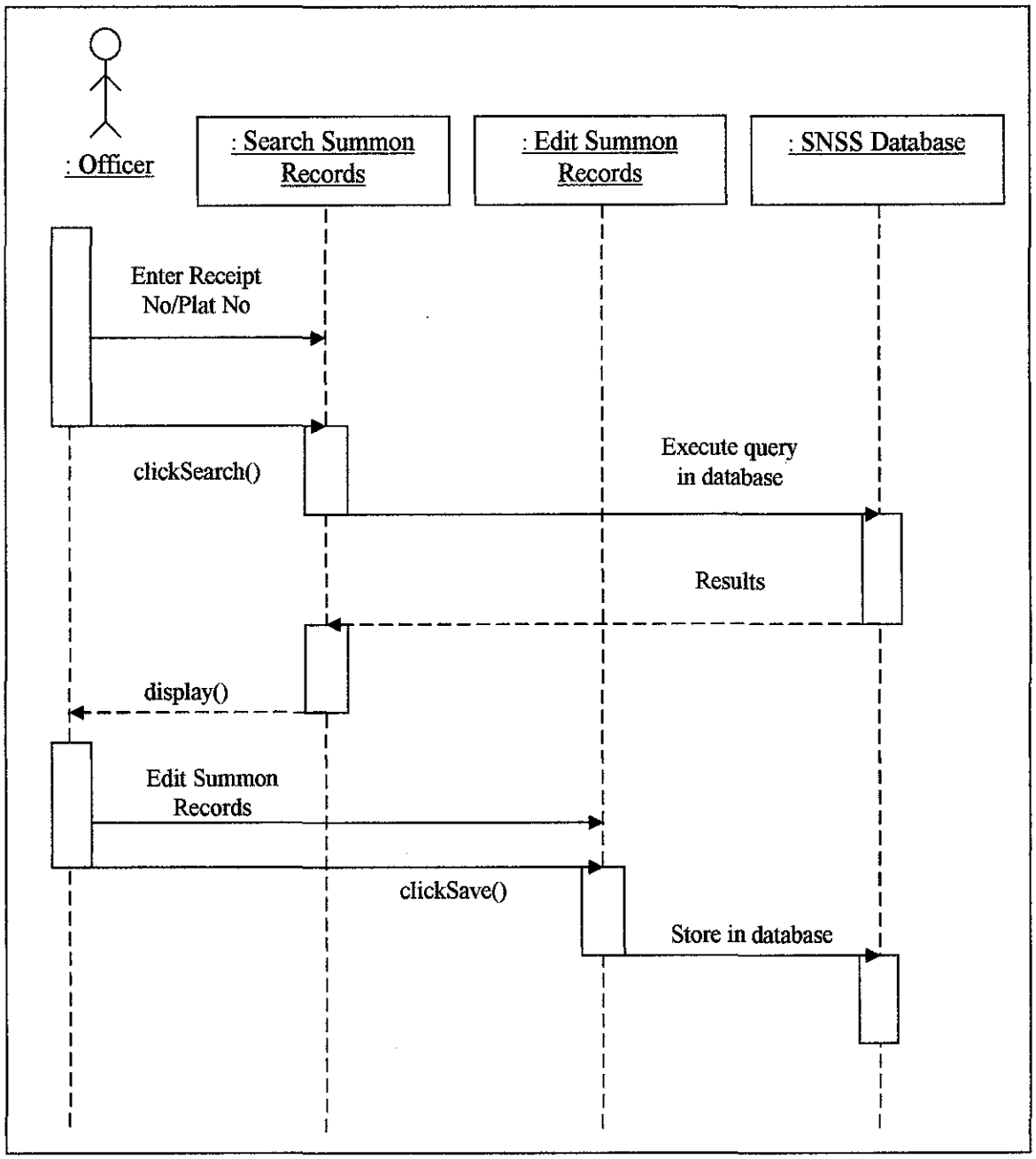

Figure 11(ii) Sequence Diagram: Search and Edit Summon

- Description:

  The sequence diagram shows that an officer can search the summon records by entering the Receipt No (for Other Summon) and Plat No (for Traffic Summon) in the search entry. Then it would search the detail in the database. If the results match, it would display. Officer also can edit or modify the summon records by entering new details in the Edit Traffic Summon or Other Summon forms. These new details then would be stored in the database.

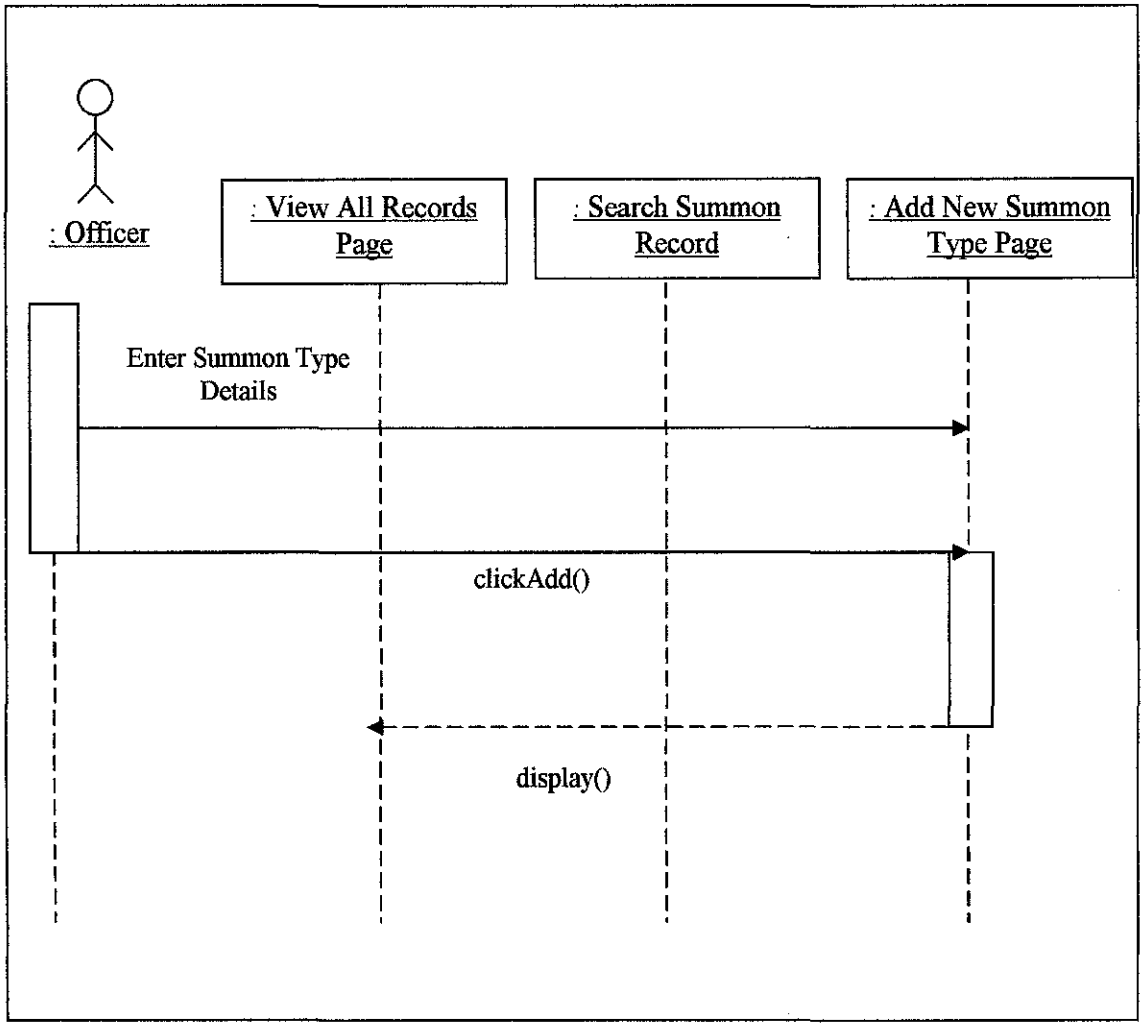

Figure 11(iii) Sequence Diagram: Add New Summon Type

- Description:

  An officer (administrator only) can add new type of summon in the Summon Type of Traffic and Other summons. When he or she click the 'Add New' button, the new summon type will be stored in the database.

4) Send SMS Module

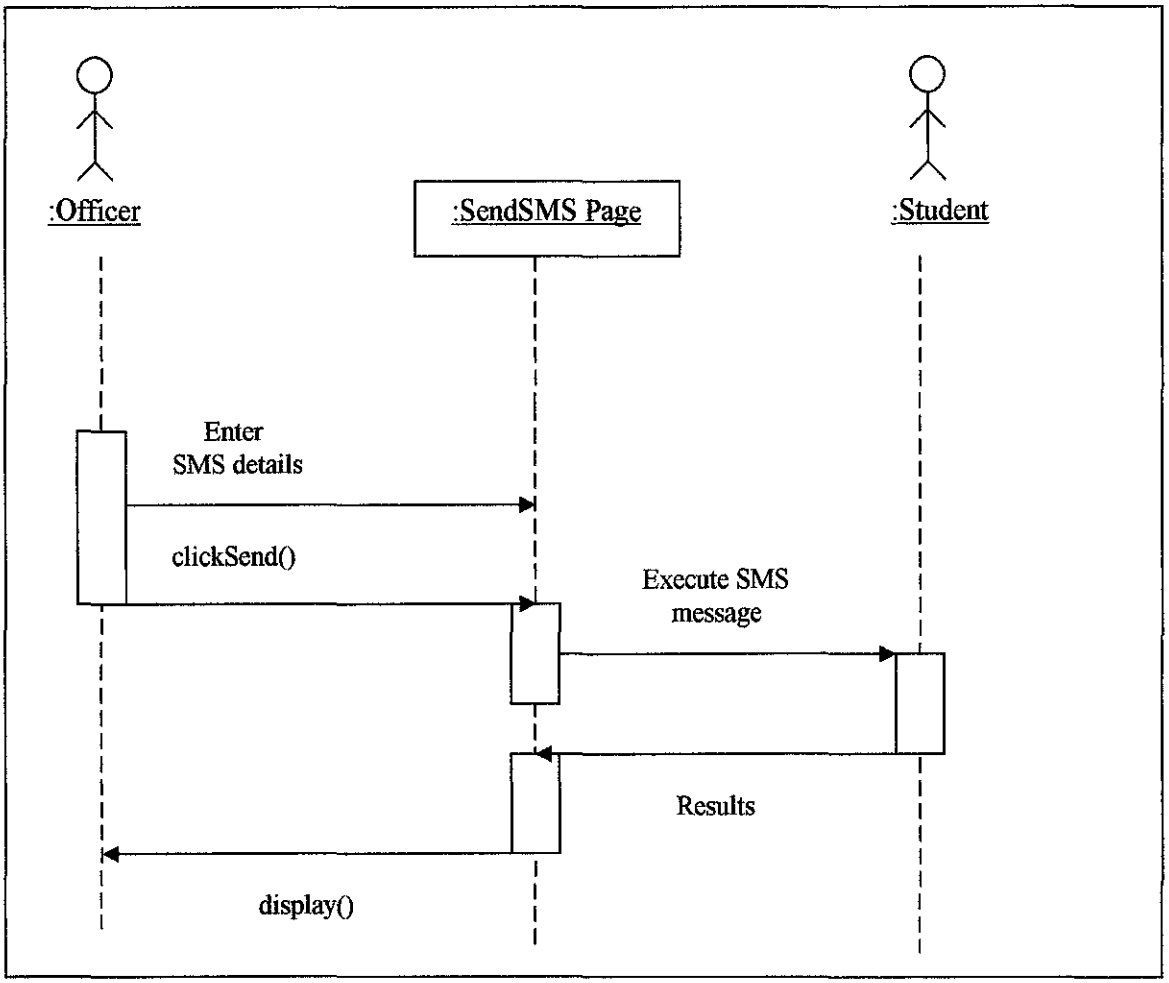

Figure 12 Sequence Diagram: Send SMS

- Description:

  An officer sends SMS to the students when their summonses are overdue. The SMS is to alert the students that they have not paid the summonses and it is overdue. Soon after the SMS is being sent, a result indicates the SMS has been sent to the respective student will be displayed.

5) Student Search Summon Module

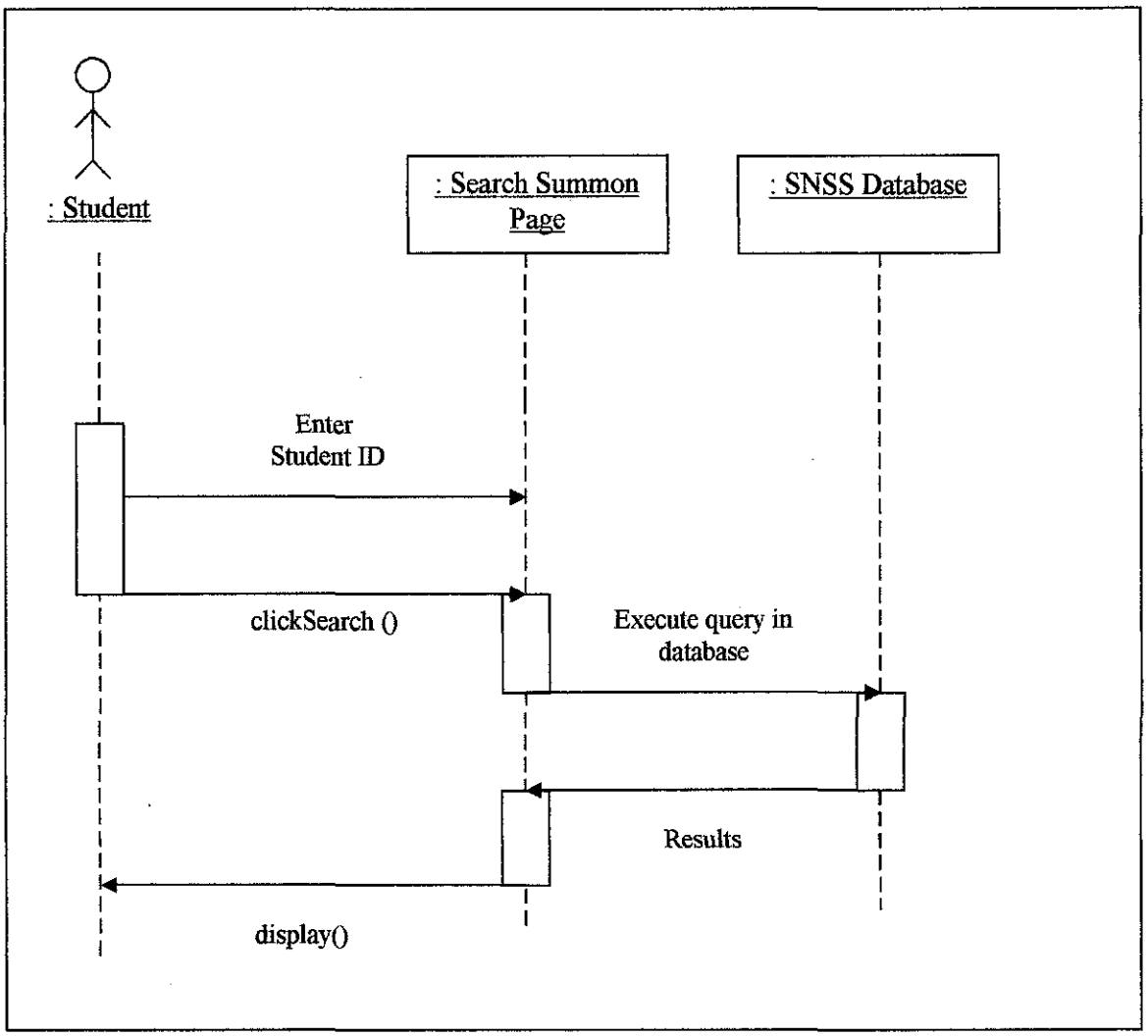

Figure 13 Sequence Diagram: Student Search Summon

- Description:

  A student can view his/her current summon through this system. This can be done by log into the system and enter Student ID in the search box summon. When the 'Search' button is clicked, the system searches the ID in the database. If the record does not exist, it shows that either the student has no summon or the ID incorrectly entered. If record founds, it will be displayed.

4.1.3 Functional Description

For simplicity and better understanding, the modules of the system are briefly described in a table. Below are the modules and functionalities containing in the administrator and security officer page:

Module/ Page	Description
1. Login	Username and password need to be entered by the officer and administrator in order to access into the system.
2. Student Profile	Consists of Add Profile, Edit Profile, View All Profiles, View By Ranking and Search Profile functions.
a) Add Profile	The Add Profile function is to add new student information into the database.

b) Edit Profile	Edit Profile has the same entries as Add Profile except it modifies the existing data.
c) View All Profiles	The View All Profiles page consists of a display table of all the student details.
d) View By Ranking	View By Ranking comprises of selection function and a display table of selected students.
e) Search Profile	Search Profile function is to search a specified student profile.
3. Traffic Summon	It has four (5) main functionalities, namely the Add Summon, Edit Summon, View All Records, View Selected Record and Search Record.
a) Add New Record	This function let the security officer to add new summon record for a student.
b) Edit Summon Record	Edit Summon modifies the existing summon record and add new details into the database.
c) View All Records	This function lists all the traffic summon details.

d) View Selected Record	This function lets the user to view student summon records based on the record status. The record status includes the 'Paid' and 'Overdue'.
e) Search Record	The search record function enable the user to search a specified summon record. User has to enter the Receipt Number or Plat No (for Traffic Summon) in order to search the records.
f) Add New Summon Type	This function is to add new type of summon. User needs to enter the code number and name of new summon.
4. Other Summon	This module has the same functionalities as the Traffic Summon module except it owns different elements and is referring to the behavior summon.
5. Send SMS	This module has input fields that need to be entered in order to send a notification message to the student.

Table 1: Security Officer and Administrator Page

Next, below is the illustration about the modules and functionalities containing in the student page.

Module/Page	Description
1. Login	Student needs to enter student ID and password in order to access into the system.
2. Search Summon	This function is to search summon details. A student needs to enter student ID to search for Other Summon and enter Vehicle's Plat No to search Traffic Summon. Summon details will be displayed if there is any.

Table 2: Student Page

4.1.4 System Architecture

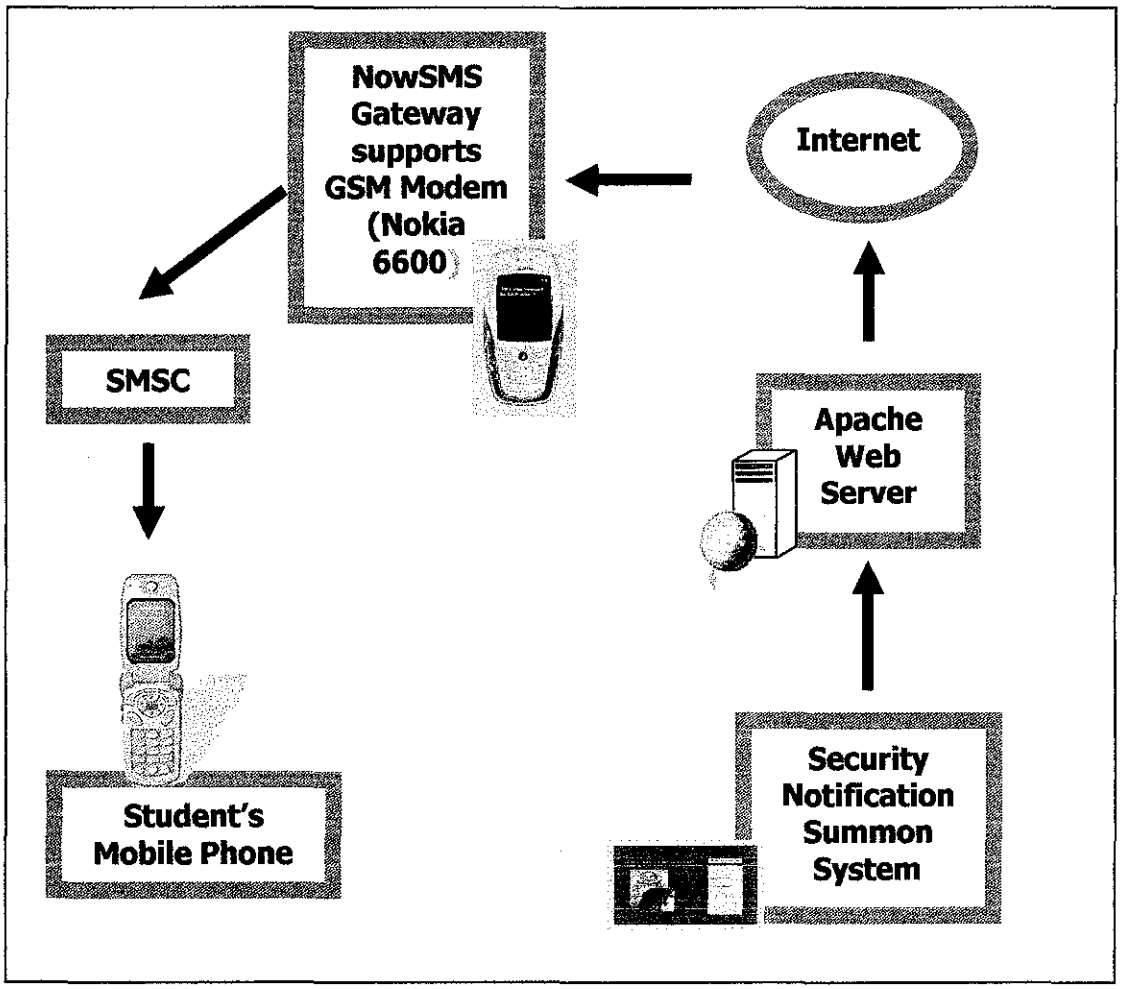

Figure 14: System Architecture

The system architecture shows the flow of the SMS message from the Security Notification Summon System (SNSS) to the mobile phones. When the user click the 'Send SMS' button, the SMS message will be sent through the web server and next transmit via the Internet. The NowSMS Gateway will be used as a middleware tool which simplifies the process of connecting to service providers (SMSC) and managing one GSM modem.

4.2 Result and Discussion

The final product for this project would be a complete web-based system with an SMS application used to notify the students of overdue summons.

4.2.1 Send SMS from Pc to Mobile Phone

The author has discovered on how to send the SMS from the website to mobile phones. The Nokia 6600 GSM Modem will be used to enable the system to send text messages to the students. By linking the GSM Mobile Modem to notebook using infrared, the connection to the gateway can be established.

Next, SMS protocol needs to be defined and implemented in the Send SMS module so that it can link or communicate with the gateway. The chosen protocol is the HTTP language. The author also has discovered that the PHP and HTTP language can be used to send SMS from a website to mobile phones. This can be proved in the conference paper by Farheen Rehman, 'Sending SMS thru HTTP'. However Farheen used the TM4B as the gateway for his application which needs to be subscribed. Therefore, the author decided to use the NowSMS Gateway since it is free, besides it provides the PHP language script for sending SMS from the website. Initially, the NowSMS gateway has been configured in the website.

The difficulty in developing the SMS application in this website is when to implement the source code that is reliable with the gateway.

4.2.2 User Testing

After the system has been completed, the author has conducted a user testing session with the security personnel and student. After the user has tested the system, questionnaires are distributed and they are required to fill in. The questions ask about their views toward the system in terms of usability, design and suitability. Below is the result and feedback from the user testing which is depicted in a graph.

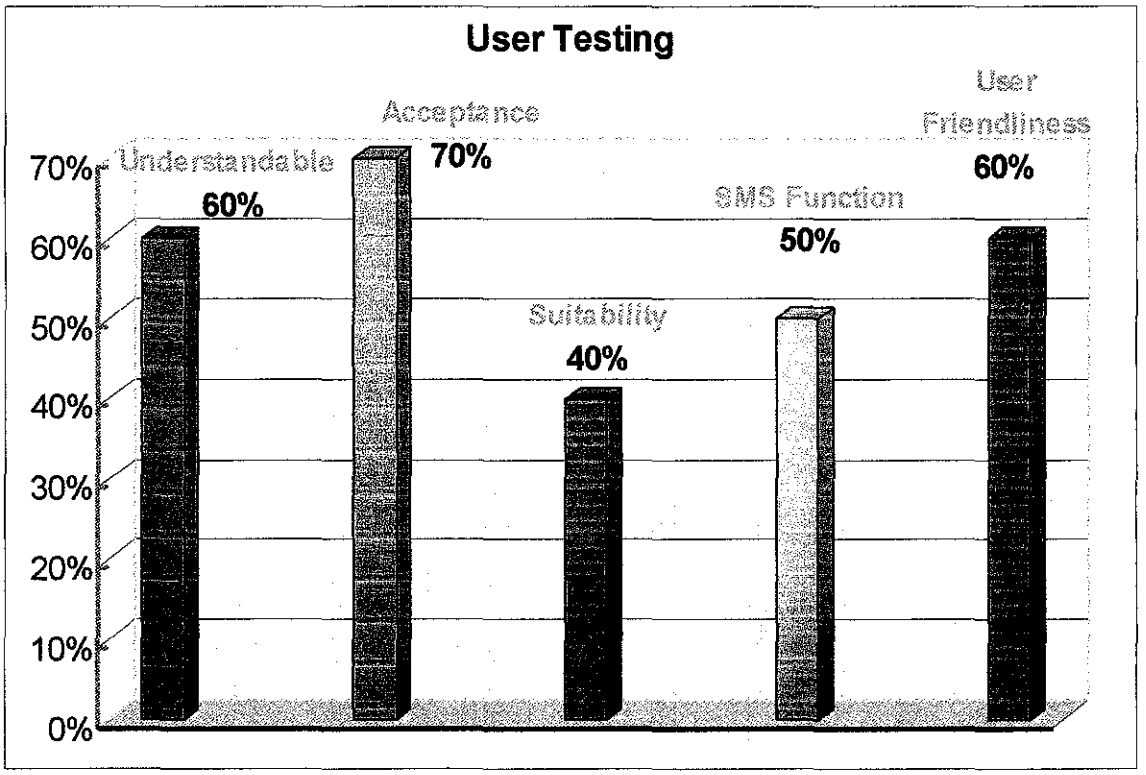

Figure 15: User Feedback

Based on the graph above, it shown that 60% of the users find the website interface is easily understandable. Meanwhile 70% accept the development of the system and 40% think it suitable to be implemented in UTP. For the SMS function aspect, 50% of them think SMS function is necessary to be included in the system. Last aspect which is user friendliness shows that 60% of the users find the system is user friendly and easy to use. Overall, in order for the system to be implemented in UTP, an ongoing user testing must be conducted, so that the system meets the user preferences.

4.2.3 Website Development

Throughout the website development, a portion of the system has been modified to well suit the user requirements and meet the Human Computer Interaction (HCI) aspects in website designing. The author also had made some modification on the design of the web pages and graphics. These include the additional website interfaces in order to have a better link and interaction with the user. Below are the website flow and screenshots that have been completed. For simplicity, this section shows the main flow and functionalities of the system. Refer to Appendix B to view the rest of the screenshots.

- **Website Flow**

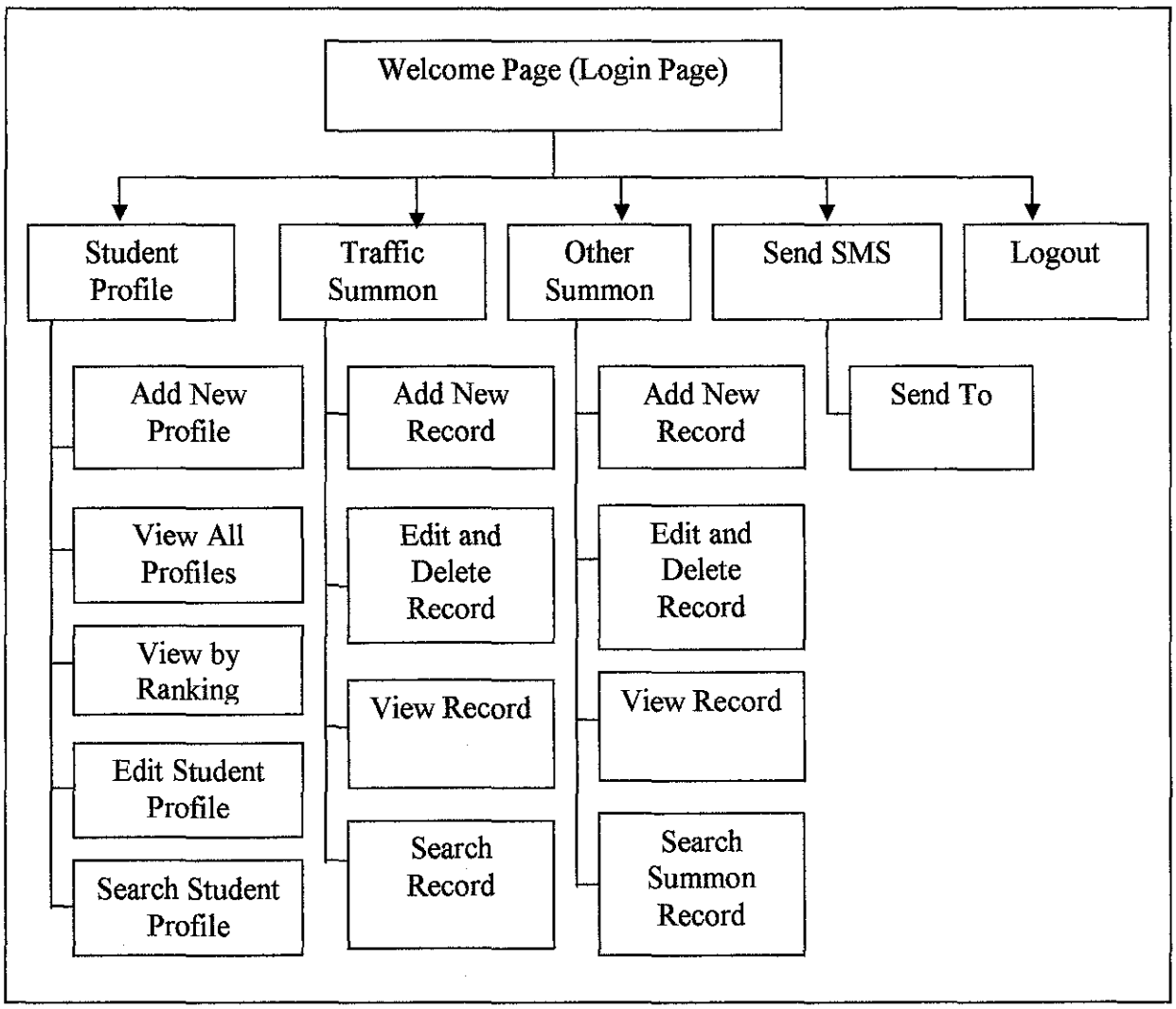

Figure 16 Website Flow

- **Website Screenshots**

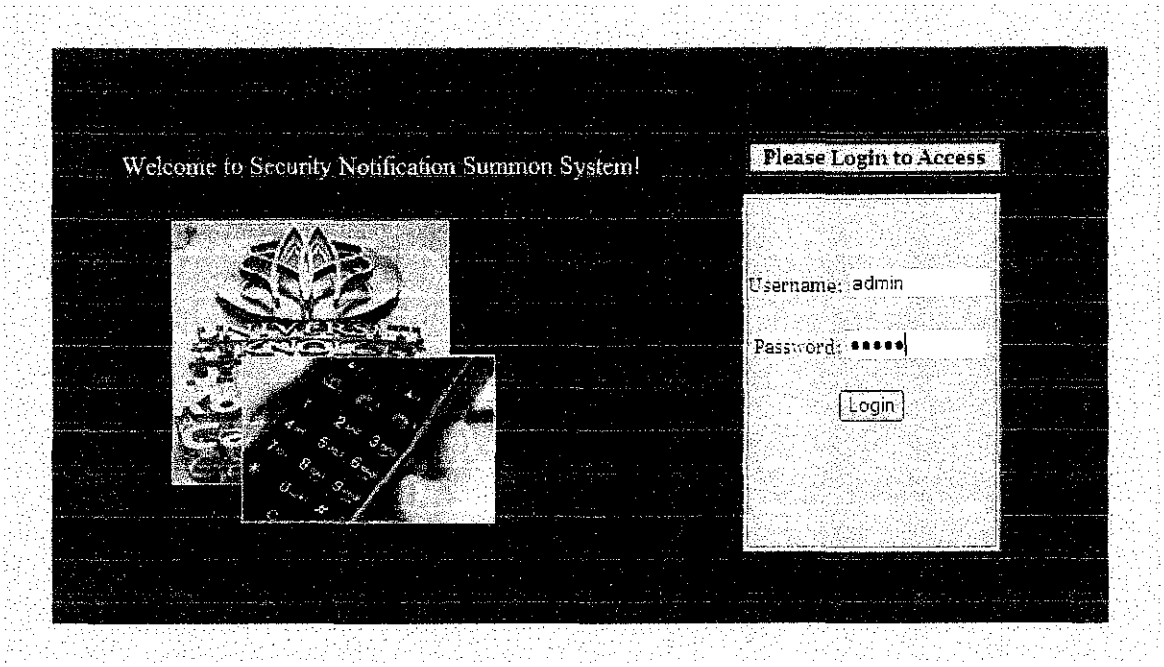

Figure 17 Welcome Page (Login Page)

Above is the Welcome or Login Page. This is where security officer, administrator and student will enter their username and password in order to access into the system. An error message will appear if the username and password are incorrectly entered.

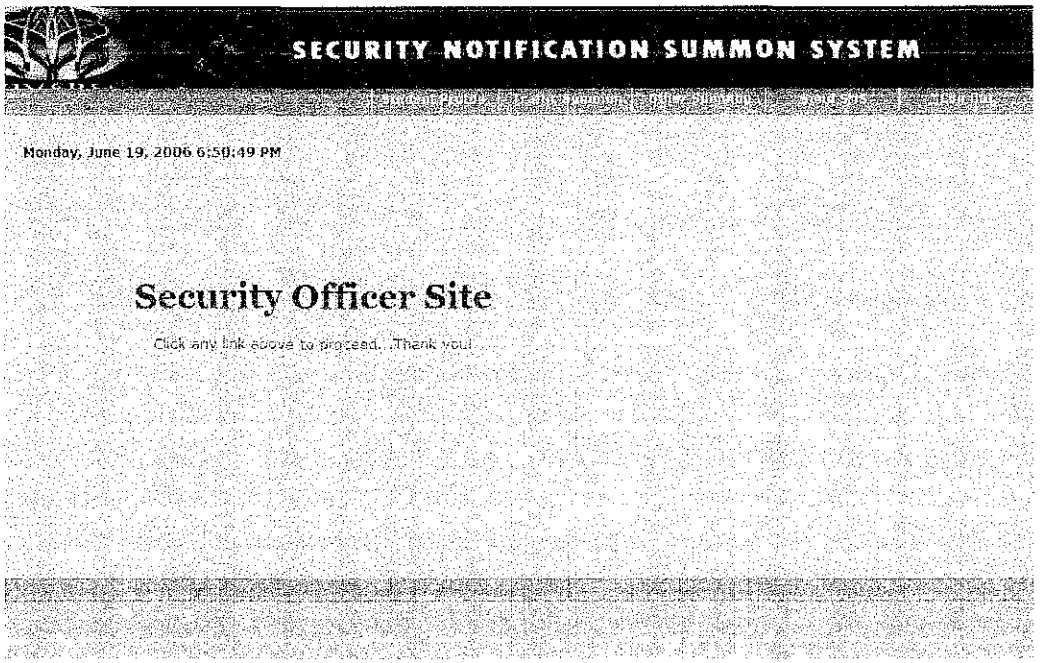

Figure 18 Security Officer Landing Page

If the login successful, security officer will be directed to the security officer landing page. He or she can click any link to proceed. For a user, there are four (5) modules or links, namely, 'Student Profile', 'Traffic Summon', 'Other Summon', 'Send SMS', and 'Log Out'.

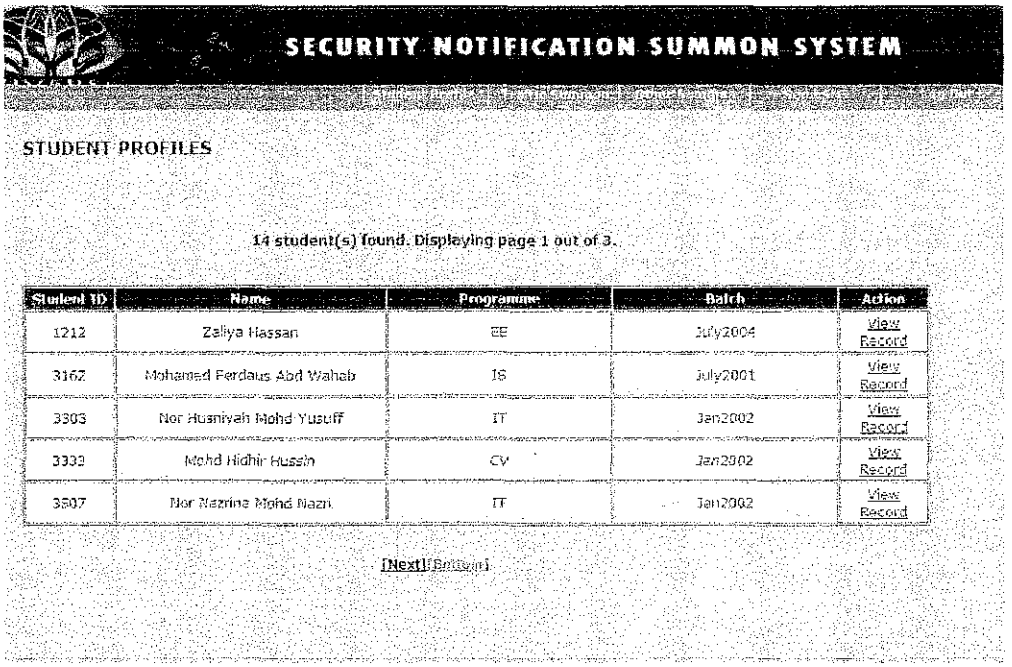

Figure 19(i) Student Profile: View All Profiles

Above is the 'View All Profiles' page. This is where a list of existing student profile is listed. In this main page, it only displays the 'Student ID', 'Name', 'Programme', 'Batch' and 'Action'. The 'Action' column let the user to click to view the details summon record about a particular student.

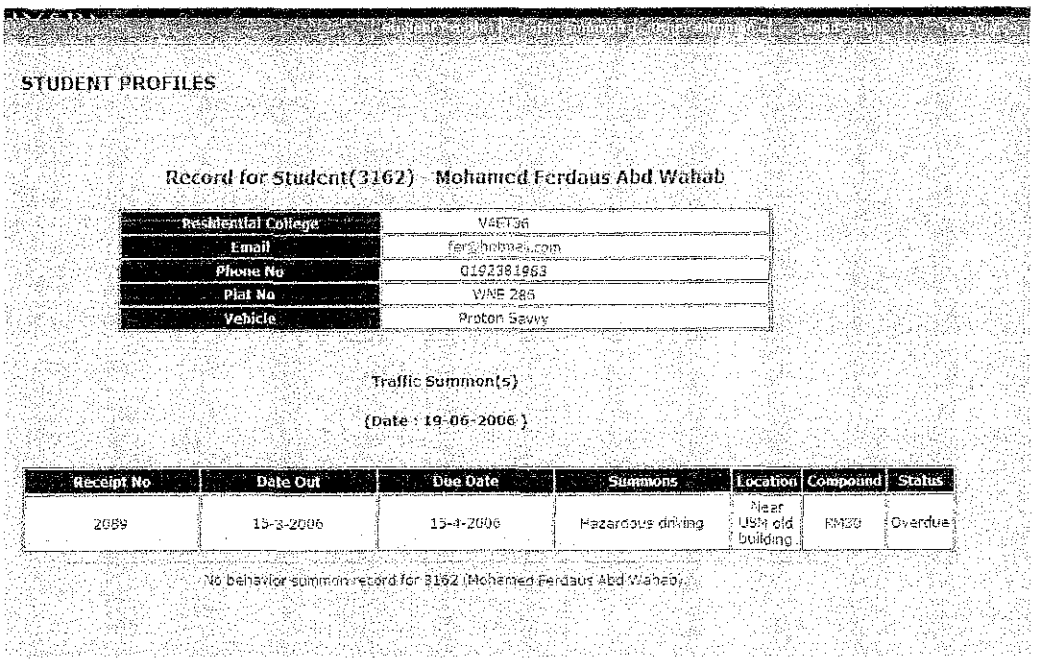

Figure 19(i) Student Profile: View All Profiles (View Record)

When the user click the 'View Record' in the 'Action' column, a page appears that listed the details about a student. The student profile details are the Student's Residential College, Email, Phone No, Plat No and Vehicle. There is also a list of Traffic and Other Summons that a student has obtained. In Traffic summon table, it shows the 'Receipt No', 'Date Out', 'Due Date', 'Summons', 'Location', 'Compound' and 'Status'. Meanwhile the Other summon table shows the 'Receipt No', 'Date Out', 'Due Date', 'Summons', Compound', and 'Status'. The Status can be either Pending or Overdue. If the student does not pay the summon and it is overdue, the word 'Overdue' in red color appears.

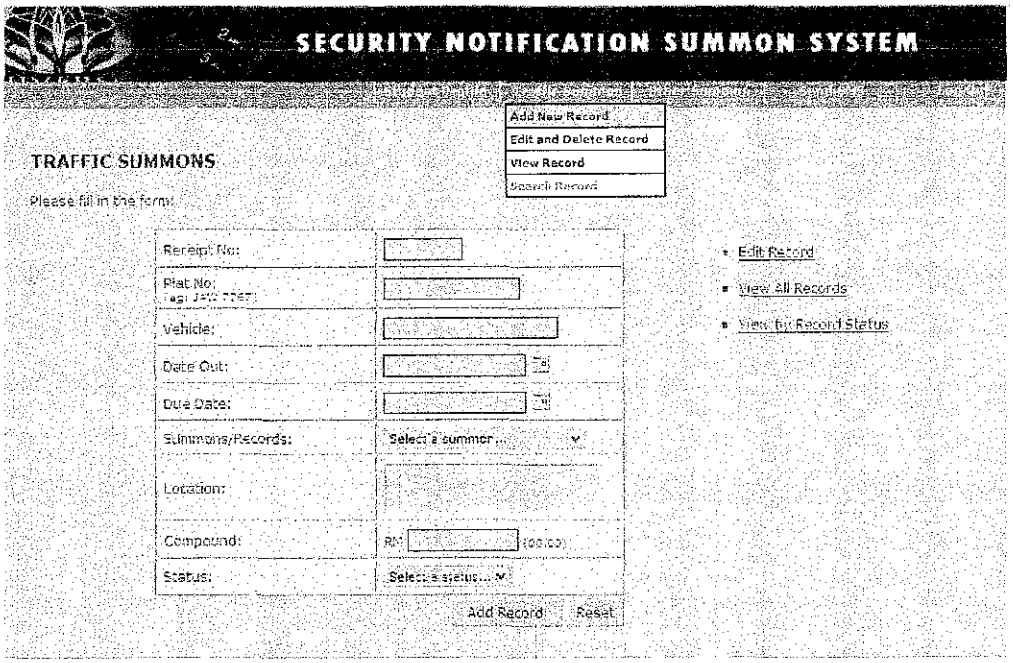

Figure 20(i) Traffic Summon: Add New Record

Above is the 'Add New Record page for Traffic Summon module. User can fill in the form entries to add new traffic summon. When user clicks the Add Record button, the details are stored in the database. Next to the form is the link to edit record, view all records and view by record status page.

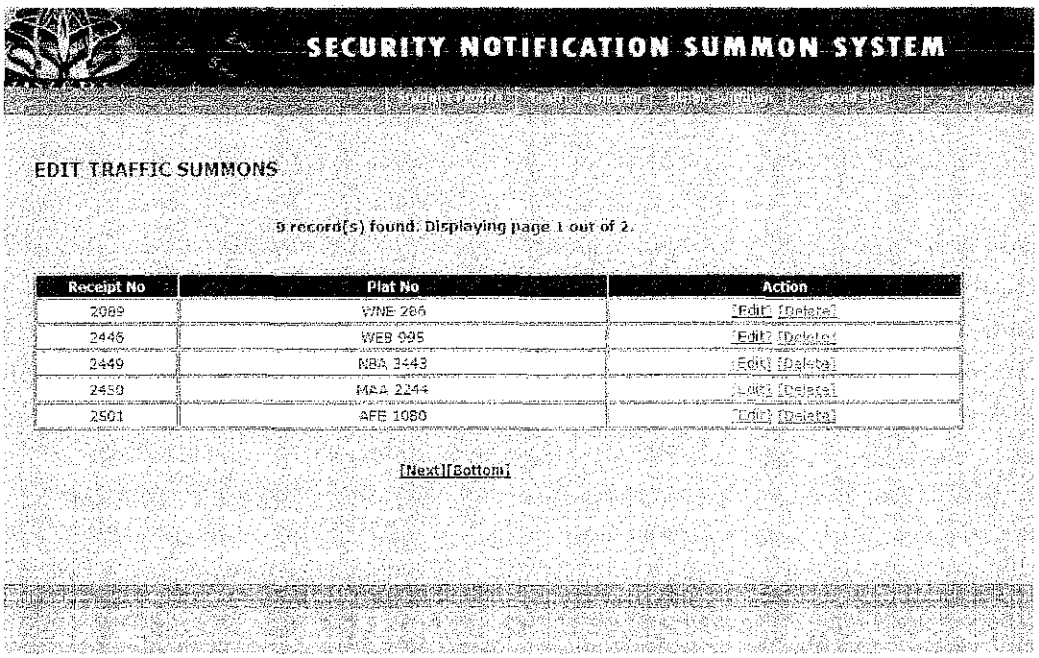

Figure 20(ii) Traffic Summon: Edit and Delete Record

This is the Edit and Delete Record page for the Traffic Summon module. In the above screenshot, it shows list of Receipt No, Plat No and Action. The Action column consists of 'Edit' and 'Delete' links to corresponding pages.

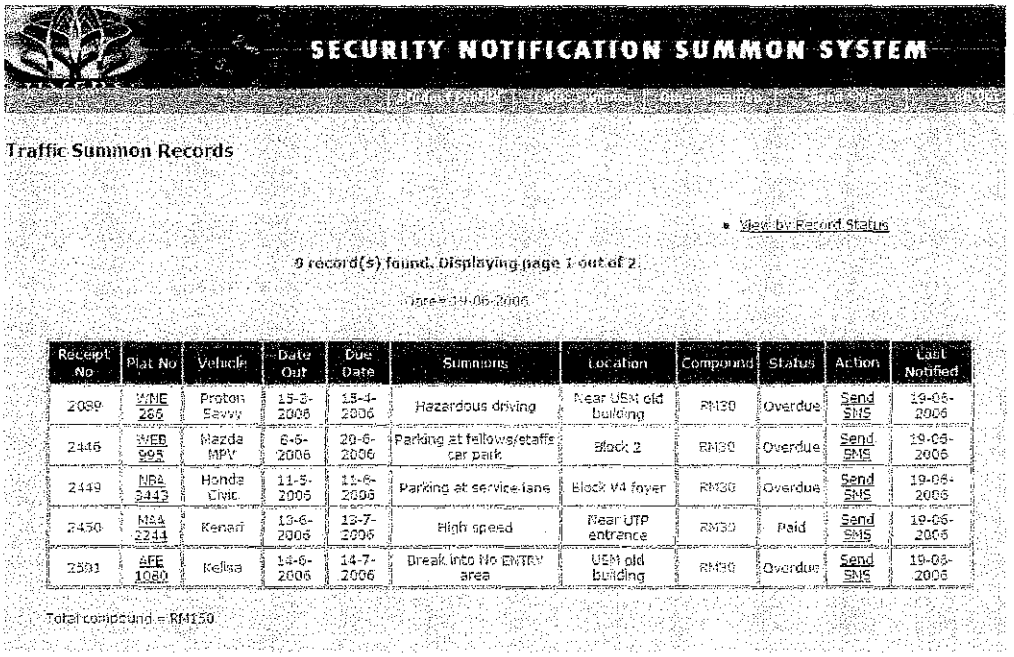

Figure 20(iii) Traffic Summon: View Record

Above screenshot shows the 'View Record' page. There 11 columns which are 'Receipt No', 'Plat No', 'Vehicle', 'Date Out', 'Due Date', 'Summons', 'Location', 'Compound', 'Status', 'Action' and 'Last Notified'. When the 'Overdue' is in red in color, user can send SMS to the respective student by clicking the 'Send SMS' link in the 'Action' column. When user clicks it, the Send SMS page appears.

Figure 20(iv) Traffic Summon: Search Record

This is the Search Traffic Summon Record page. User can search traffic summon for a particular student by just entering the vehicle's plat no and the system will search and display the details. In the 'Plat No' column, there is a link to the respective student details.

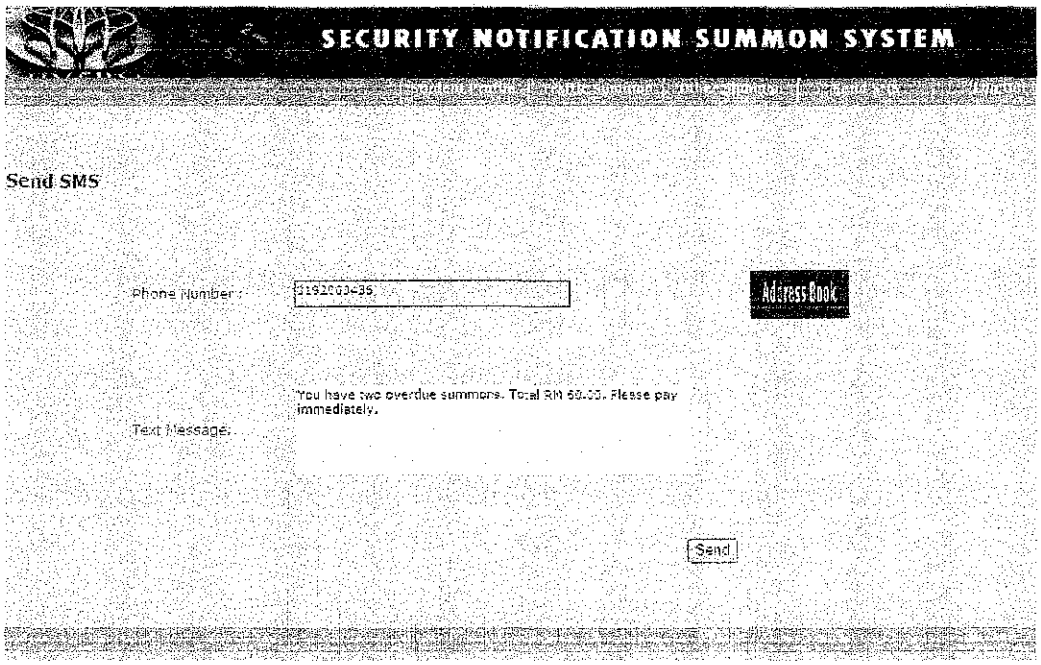

Figure 21(i) Send SMS: Send To

The Send SMS page enables the user to send SMS message to the students for summon notification. User just has to enter phone number in 'Phone Number' input field and SMS message in the 'Text Message' text area field. If the user wants to send SMS messages to multiple students, he or she can click the 'Address Book' button and a pop window appears with list of student's phone numbers.

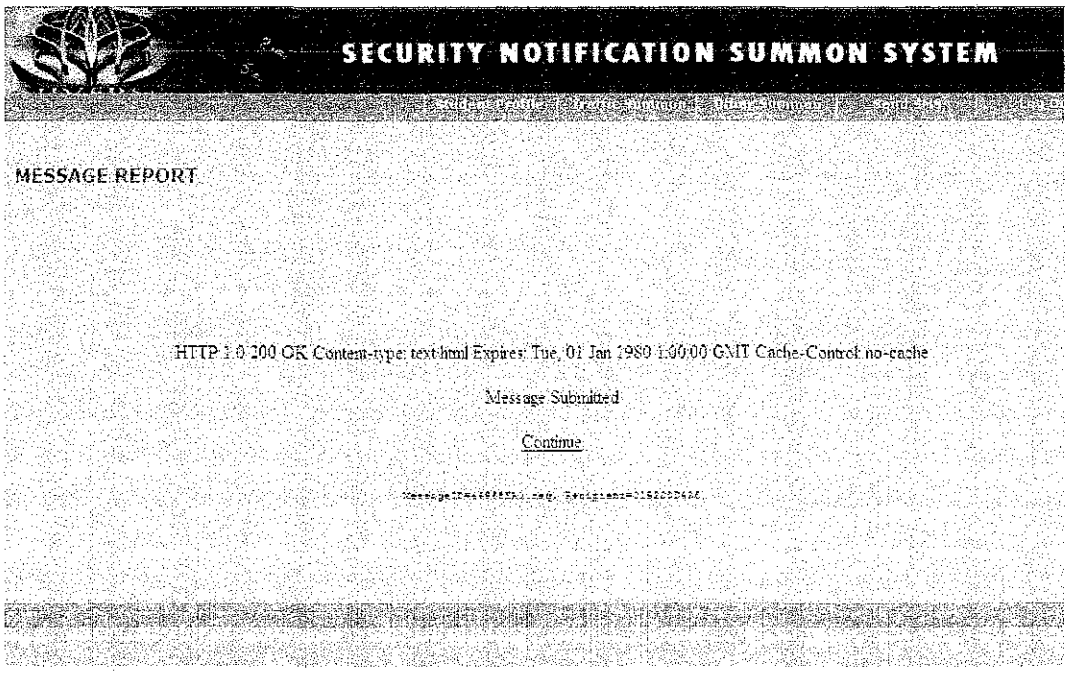

Figure 21(i) Send SMS: Message Report

The above screenshot shows the Message Report page. As soon as the user enter all details and click the Send button in Send SMS page, a message report indicating the SMS message has been submitted will be displayed.

4.2.4 Future System

Security Notification Summon System (SNSS) is a web based system that could cater the weaknesses of the current system. It is design to improve the interaction between the user and the system itself. Interactive navigations and interesting interface let the user to have better interaction with the system. With SNSS, user can add, delete, view and edit records by just clicking the button which leads the user to the next screen. Unlike the existing system, SNSS is a web based system whereby it can be accessed online via Internet. User from different places with network connection can access into the system. Moreover, SNSS also consists of database that stores data regarding student details, officer access information, summon records and notification records. Some additional functions that might be the advantage of using this system is that, the system is able to notify the user, each time they log into the system which is an alert message indicates the overdue summons. When the user clicks this alert message, it will direct the user to the summon record. When the user founds this, the SMS Notification function will be useful. SMS Notification function enables the user to send notification messages or SMS message to the students for their overdue summons. All the details regarding phone number and student name can be gained from the student records.

4.2.5 Benefits of Security Notification Summon System

- Improve interaction between user and system.
- Reduce human error.
- Reduce time consuming.
- Fast and quick action through SMS notification.
- Easy to use

CHAPTER 5
CONCLUSION AND RECOMMENDATION

5.1 Conclusion

Based on the objective and benefits of SMS technology and Security Notification Summon System, it can be say that this project has added some value over the university environment. This project has demonstrated that SMS notification technology could be useful to the university especially to UTP Security department in assisting and simplifying their tasks. It has shown that the department does not need to spend more time to trace and remind students who do not pay their summons. Security Notification Summon System (SNSS) can be described as the solution for notifying the students and security officers. Research element of this project is useful for any researcher and students in order to use SMS technology as the key to achieve an unbreakable state and expansion.

Basically, this project has accomplished the objective of performing small scale study on SMS technology that can notify people and enhancing the existing system. Based on the study and research, this project manage to analyze the problem behind the existing system, the benefits of SMS and the requirement needed to build up a website with SMS technology. This project is also managed to configure SMS gateway and SMS protocol that are suitable for this system. It has been accomplished by doing all necessary study and research of the SMS and other related issues. Another objective that has been achieved is the implementation of SMS function in the system that is able to send notification messages to the student.

5.2 Recommendation for future expansion and continuation

The recommendation for this project is the system should be used by the security department in order to enhance the work process and speed up the process of notifying students. As a result, it can reduce time consuming, cost and energy. To achieve better performance, this system can be enhanced by having more interaction with more people. This can be done by implementing a peer-to-peer message between Finance Unit, Student Support Services, and Finance Unit. Thus, security officer does not have to walk or call to other departments to verify the information regarding the student summons.

Other than that, an email technology could also be applied in this system. With it, Finance people, Student Support Services personnel and Security Department officer can communicate with each other. Besides, the email can be the secondary notification medium for this system, if the SMS function suddenly couldn't work properly. Then the email will be used to notify the students.

Furthermore, the Send SMS function should be developed as an automatic function. Thus, the Security officer does not have to enter it manually. When the date is set to overdue, it will automatically send the message to the student.

Likewise, it is reasonably to develop a two-way SMS between the students and security officer. Students can know his or her summons amount and status by sending SMS message to the Security Department. Moreover, there should be a special section or link to Security Notification Summon System (SNSS) in the UTP website, so that the student can access easily without entering the website's url. Overall, an enormous advancement and innovation to Security Notification Summon System (SNSS) could give huge benefits to the security department. Namely, simplification of tasks, improve better interaction among people, fast information deliverable, save time, energy and cost.

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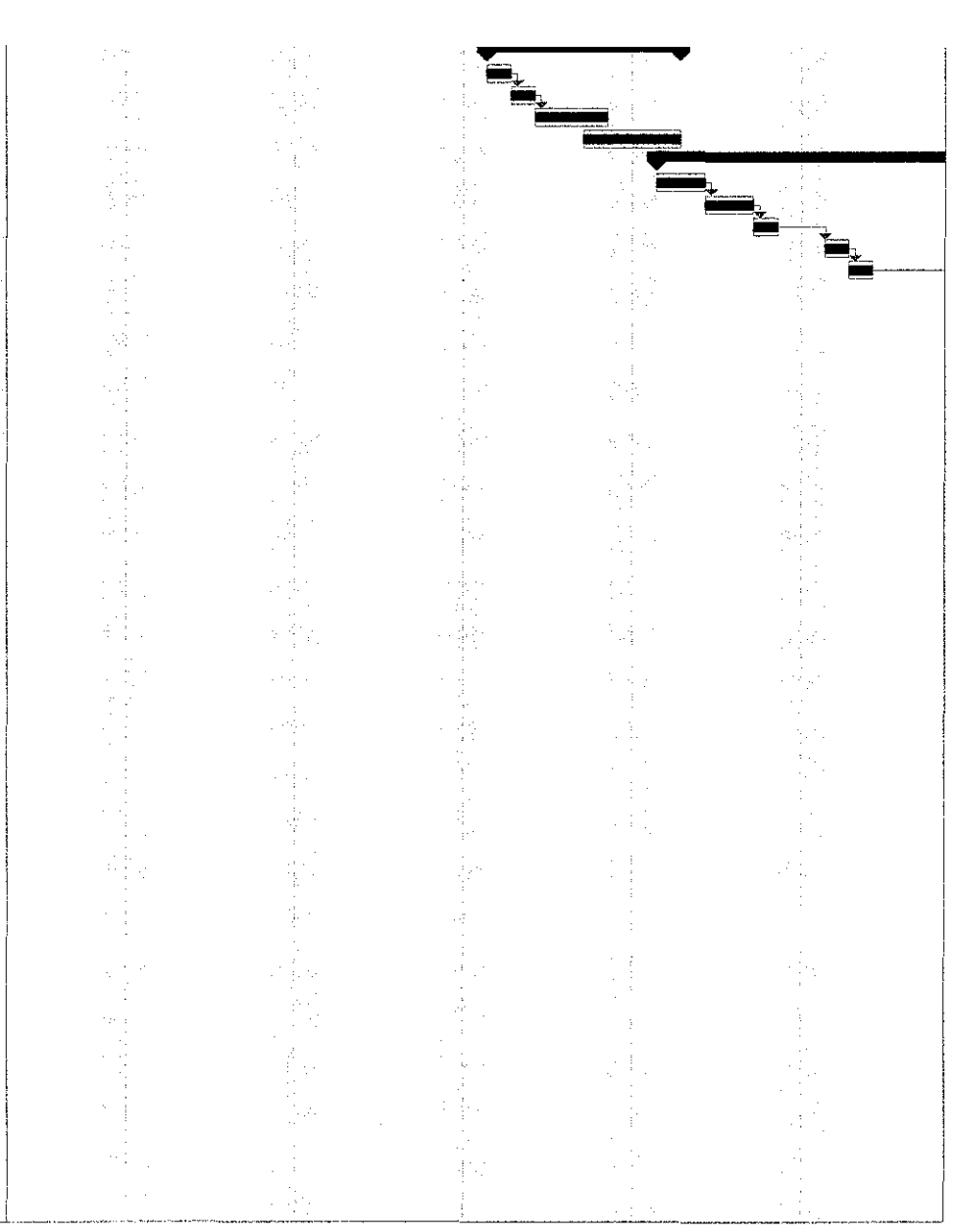
APPENDICES

APPENDIX A

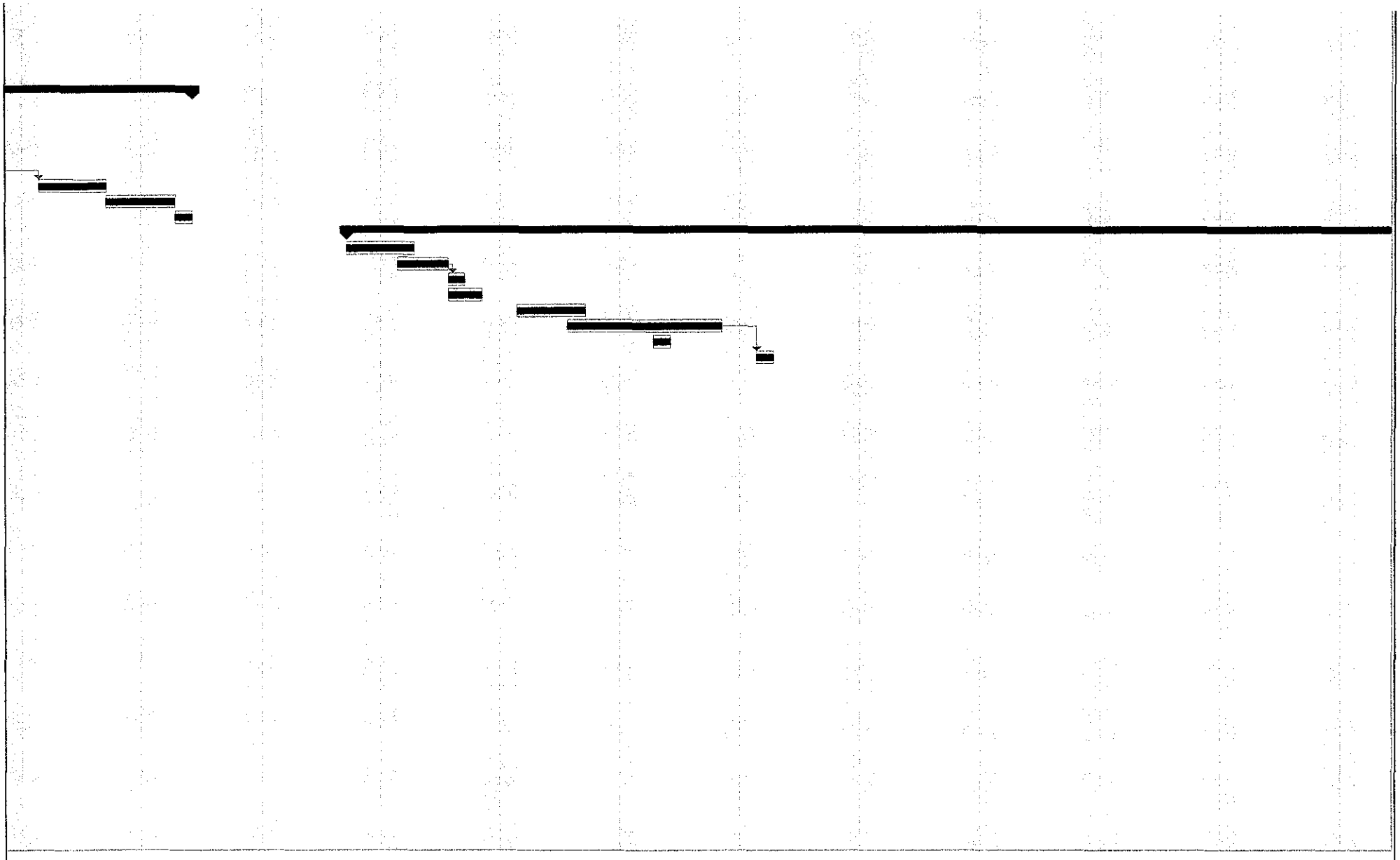
PROJECT TIMELINE

		Task Name	Duration	Start	Finish	Predecessors
5	✓	**Requirement Analysis and Specification**	**6 days**	**Mon 10/3/05**	**Mon 10/10/05**	
6	✓	Interview with user (UTP Security Department Officer)	1 day	Mon 10/3/05	Mon 10/3/05	
7	✓	Meeting with Supervisor	1 day	Tue 10/4/05	Tue 10/4/05	6
8	✓	Completing the Preliminary Report	3 days	Wed 10/5/05	Fri 10/7/05	7
9	✓	Research on SMS Notification Technology	2 days	Fri 10/7/05	Mon 10/10/05	
10	✓	**Design Specification**	**17 days**	**Mon 10/10/05**	**Tue 11/1/05**	
11	✓	Development of Use Case and Sequence Diagrams	2 days	Mon 10/10/05	Tue 10/11/05	
12	✓	Draft of System Architecture	2 days	Wed 10/12/05	Thu 10/13/05	11
13	✓	Meeting with Co-Supervisor for consultation	1 day	Fri 10/14/05	Fri 10/14/05	12
14	✓	Submission of Preliminary Report	1 day	Mon 10/17/05	Mon 10/17/05	13
15	✓	Discussion with Supervisor regarding System Design and Spe	1 day	Tue 10/18/05	Tue 10/18/05	14
16	✓	Design the draft of system database	4 days	Mon 10/24/05	Thu 10/27/05	15
17	✓	Draft of GUI for Security Notification Summon System	2 days	Fri 10/28/05	Mon 10/31/05	
18	✓	Installation of system development tools	1 day	Tue 11/1/05	Tue 11/1/05	
19	✓	**Coding and Module Testing**	**116 days**	**Fri 11/11/05**	**Fri 4/21/06**	
20	✓	Database development using MySQL	2 days	Fri 11/11/05	Mon 11/14/05	
21	✓	Completing Interim Report	3 days	Mon 11/14/05	Wed 11/16/05	
22	✓	Submission of Interim Report	1 day	Thu 11/17/05	Thu 11/17/05	21
23	✓	Studies on the usage of PHP language in SMS application de	2 days	Thu 11/17/05	Fri 11/18/05	
24	✓	System GUI development using Macromedia Dreamweaver I	4 days	Mon 11/21/05	Thu 11/24/05	
25	✓	Preparation for FYP Presentation Part I	7 days	Thu 11/24/05	Fri 12/2/05	
26	✓	Discussion with Supervisor regarding requirement of the pres	1 day	Tue 11/29/05	Tue 11/29/05	
27	✓	FYP Part I Presentation	1 day	Mon 12/5/05	Mon 12/5/05	25
28	✓	Modification of website GUI	3 days	Mon 1/23/06	Wed 1/25/06	
29	✓	Completion of Login Page Module	3 days	Wed 1/25/06	Fri 1/27/06	
30	✓	Discussion with Supervisor regarding project progress	1 day	Fri 1/27/06	Fri 1/27/06	
31	✓	Add New Profile Page development (user page)	3 days	Mon 1/30/06	Wed 2/1/06	
32	✓	Confirmation Page development for Student Profile Module (	3 days	Wed 2/1/06	Fri 2/3/06	
33	✓	View All Profiles Page Development (user page)	4 days	Mon 2/6/06	Thu 2/9/06	32
34	✓	Completing the Progress Report	3 days	Thu 2/9/06	Mon 2/13/06	
35	✓	Submission of Progress Report	1 day	Mon 2/13/06	Mon 2/13/06	
36	✓	Add New Record Page development for Summons Module (u	4 days	Tue 2/14/06	Fri 2/17/06	
37	✓	Confirmation Page development for Summons Module (user	5 days	Mon 2/20/06	Fri 2/24/06	36
38	✓	Add uploading pictures function in Add New Profile Page (use	5 days	Mon 2/27/06	Fri 3/3/06	
39	✓	View by Rank function development for Student Profile and S	5 days	Mon 3/6/06	Fri 3/10/06	
40	✓	Categorization of Summons intoTraffic and Other Summon (u	3 days	Mon 3/13/06	Wed 3/15/06	
41	✓	Add New Record function development for each Summon Ty	3 days	Wed 3/15/06	Fri 3/17/06	
42	✓	View All Records Page for Traffic and Other Summon (user p	5 days	Mon 3/20/06	Fri 3/24/06	41
43	✓	Meeting with Supervisor	1 day	Fri 3/24/06	Fri 3/24/06	
44	✓	Preparation for Pre-EDX Presentation	6 days	Fri 3/24/06	Fri 3/31/06	
45	✓	View Selected Record Page for each Traffic and Other Sumr	2 days	Fri 3/31/06	Mon 4/3/06	
46	✓	Pre-EDX Presentation	1 day	Tue 4/4/06	Tue 4/4/06	45
47	✓	Summons and Student Profile Module development for Admi	7 days	Tue 4/4/06	Wed 4/12/06	
48	✓	Modification and enhancement of web pages and functions	3 days	Wed 4/12/06	Fri 4/14/06	
49	✓	Add link to View All Profiles Page in Student Profile Module	2 days	Mon 4/17/06	Tue 4/18/06	48
50	✓	View Summons Page development for Student Page	4 days	Tue 4/18/06	Fri 4/21/06	
51	✓	**Integration and System Testing**	**5 days**	**Mon 4/24/06**	**Fri 4/28/06**	
52	✓	Send SMS Module development	5 days	Mon 4/24/06	Fri 4/28/06	
53	✓	**Operation and Maintenance**	**36 days**	**Mon 5/1/06**	**Mon 6/19/06**	
54	✓	Last touch up on the website	5 days	Mon 5/1/06	Fri 5/5/06	
55	✓	System execution	1 day	Fri 5/5/06	Fri 5/5/06	
56	✓	Completing the Draft Dissertation	5 days	Mon 5/8/06	Fri 5/12/06	55
57	✓	Submission of Final Report to FYP Coordinator	1 day	Tue 5/9/06	Tue 5/9/06	
58	✓	Final Presentation to External Examiner	4 days	Wed 6/14/06	Mon 6/19/06	



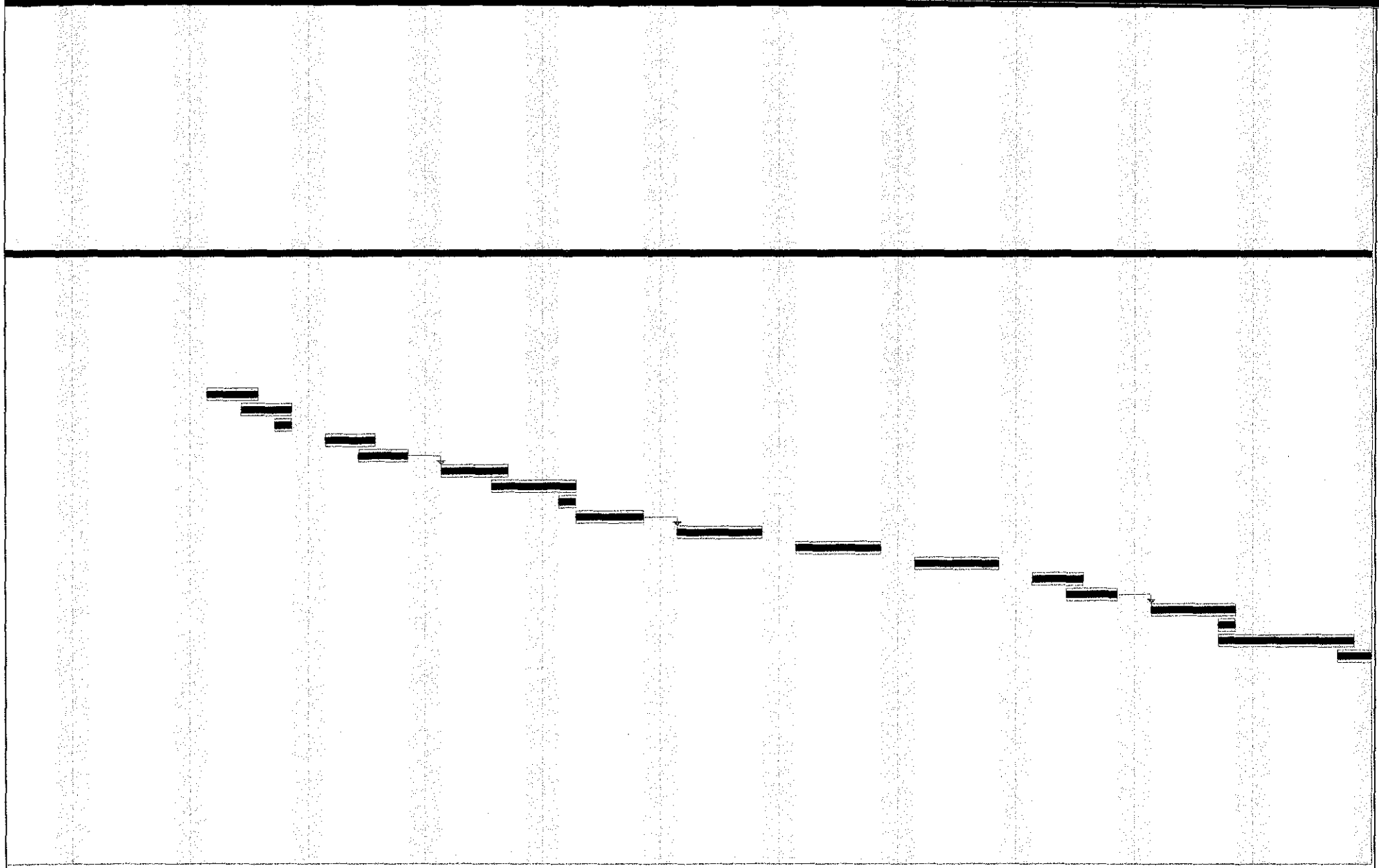
Project: Project Timeline.mpp
Date: Tue 6/20/06

Task | Progress | Summary | External Tasks | Deadline
Split | Milestone | Project Summary | External Milestone



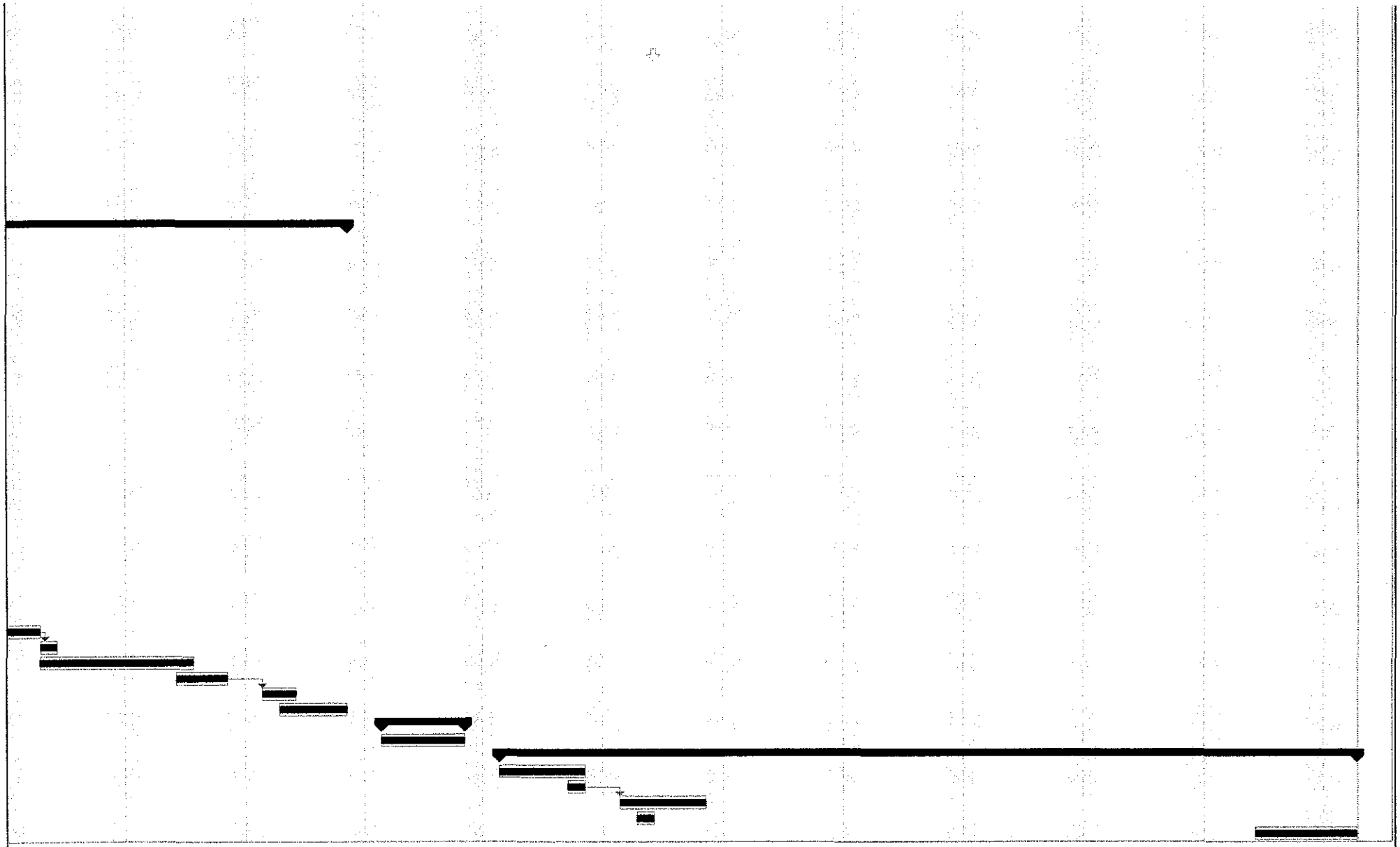
Project: Project Timeline.mpp
Date: Tue 6/20/06

Task | Progress | Summary | External Tasks | Deadline
Split | Milestone | Project Summary | External Milestone



Project: Project Timeline.mpp
Date: Tue 6/20/06

Task | Progress | Summary | External Tasks | Deadline
Split | Milestone | Project Summary | External Milestone



Project: Project Timeline.mpp
Date: Tue 6/20/06

Task | Progress | Summary | External Tasks | Deadline
Split | Milestone | Project Summary | External Milestone

APPENDIX B

USER TESTING QUESTIONNAIRE

Security Notification Summon System Questionnaires

Security Notification Summon System (SNSS) is a web based system that assist the security personnel to record summons and notify students of overdue summon by using the SMS technology. This project is done in conjunction with Final Year Project. The questions below ask about your views toward the system in terms of usability, design and suitability.

1. You felt extremely comfortable using this system?

1	2	3	4	5
Uncomfortable	Less Comfortable	Moderate	Comfortable	Very Comfortable

2. Do the page layouts organize the information in a logical manner?

1	2	3	4	5
Unorganized	Less Organized	Moderate	Organized	Very Organized

3. Does the information given in the system is sufficient?

1	2	3	4	5
Insufficient	Less Sufficient	Moderate	Sufficient	Very Sufficient

4. Does the website interface is easily understandable?

1	2	3	4	5
Not Understandable	Less Understandable	Moderate	Understandable	Very Understandable

5. Does the navigation through the pages is easy?

1	2	3	4	5
Difficult	Less Easy	Moderate	Easy	Very Easy

6. Does this system acceptable to you?

1	2	3	4	5
Not Acceptable	Less Acceptable	Moderate	Acceptable	Very Acceptable

7. Do you think the system is suitable to be implemented in UTP?

1	2	3	4	5
Not Suitable	Less Suitable	Moderate	Suitable	Very Suitable

8. Do you think the SMS function is necessary for the system?

1	2	3	4	5
Unnecessary	Less Necessary	Moderate	Necessary	Very Necessary

9. Overall, do you satisfied with the system?

1	2	3	4	5
Dissatisfied	Less Satisfied	Moderate	Satisfied	Very Satisfied

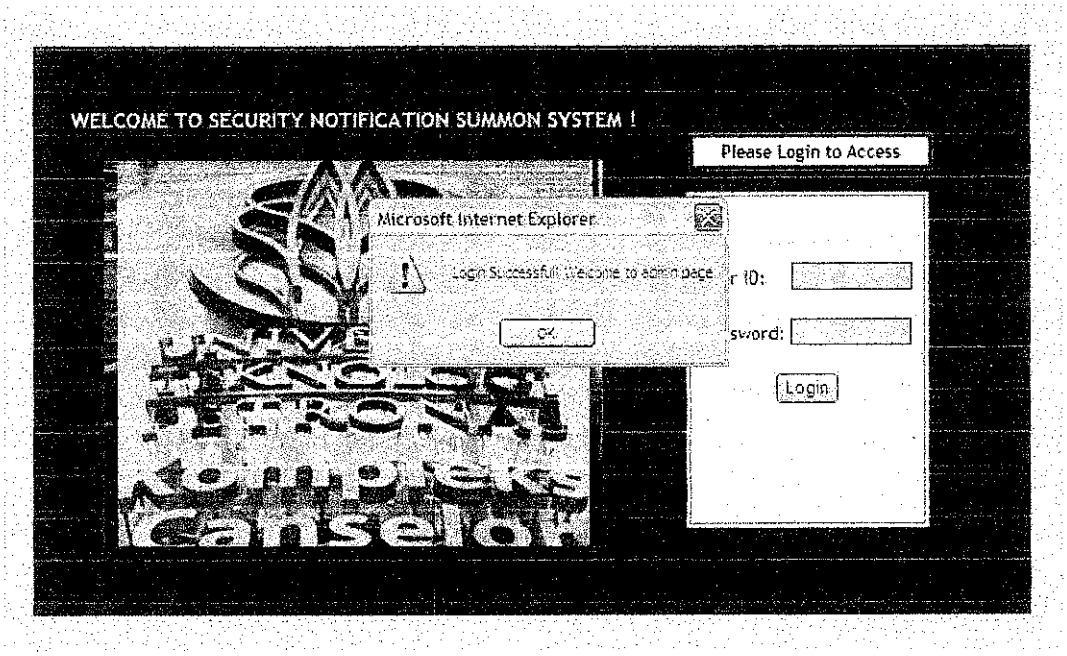
10. Any suggestion for Security Notification Summon System (SNSS)?

_____

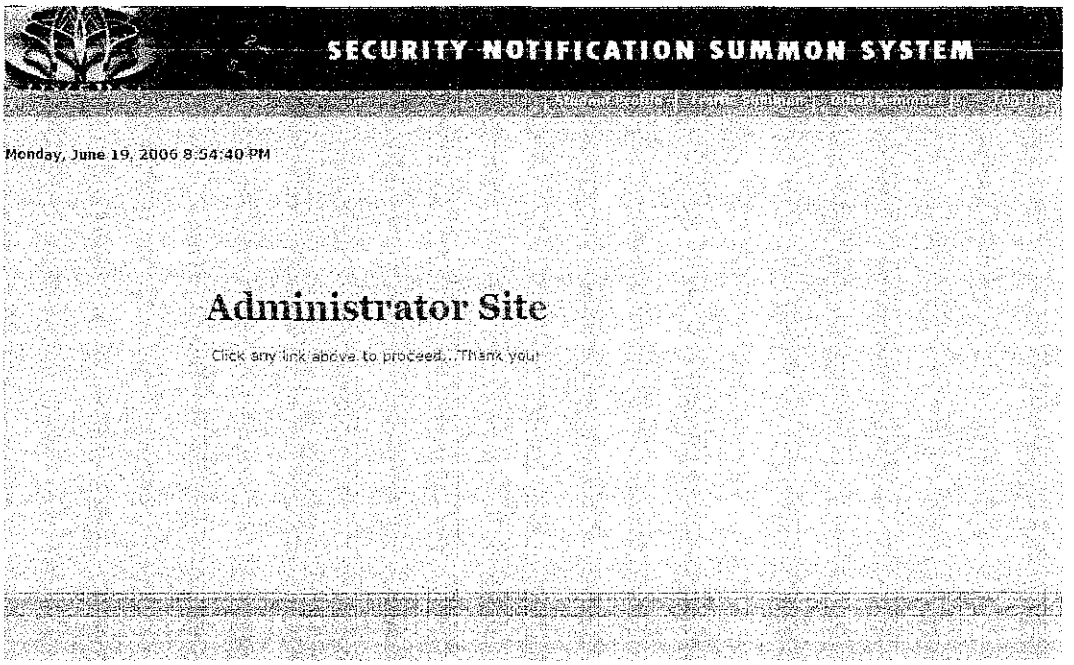
APPENDIX C

WEBSITE SCREENSHOTS

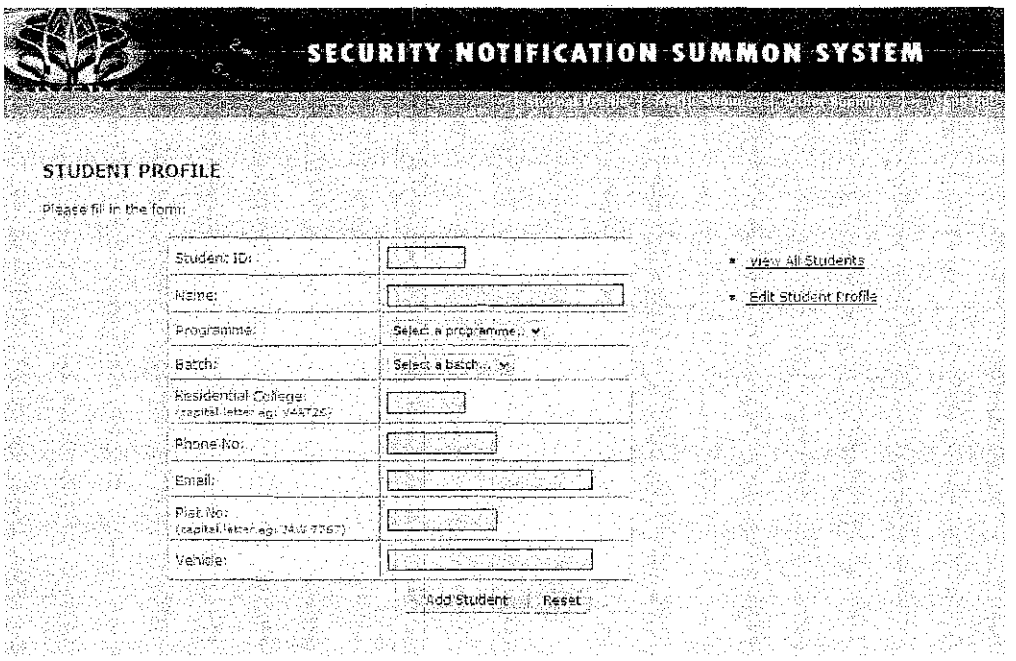
Admin Page



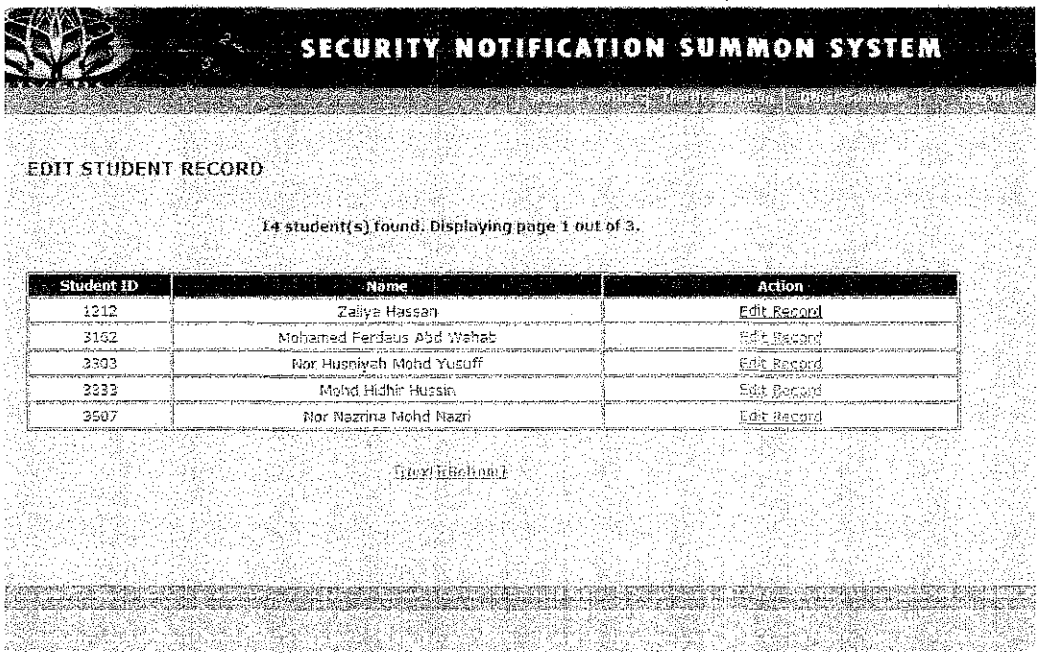
Admin Login Page



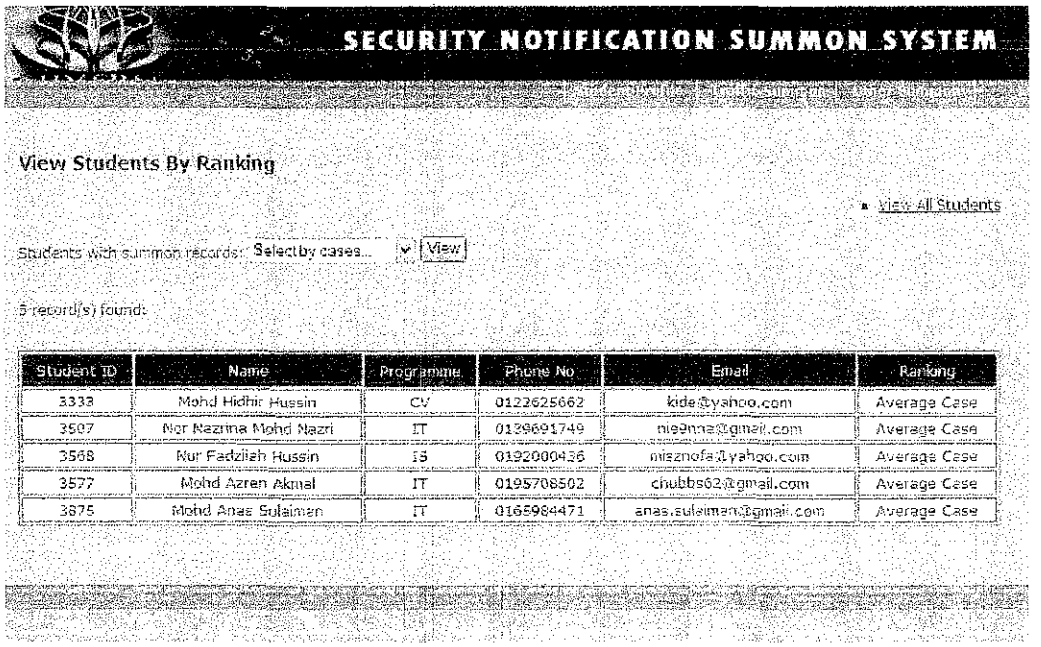
Admin Landing Page



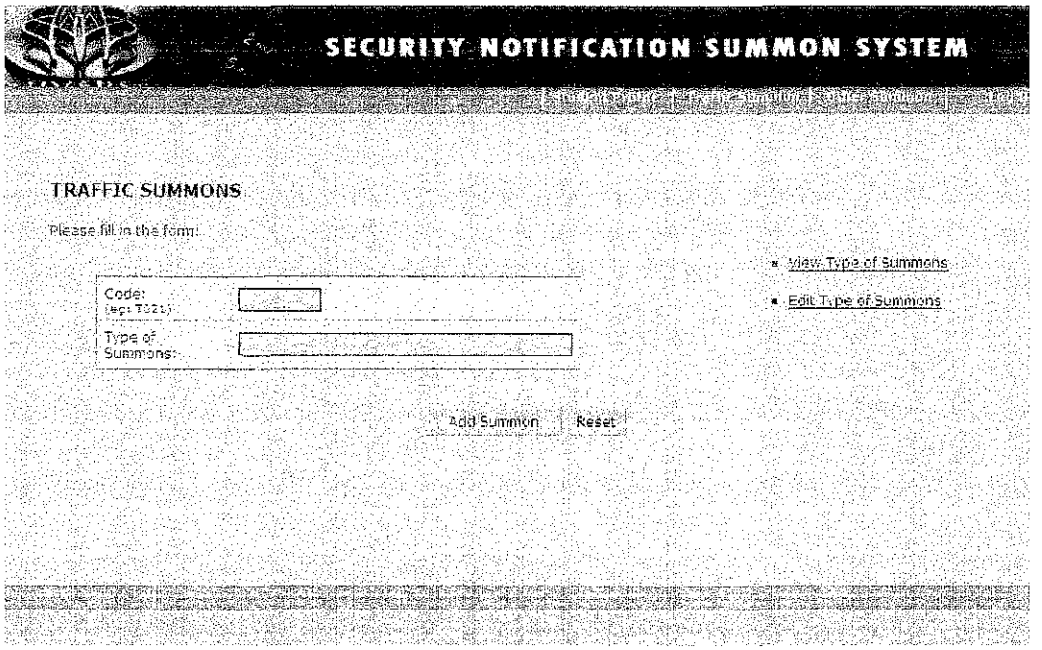
Student Profile: Add New Profile



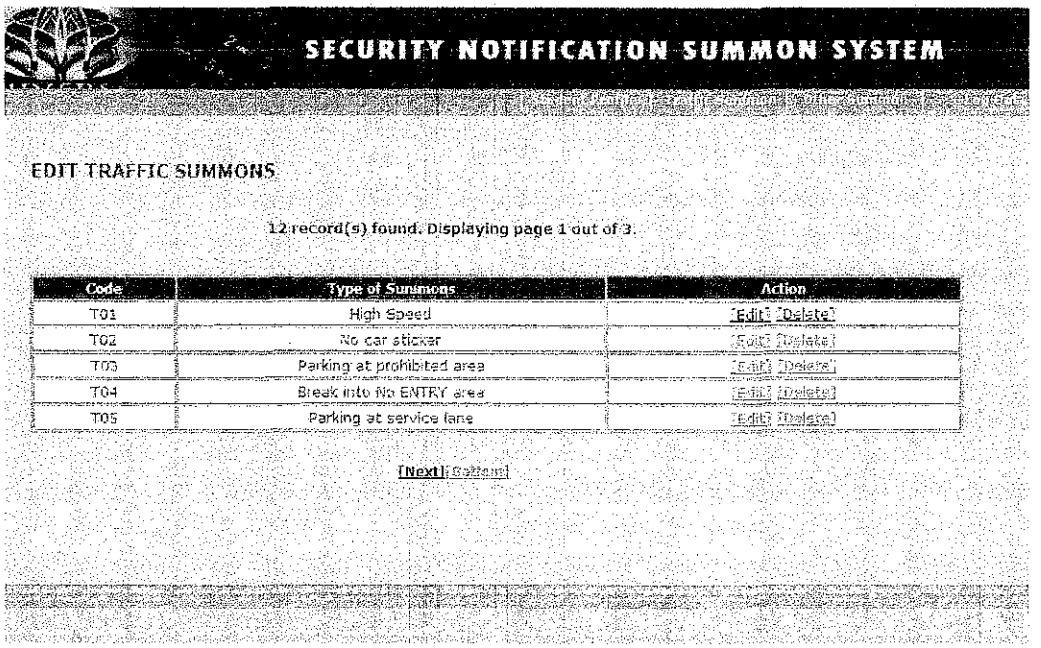
Student Profile: Edit Profile



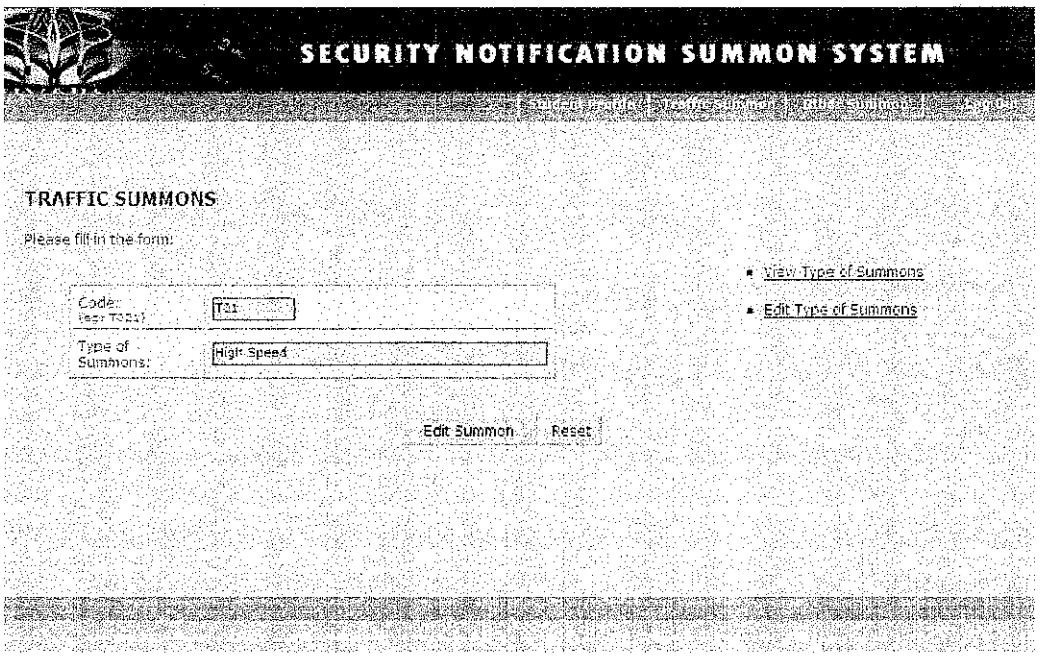
Student Profile: View By Ranking



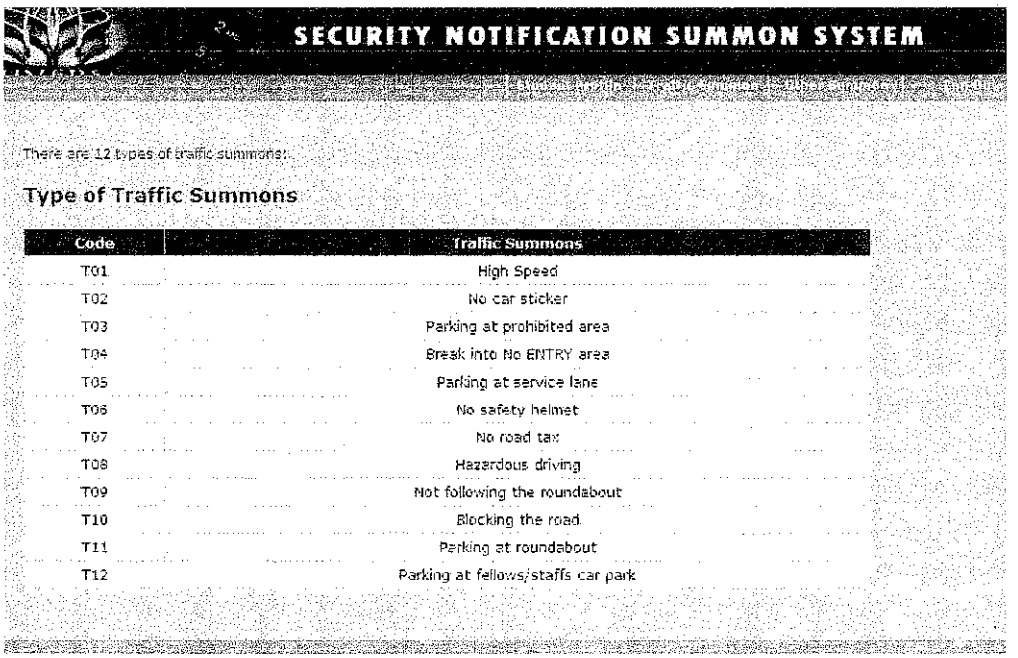
Traffic Summons: Add Summon Type



Traffic Summon: Edit and Delete Summon

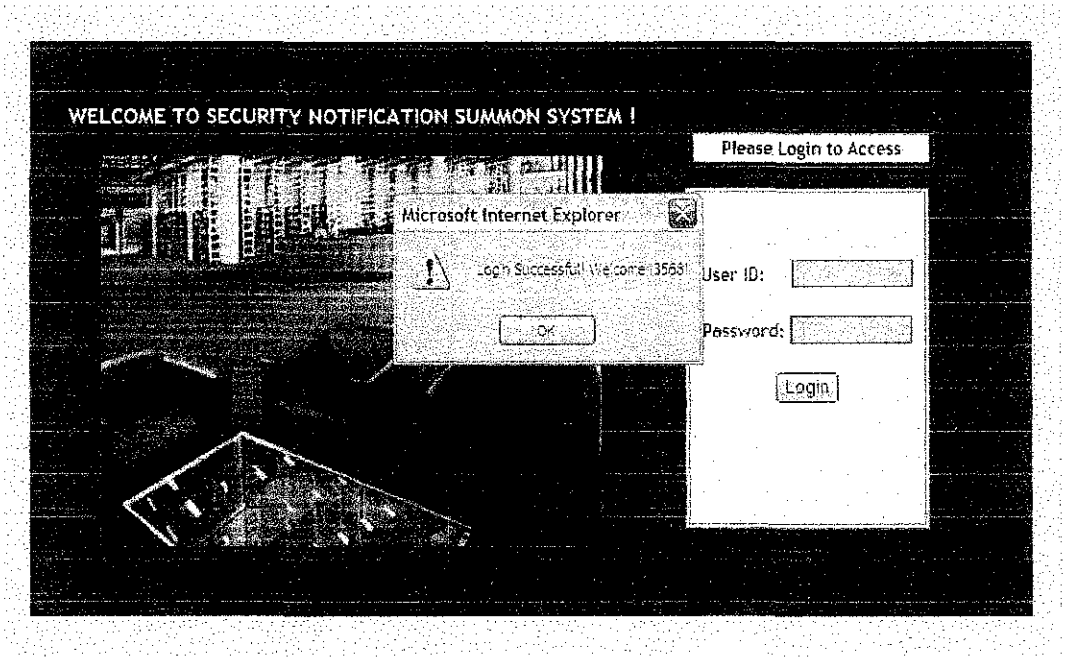


Traffic Summons: Edit Summon

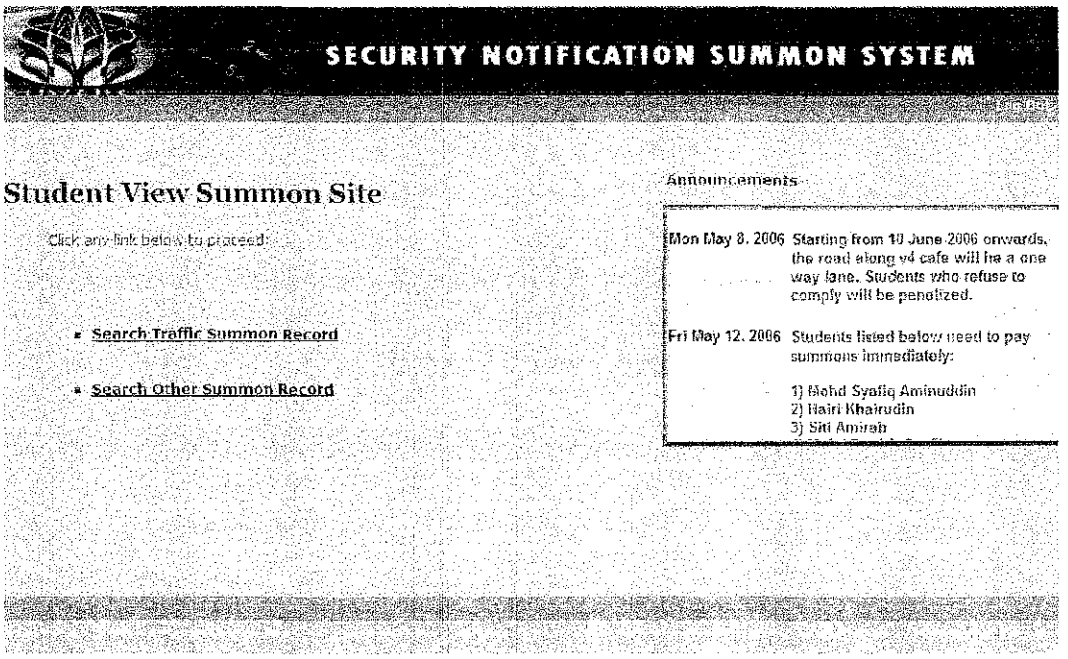


Traffic Summons: View Summons

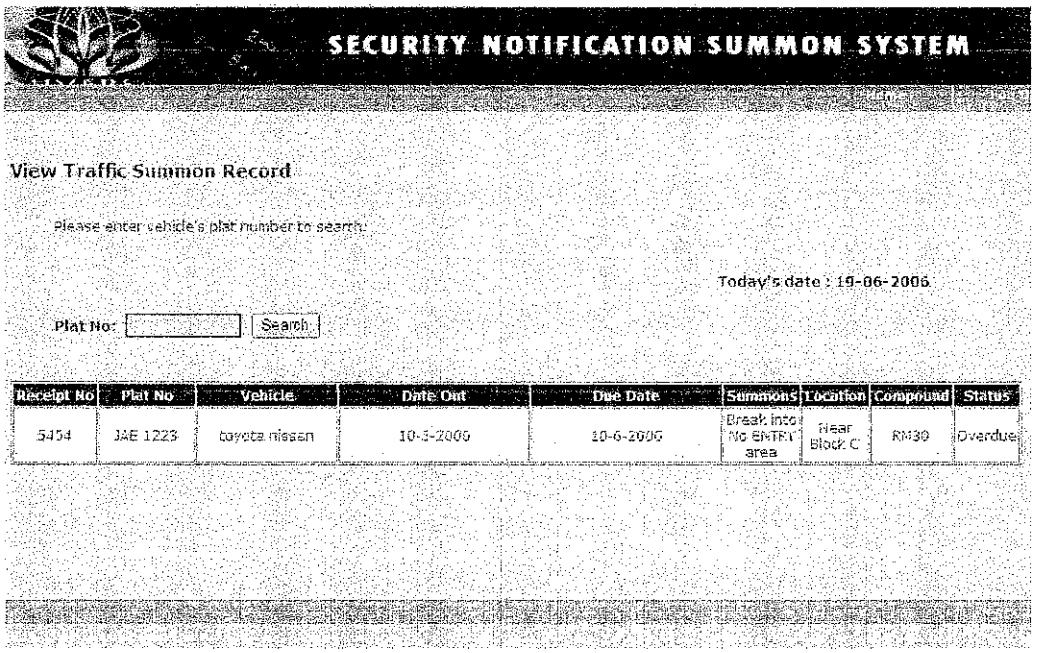
Student Page



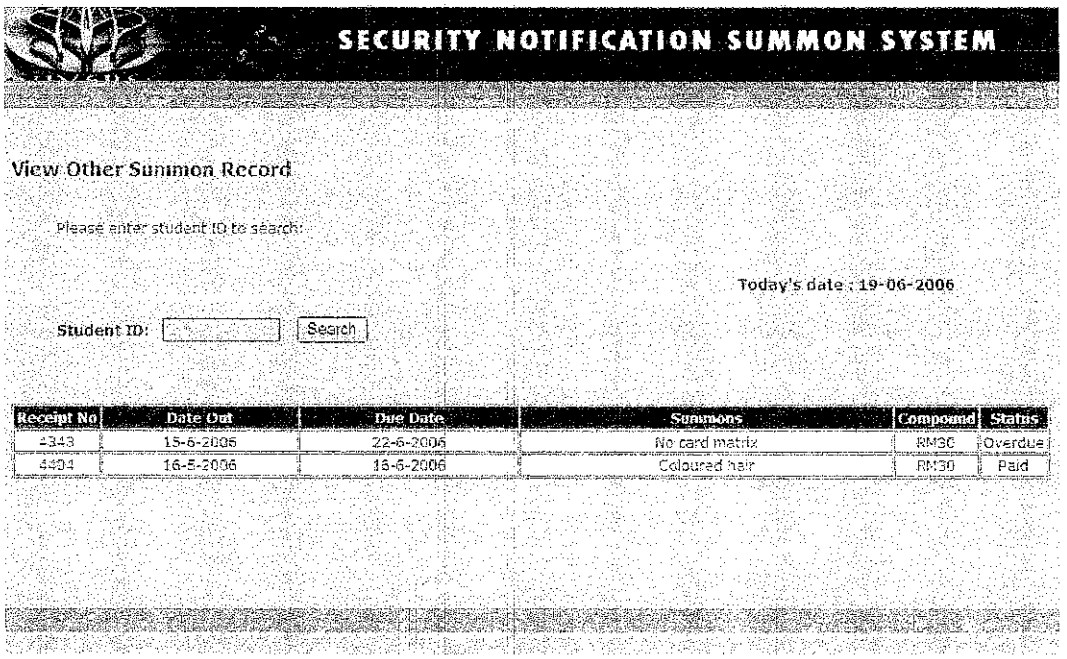
Student Login Page



Student Landing Page



Search and View Traffic Summon



Search and View Other Summon