HOME MAILBOX NOTIFICATION

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This Report Is Submitted In Partial Fulfillment of Requirements For The Bachelor
Degree of Electronic Engineering (Telecommunication)

Fakulti Kejuruteraan Elektronik dan Kejuruteraan Komputer
Universiti Teknikal Malaysia Melaka

June 2013

Tajuk Projek : HOME MAILBOX NOTIFICATION

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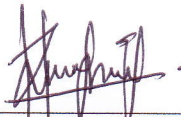
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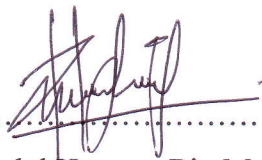Disahkan oleh:

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Supervisor's Name : Siti Rosmaniza Bte Ab. Rashid

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Specially dedicated to my beloved parents;
Mohamed Harith bin Ab. Halim and Roslina binti Abd. Rahim
To my Supervisor;
Mdm Siti Rosmaniza Bte Ab Rashid
also to all my fellow friends who have encouraged and inspired me
Thanks for all the support and guidance

ACKNOWLEDGEMENT

Alhamdulillah, thank Allah S.W.T for HIS blessing and guidance have helped me in completing my thesis. I would like to thanks to all who have involved either directly or indirectly in giving me guidance and share their opinion. At times, the guidance and moral support given by madam Siti Rosmaniza Bte Ab Rashid.

I would like to thank the management of the PSM Laboratory for providing me with facilities and equipments that help me a lot during the arduous to complete this project. I also would like to thank to my beloved family for their encouragement and never ending support. Last but not least, my deepest appreciation goes to all my fellow friends for the companionship, suggestions and wishes. Their fully support have inspired me throughout the interlude of completing this project.

With all the supports, Alhamdulillah, I have managed to complete the final year project and gained a lot of knowledge and experience. I end this acknowledgement with two words, THANK YOU.

ABSTRACT

Upon receiving new mails or letters in mailbox, most users do not get notified of this fact. Users have to periodically check their mailbox contents. In most events, the users are neglectful on checking their mailbox. At the same time, may lead towards the ignorance of important letters and results in various miseries. Most of multi-storey buildings such as apartments, condominiums, office buildings and etc. limit the users to check their letters due to centralize mailbox location. Users find more convenient if an alert is sent if any mails received in order 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 electronics technology is incorporated into these usual 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 (SMS) and this enable the users to be notified whenever a new mail is delivered. When mails delivered into the users mailbox, the system will automatically generate an alert which is send in the form of a short message system that typically details the real time of mail delivery. This is likely to be a fast growing and popular application for short messaging system toward human.

ABSTRAK

Semasa menerima surat-surat di dalam peti surat, sebahagian besar pengguna tidak dapat mengesan perkara ini. Pengguna harus memeriksa secara berkala isi peti surat mereka. Dalam situasi tertentu, kebanyakan pengguna lalai untuk menyemak peti surat mereka. Pada masa yang sama boleh menyebabkan surat-surat penting terabai dan menjejaskan sesuatu proses untuk berjalan dengan lancar. Sebahagian besar bangunan seperti apartmen, kondominium, pejabat dan lain-lain menyekat pengguna untuk menyemak atau mengumpulkan surat-surat mereka kerana lokasi tempat surat tersebut. Pengguna berasa lebih selesa dan bersedia untuk menerima surat dari peti surat mereka dengan cara yang mudah dan menyenangkan bagi menggantikan kaedah biasa pada masa sekarang ini untuk menyemak peti surat mereka. Oleh kerana penggunaan surat-surat rasmi meningkat sebagai alat yang sesuai secara global, pengguna memerlukan penyelesaian yang lebih baik bagi memudahkan mereka untuk memeriksa setiap kali surat dihantar. Apabila surat dimasukkan ke peti surat pengguna, satu sistem automatik akan menghasilkan amaran yang dihantar dalam bentuk sistem mesej pesanan ringkas (SMS) kepada pengguna. Ini mungkin merupakan satu aplikasi yang mudah untuk berkembang dan popular bagi sistem mesej pesanan ringkas terhadap manusia.

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LIST OF ABBREVIATION

GSM   -   Global System for Mobile Communication

SMS   -   Short Message Service

PIC   -   Peripheral Interface Controller

AT   -   Attention

RFID   -   Radio Frequency Identification

LCD   -   Liquid Crystal Display

GUI   -   Graphical User Interface

PLC   -   Programmable Logic Controller

IR   -   Infrared

LED   -   Light Emitting Diode

PC   -   Personal Computer

SIM   -   Subscriber Identity Module

IC   -   Integrated Circuit

AC   -   Alternating Current

PCB   -   Printed Circuit Board

I/O   -   Input Output

A/D   -   Analog to Digital

IDE   -   Integrated Development Environment

Vcc   -   Voltage at the common collector

TTL   -   Transistor-Transistor Logic

RS232   -   Recommend Standard 232

GPRS   -   General Packet Radio Service

CHAPTER I

INTRODUCTION

1.1   Background Project

Mailbox is usually a small box that serves only one purpose which is to store received mail, letters, magazines, and advertising materials and so on. It must keep its content safe until owner of the mailbox takes his or hers mail. Mailbox is a receptacle for receiving incoming mail at a private residence or business

Mailbox can be innovated with new system that is GSM. GSM, which stands for Global System for Mobile communications, reigns as the world's most widely used cell phone technology. Cell phones use a cell phone service carrier's GSM network by searching for cell phone towers in the nearby area.

Home mailbox notification via GSM system can be build using infrared, buzzer, LCD and GSM modem. This application will function just like our phone SMS. When letter is inserted in the mailbox, the infrared sensor will detect the letter and it will trigger buzzer together with LCD. The buzzer and LCD will alert people in the home. A handphone number that has been set will receive the notification messages that tell there is letter in the home mailbox.

This mean, in this project there are one input and three outputs. The input is infrared and the three outputs are buzzer, LCD and GSM modem. So, this application very useful in order to avoid important letter missing from the mailbox. An infrared sensor is an electronic device that emits or detects infrared radiation in order to sense some aspect of its surroundings. Infrared sensors can measure the heat of an object, as well as detect motion.

All objects emit some form of thermal radiation, usually in the infrared spectrum. This radiation is invisible to our eyes, but can be detected by an infrared sensor that accepts and interprets it. In a typical infrared sensor like a motion detector, radiation enters the front and reaches the sensor itself at the center of the device.

1.2   Project Objective

The objective of this project is to design a prototype of a system that can detect the presence of letters in mailbox. When letter is inserted into the mailbox, the infrared sensor will detect the letter, buzzer and LCD will be triggered to notify people in the house and GSM modem will send SMS to the mobile phone number that has been set.

1.3   Problem Statement

As the time moves the life style of the persons has completely changed and there is no time for the people to have micro management of every issue personally. So, this is the right time to provide some space to the technology into the live for monitoring the issues which requires user's personal presence to avoid missing of some important letters. So this project aims in providing a very reliable and very user friendly solution to overcome this kind of problem.

The advancements in the GSM technologies and making use of the existing technologies can design a device which is capable of identifying the arrival of courier. As soon as the courier boy drops the letter into the mailbox, the infrared will detect the presence of the letter and then GSM modem will function as a message sender and will send notification to a number that has been programmed in the GSM. This system just like our mobile phone operating as message sender to the receiver.

To design the entire system a microcontroller is required which acts as a medium of communication between the infrared and the GSM modem. The major advantage of this system is the presence of the GSM modem which enables the device to communicate with the receiver that situated in any place. Buzzer and LCD used as the second and third output which functions as to notify people in the house. This project will increase the chance of getting important letter as soon as possible instead of need to check the mailbox frequently as the GSM modem, buzzer and LCD were used as alert devices.

1.4   Scope of the Project

In order to achieve the objective of this project, scope of work had been divided into two parts which is software and hardware. Before fabricating process, the circuit that had been designed will be simulating using the suitable software. In this project, Proteus 7 Professional software had been used to simulate the circuit that has been designed and also can be used extensively in a hardware design. For the hardware part, the circuit designed will go through the fabrication process. The microcontroller also controls other interface that include with this project which are buzzer and GSM (Global System of Mobile Telecommunications).

In this project, software is analyzed using programs assembly to assemble buzzer, LCD, infrared and GSM modem to communicate within each other. The suitable

coding was analyzed to be burned in Peripheral Interface Controller (PIC). Hardware that is used such as buzzer, infrared sensor, LCD, GSM modem and other suitable prototype were analyzed according to functionality of this project design. Solutions for expectable and unexpectable problems are searched.

1.5   Project Methodology

There are four main parts to complete this design.
- System to sense the letter arrival
  - ➢ Component involved is infrared sensor that used to detect the arrival of letter.

- System design to send the information
  - ➢ Components involved are GSM modem, buzzer and LCD that used to alert users about the arrival of letters.

- Controller circuit using PIC
  - ➢ Design the system controller using PIC as microcontroller to connect infrared sensor, GSM, LCD and buzzer.

- System model design
  - ➢ Prototype design for home mailbox notification.

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