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MAILBOX NOTIFICATION VIA SMS

MOHD NOR IFTIKHAR BIN MAKHTAR

This report is submitted in partial fulfilment of the requirements for the
Bachelor of Computer Science (Computer Networking)

FACULTY OF INFORMATION AND COMMUNICATION TECHNOLOGY
UNIVERSITI TEKNIKAL MALAYSIA MELAKA
2013

DECLARATION

I hereby declare that this project report entitled

MAILBOX NOTIFICATION VIA SMS

is written by me and is my own effort and that no part has been plagiarized

without citations.

STUDENT   : _____ Date: _____

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DEDICATION

Specially dedicated to my beloved parents, siblings,

friends who have encouraged, guided and inspired me throughout

my journey of education. Besides that, I would like to dedicated

to my supervisor who always have passionate and guided me

while completing this project

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ABSTRACT

Global System for Mobile Communication (GSM) is one of the cellular network technology that been widely used around the world. GSM includes the short messaging service (SMS) that enables users to send 160-character text messages to each other. Short Message Service (SMS) is a text messaging service component of phone, web, or mobile communication systems, using standardized communications protocols that allow the exchange of short text messages between fixed line or mobile phone devices. SMS is been used as a medium for communication in this project because SMS is one of the fastest and reliable way in transfering information. By integrating the GSM with the Programmable Interface Controller (PIC), SMS will be generate to inform the user when there is new mail been delivered. When a new mail is place inside the mailbox, the system will generate an alert system for the user that is SMS and it is a real-time notification. This system will ease the user in the aspect of energy and time because of the alert SMS been send to them.

ABSTRAK

Global System for Mobile Communication (GSM) adalah salah satu teknologi rangkaian yang di pakai secara meluas di seluruh dunia. Short Message Service (SMS) merupakan antara perkhidmatan yang di tawarkan GSM membolehkan para pengguna untuk menghantar 160 patah perkataan kepada satu sama lain. SMS adalah komponen perkhidmatan untuk telefon bimbit, laman sesawang atau sistem telekomunikasi menggunakan piawaian tetap protocol telekomunikasi yang membenarkan pertukaran pesanan ringkas antara talian tetap atau peranti telefon bimbit. SMS digunakan sebagai medium telekomunikasi di dalam projek ini kerana SMS merupakan salah satu cara yang cepat dan boleh di harapkan dalam menyampaikan maklumat. Dengan penggunaan GSM dan Programmable Interface Controller (PIC) di gabungkan, SMS akan dihasilkan untuk memberitahu pengguna apabila surat baru di hantar kepada mereka. SMS yang dihantar juga merupakan notifikasi masa sebenar. Sistem ini akan memudahkan para pengguna dari segi aspek tenaga dan masa kerana SMS pemberitahuan yang telah dihantar kepada mereka.

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CHAPTER I

INTRODUCTION

1.1   Project Background

Nowadays, the technologies grown very fast and rapidly in this world. Eventhoughthe technologies era are growing rapidly, one of the system that still been used in this era is mailing system. Mailing system still been used because it is still convenient and one of the effective way to give information to the user. The problem is the user need to check their mailbox periodically to check either they receive the letter or not. Most of the users are very slothful to check their mailbox especially those who live in multi-story building such as the apartment, condominium and office. It is because of their mailing system is centralized to one location of the building.

This will lead to overlooked if any important or confidential letter are been delivered that need to be view as soon as possible by the user. The user are expecting if there any way or solution that will overcome this problem. Due to modern technologies, there is a way to connect Global System for Mobile Communication (GSM) modem with a programmable interface controllers equip with limit switch sensor that will notify the user for the incoming letter. The system will give an alert to the user that is Short Message System (SMS). This system will help the user to notify them with a real-time notification if there any letter given to them.

1.2   Problem Statement

The problem is the user need to check their mailbox periodically to check either they receive the letter or not. Most of the users are very slothful to check their mailbox especially those who live in multi-story building such as the apartment, condominium and office. This will lead to overlooked if any important or confidential letter are been delivered that need to be view as soon as possible by the user. The user also will waste their time and enrgy to check for the mail if there is no new mail delivered to their mailbox. The user are expecting if there any way or solution that will overcome this problem.

1.3   Objective

The objective of this project are :

1. To conduct in-depth study of system involves limit switch sensor and GSM modem with Programmable Interface Controller (PIC)

2. To design a prototype that will detect the incoming letter and notify the user

3. To improve the mechanism for incoming letter notification

1.4   Scope

The scope of this project is to design a system that using limit switch sensor and a GSM modem that can be integrate to notify the user when a letter sent to the mailbox. This project will introduce a system that will replace the method of checking the user mailbox by giving notification to the user with a Short Message Service (SMS). The project also will make us understand how the system will work when integrating the limit switch

sensor, GSM modem and the programmable interface controllers with the application that will be study and used during this project.

This system is develop to ease daily life of the user especially for the users that live in multi-story building such as at the apartment or condominium. This system will give benefit to them in term of saving their energy and time. It will also help them from overlooked any important or confidential letter.

1.5 Expected Output

The expected output of this project is the mailbox alert system will help the user from overlooked if any important or confidential letter are been delivered to them. The SMS that will be sent from the system as the alert for the user will ensure that they will get notify within the real-time they receive the letter. This system will also benefit the user in the aspect of energy and time because of the alert that they received sent to their mobile phone.

1.6 Report Organization

Upon completing this project, there will be six chapter for the purpose of documentation that will briefly explain all the process and the flow for completing this project. The purpose of dividing the report into several chapter is to ease the person that want to review this project for future review.

Chapter 1 discuss about the general view for the project including the project background and the objective/goals that need to be achieved. The problem statement is also stated in this chapter to show the purpose of developing the project. Report organization is to define what will be defined in each chapter and to complete this chapter, conclusion will also included.

Chapter 2 consist of the research for literature review of the project and related/previous work that have the same scope or similarities with this project. Analysis of current problems are also included to identify what is the drawbacks that the developer faced and proposed further solution for the project. Last but not least, the conclusion of this chapter will be included to complete this chapter.

Chapter 3 consist of the project methodology model that has been choose for the project that System Development Life Cycle (SDLC). The milestones for the subject are also included to ensure that the developer have a schedule or good time management to complete the project. This project uses the test bed concept for the system development process. Last but not least, the conclusion of this chapter will be included to complete this chapter.

Chapter 4 consist of the design and implementation that will be use for this project. The hardware and software requirements also included to make sure the component or hardware that been used are defined correctly. Implementation describes the details on how it works or carried out and samples of result or output. Last but not least, the conclusion of this chapter will be included to complete this chapter.

Chapter 5 consist of testing and analysis describing where it includes the method or step how to test and analyze the system or product that has been developed. To complete this chapter, conclusion will also included.

After gone through all the process and successfully achieved all the objectives as stated in the earlier chapter, the overall project can be conclude as explain inChapter 6. Chapter 6 consist of limitations, contribution and future work of the project.

1.7   Conclusion

At the end of this project, this project will help the user to check their mailbox without taking so much time and conserve their energy too. This project is design especially for the user that live in a multi-story building but for a conventional home also still can use the system. This project will be helpful for them and changing their method to check their mailbox because they will receive a notification via SMS if there any letter detected in their mailbox. This project also help us in learning the concept of the system that use the electronic parts such as limit switch sensor and a PIC with help by the GSM modem to generate the notification for the user. In the next chapter, the literature review about the project are discussed and collecting information of facts or journal.

CHAPTER II

LITERATURE REVIEW

2.1 Introduction

In this chapter, the developer will doing some research about the method or application to gain the information regarding the project. Any journals or documents that are related to this project are being review to make as the references for the project.

2.2 Fact And Findings

2.2.1 Mailing System

Mailing system is used to transport letters and objects for examples written documents, typically enclosed in envelopes, and also small packages. The transportation path originating from sender to the recipient has become a sophisticated network of carriers ranging from people, to airplanes, to tractor trailers, to smaller vehicles [1]. Objects sent through the postal system is called mail or post. This system is being used until the latest system which is an electronic mailing system takeover. But, mail is still being used as a medium to send an important information or document. Usually mailing information consists of a destination address and a postage stamp. The figure 2.1 show a centralized mailing system in a building.

Figure 2.1 Centralized mailbox

2.2.2 Global System For Mobile Communication (GSM)

A technology that starts from Europe and then spread out in every nook and cranny of the world. GSM is a digital cellular phone technology based on TDMA. It was developed to replace the first generation (1G) of analog cellular networks. The GSM was build using digital technology and uses narrowband Time Division Multiple Access (TDMA) technique to transmit signals which originally described a digital, circuit switched network optimized for full duplex voice telephony. It has an ability to carry 64 kbps to 120 Mbps of data rates. Over 200 GSM networks (including DCS1800 and PCS1900) are operational in 110 countries around the world. In the beginning of 1994, there were 1.3 million subscribers worldwide [2].

Other than that, the GSM provides Roaming service which is used to advanced voice and data services. Roaming is where you can use your GSM phone number in another GSM network that will operates at either 900 MHz or 1,800 MHz frequency band. GSM phones use a Subscriber Identity Module (SIM) smart card which contains all of the user account information. GSM includes the short messaging service (SMS) which enables users to

send text messages to each other. Figure 2.2 below show one of the GSM modem type that been used nowadays.

Figure 2.2 GSM modem

A GSM modem works just like a mobile phone. It is a modem which accepts a SIM card, and subscribe to a mobile operator. Thus, from the mobile operator's point of view, a GSM modem looks just like a mobile phone. Besides, there is certain mobile phone that provides GSM modem capabilities. Figure 2.3 shows the evolution of 3GPP family.There are several reasons why GSM is so popular among operators and their customers:

1. **Clear voice quality**, as an alternative to wire line telephony for users.

2. **Spectral flexibility**, numerous spectrum bands is available for user devices and has an infrastructure network.

3. **Tight security**, prevention from eavesdropping and hacking.

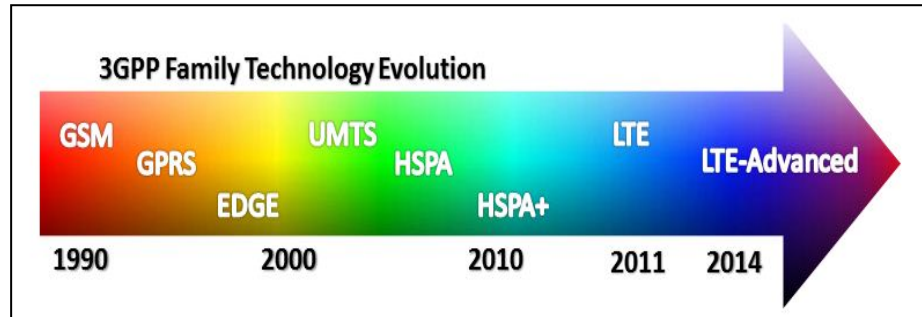4. **Data support**, which includes web browsing and SMS.

Figure 2.3 GPP Family Technology Evolution

2.2.3   Limit Switch Sensor

A limit switch is a switch works by the movement of a machine part and existence or presence of an object. It is usually used for controlling machine, to count objects passing a point, or as safety interlocks. It is an electromechanical device which consists of an actuator that was linked to a set of contacts. When an object touches the actuator, the device will operates the contacts to start or stop an electrical connection. Figure 2.4 below show a limit switch hardware.

Figure 2.4 Limit switch