AUTOMATIC MAIL DETECTOR VIA SMS

MOHD SUBHAN BIN GHARAT

This Report Is Submitted In Partial Fulfillment Of Requirements For The

Bachelor Degree Of Electronic Engineering (Industrial Electronic) With

Honours

Faculty Of Electronic Engineering And Computer Engineering

Universiti Teknikal Malaysia Melaka

April 2010

UNIVERSTI TEKNIKAL MALAYSIA MELAKA
FAKULTI KEJURUTERAAN ELEKTRONIK DAN KEJURUTERAAN KOMPUTER

BORANG PENGESAHAN STATUS LAPORAN
PROJEK SARJANA MUDA II

Tajuk Projek : **AUTOMATIC MAIL DETECTOR VIA SMS**

Sesi Pengajian : **SESI 2009/2010**

Saya **MOHD SUBHAN BIN GHARAT** mengaku membenarkan Laporan Projek Sarjana Muda ini disimpan di Perpustakaan dengan syarat-syarat kegunaan seperti berikut:

1. Laporan adalah hakmilik Universiti Teknikal Malaysia Melaka.

2. Perpustakaan dibenarkan membuat salinan untuk tujuan pengajian sahaja.

3. Perpustakaan dibenarkan membuat salinan laporan ini sebagai bahan pertukaran antara institusi pengajian tinggi.

4. Sila tandakan (√) :

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

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

□ **TIDAK TERHAD**

Disahkan oleh:

_____   _____
(TANDATANGAN PENULIS)   (COP DAN TANDATANGAN PENYELIA)

Tarikh: ……………………..   Tarikh: ……………………..

I, MOHD SUBHAN BIN GHARAT hereby declare that this report is the result of
my own work and research except for quotes and cited in the references.

Signature   :

Author   : MOHD SUBHAN BIN GHARAT

Date   : 26 APRIL 2010

"I hereby declare that I have read this report and in my opinion this report is sufficient in terms of the scope and quality for the award of Bachelor of Electronic Engineering (Industrial Electronics) with Honors."

Signature   :

Supervisor's Name: MISS ZARINA BT MOHD NOH

Date   : 26 APRIL 2010

Specially dedicated to my beloved parents;

Gharat Bin Kosrin and Maimon Bt Abdul

To my Supervisor;

Miss Zarina Bt Mohd Noh

*Also to all my family members and fellow friends who have encouraged,
guided and inspired me throughout my journey of education. Hoping that all
of us will be successful in whatever field we are involved and be strong in
facing the challenges of life.*

ACKNOWLEDGEMENT

Alhamdulillah, thank Allah S.W.T for the guidance and knowledge bestowed upon me, for without it I would not have been able to come this far. I would like to express my greatest gratitude and sincere thanks to my supervisor, Miss Zarina Bte Mohd Noh, for her valuable advice and assistance in the supervision and consultation of this Final Year Project. At times, the guidance and moral, support given by Miss Zarina are very much motivating at the same time persuades me when obstacle arise throughout the interlude of completing this project.

I would like to exemplify an extraordinary appreciation to the Faculty of Electronics Engineering and Computer Engineering (FKEKK) on putting into practice the Final Year Project as a compulsory chore for the final year students prior to complete their course. Not forgetting Universiti Teknikal Malaysia Melaka for their contribution on the facilities and also equipments as well as creating a platform to the final year student to achieve and carry out their projects in durable manner.

Last but not least, I would like to thank to my beloved family for their encouragement and never ending support. Their support and exquisite companionship is another important source of my strength. My deepest appreciation goes to all my fellow friends for the companionship, fruitful suggestion, proof reading and wishes.

Therefore, I end this acknowledgement with THANK YOU VERY MUCH in their reminiscence.

ABSTRACT

Upon receiving new mails or letters in their mailbox, most users do not get notified of this fact. They have to speculatively and periodically check their mailbox contents. In most events, the users are neglectful on checking their mailbox. This at times may lead towards the ignorance of important letters and results in various miseries. Most of the multi story buildings such as apartments, condominiums, office buildings etc limit the users on limited visits to check or collect their letters due to the centralize mailbox location. Users find convenient to be on alert of mails they receive to overwrite the conventional method of checking mailbox. Because of the high confidentiality and official letters are increasing as a corresponding tool globally, the users seek for a better solution which enables them to be on their toes each time a mail is delivered. The state of the art electronics technology is incorporated into these conventional mailboxes as a solution. The programmable integrated circuit, interface module and the GSM modem can be incorporated by linking the user's mailbox with short messaging system or email facilities and this enables the users to be notified whenever a new mail is delivered. Mails delivered into the users mailbox, the system will automatically generate an alert which is send in the form of a short message system or email that typically details the real time of mail delivery. The system is designed to easy human life by sending short messaging system or email to notify the users about important new mails reaching their mailbox. This is likely to be a fast growing and popular application for short messaging system and email towards the mankind.

ABSTRAK

Semasa menerima mel baru atau surat-surat di dalam peti surat, sebahagian besar pengguna tidak boleh diberitahu mengenai perkara ini. Mereka harus spekulasi dan secara berkala memeriksa isi peti mel mereka. Dalam situasi tertentu, kebanyakan pengguna lalai untuk menyemak peti mel mereka. Ini dalam masa yang sama boleh mengakibatkan kepada ketidaktahuan surat penting dan hasil dalam pelbagai pemberitahuan melalui surat-surat tersebut. Sebahagian besar bangunan seperti apartmen, kondominium, pejabat dan lain-lain menyekat pengguna untuk menyemak atau mengumpulkan surat-surat mereka kerana kedudukan lokasi tempat surat tersebut. Pengguna berasa lebih selesa dan bersedia untuk menerima surat dari peti mel mereka dengan cara yang mudah dan menyenangkan bagi menggantikan kaedah konvensional pada masa sekarang ini untuk menyemak peti mel. Oleh kerana penggunaan surat-surat rasmi meningkat sebagai alat yang sesuai secara global, pengguna mencari penyelesaian yang lebih baik yang boleh memudahkan mereka untuk memeriksa setiap kali surat dihantar. Penggunaan teknologi elektronik diaplikasikan ke dalam peti mel konvensional sebagai penyelesaian. Litar bersepadu diprogram, modul antaramuka dan modem GSM boleh dimasukkan dengan menyambung peti mel pengguna dengan sistem mesej pesanan ringkas (sms) atau kemudahan email dan ini membolehkan pengguna untuk diberitahu setiap kali surat baru disampaikan. Apabila surat dimasukkan ke peti mel pengguna, sistem secara automatik akan menghasilkan amaran yang dihantar dalam bentuk sistem mesej pesanan ringkas (sms) atau email kepada pengguna. Ini mungkin merupakan suatu aplikasi yang mudah untuk berkembang dan popular bagi sistem mesej pesanan ringkas dan email terhadap kehidupan manusia.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATIONS

CI - Communication Interface

CM - Conventional method

GSM - Global System for Mobile Communication Modem

LCD - Liquid Crystal Display

LED - Light Emitting Diode

PIC - Programmable Interface Controller

SMS - Short Message System

AMDETSYS - Automatic Mail Detector Via SMS

IR - Infra Red

SMS - Short Message System

APPENDICES

CHAPTER I

INTRODUCTION

1.1   Background

Nowadays all cellular networks, GSM, GPRS, UMTS, etc. provide handover, location and paging functions. A handover is a change of access point by a mobile terminal, without loss of connection. In the other hand, location is the process where mobile node informs the networks about its position, so it could receive information (SMS, call etc). GSM (Global System for Mobile Communication) is the most popular standard for mobile telephony systems in the world. The GSM Association, its promoting industry trade organization of mobile phone carriers and manufacturers, estimates that 80% of the global mobile market uses the standard. GSM is used by over 3 billion people across more than 212 countries and territories. GSM is a cellular network, which means that mobile phones connect to it by searching for cells in the immediate vicinity. There are five different cell sizes in a GSM network (macro, micro, pico, femto and umbrella cells). The coverage area of each cell varies according to the implementation environment.

Media Short Message Service (SMS) has been widely used for applications in data communication various fields such as banking, entertainment and more. SMS is used on this research as sensor data communication media, especially in data transmission when the sensor detects an object. Transmission of data through the electronic medium used to be able to facilitate users in their daily life as well as the

uses of advanced technologies are growing at present. Data delivery via sms system will make it easier for users find information more quickly and efficiently. Media used for send the data must have the ability to send data with two communication ways to easiest the user get the information in short time. Most of the multi story buildings such as apartments, condominiums, office buildings etc limit the users on limited visits to check or collect their letters due to the centralize mailbox location. They have to speculatively and periodically check their mailbox contents. The state of the art electronics technology with the uses of GSM is incorporated into these conventional mailboxes as a solution. The programmable interface controller, interface module and the GSM modem can be incorporated by linking the user's mailbox with short messaging system or email facilities and this enables the users to be notified whenever a new mail is delivered. Mails delivered into the users mailbox, the system will automatically generate an alert which is send in the form of a short message system or email that typically details the real time of mail delivery. The system is designed to easy human life by sending short messaging system or email to notify the users about important new mails reaching their mailbox.

1.2   Objective of this project are:

(a)   To design and built a data transfer circuit between sensor and sms system.

(b)   To replace the conventional method of checking mailbox.

(c)   To explore application of sensor and gsm system use for data transfer and communication system.

1.3   Scope of project:

(a)   To study and design a mailbox with IR sensor and transmit data via SMS system if some mail are detected to be inserted in the mailbox.

(b)   To study the programmable interface controller, interface module and the GSM/GPRS modem which can be incorporated by linking the user mailbox with short messaging system.

(c)   To introduce the system that will automatically generate an alert which will be sent in the form of a short message system that typically details the real time of mail delivery.

1.4   Problem Statement

Upon receiving new mails or letters in their mailbox, most users do not get notified of this fact. They have to speculatively and periodically check their mailbox contents. In most events, the users are neglectful on checking their mailbox. To overcome the problem, this project is built to replace the conventional mailboxes as the solution.

1.5   Research Methodology

There are 4 phases of methodology in order to achieve the objective of the project. The first phase is project planning, second phase is literature review, third stage hardware design and final phase is performance test.

1.6   Report Structure

These reports obtain five chapters that explain details about this project. The first chapter is introduction of the project. This chapter contains project introduction, project objective, project scope, problem statement and research methodology.

The second chapter is literature review about the AMDETSYS system. This includes to makes system works by using PIC as a controller. For example, in order to receive input from the IR sensor. Therefore, brief information about IR sensor also include in this chapter. It is important to understand the concept involves and how this system works.

The third chapter is Research Methodology. This chapter will decide the selecting from literature review of figure out a few technique and approach that been conducted. This is to make sure that all data and other technique will involve. The factor, procedures, devices and method used to generate the expected results will include in this chapter. This chapter also gives information about a circuit and the main components used. The components are PIC (microcontroller).

The fourth chapter is focused on to build a few programming during attend the PIC class and laboratory. The purpose of the test, expected result, procedures and result for each test will be detailed out in this report (PSM 2).

The last chapter is about project application of the project, discussion, project improvement, suggestion and also conclusion.

CHAPTER II

LITERATURE REVIEW

2.1   Background

This chapter contains the research and information about the project on several important concepts of sensor, SMS system, GSM system, technology and tools used in the study. Every facts and information, which found through journals or other references, will be compared and the better methods have been chosen for the project.

2.2   Mailing system, Sensor, GSM module and interface module; Concept, Overview of Concept, Element, and Specification.

2.2.1   Mailing System

Mail is part of a postal system wherein written documents, typically enclosed in envelopes, and also small packages, are delivered to destinations around the world. Anything sent through the postal system is called mail or post [1]. In the late 1990's the e-mail has dominant the mailing system which is always faster than postal system and cheap for users to communicate thought the world. The revolutions on mails have been drastic yet the usage of the conventional mailing system is widely practice

thought out the world. Most of our important and official documents are sending by the conventional way [2]. The centralize mailbox system is as shown in figure 2.1

Figure 2.1: Centralize mailbox system

This research has found a new revolution in using newer technologies to alert the users on the event a mail is delivered, especially through the short message service (SMS).

2.2.2   Control of the mail alert system

The Automatic Mail Detector via Sms (AMDETSYS) is a device that helps the users by sending a real time notification on mail delivery overwriting the conventional way of checking mails. This research on the real time AMDETSYS is a new beginning for the mankind within the reach of available technology in making our life's easy especially for domestic and commercial users such as the industrial people and office users [3].

2.2.3   Elements of AMDETSYS (Concept)

2.2.3.1 PIC Microcontroller for main circuit

The PIC microcontroller is the control unit used in the AMDETSYS is as shown in figure 2.2. It compromises the requirements of the AMDETSYS in supporting with real time control system with the capability of preprogrammed wireless communication alerting system. The PIC microcontroller is an intelligent and efficient device which is capable to work without human interventions at all times. [4]
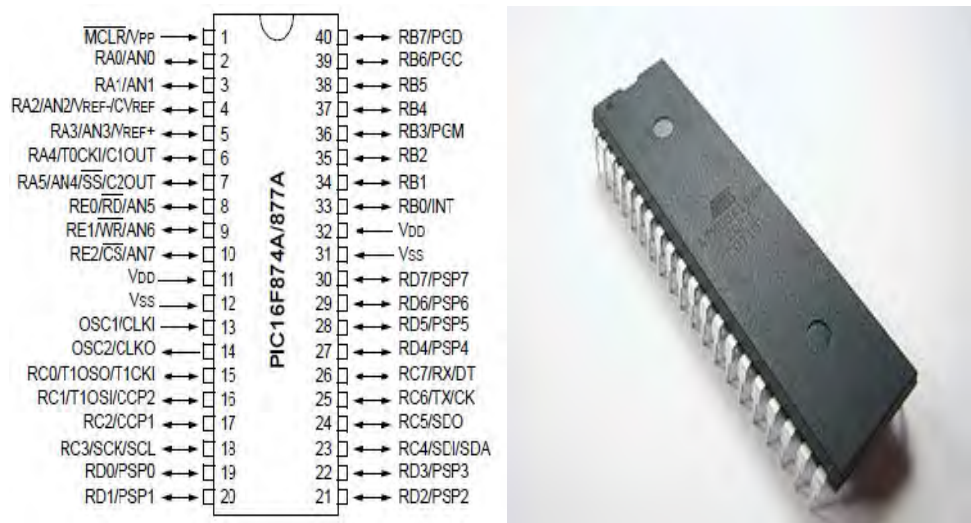

Figure 2.2: PIC 16F877A microcontroller

A PIC microcontroller is a processor with built in memory and RAM and can be used to control much kind of projects (or build projects around it). So it saves cost and etc to building a circuit that need to have separate external RAM, ROM and peripheral chips. [4]