HOME SECURITY SYSTEM VIA SMS

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This report is submitted in partial fulfillment of the requirements for the award of
Bachelor of Electronic Engineering (Industrial Electronics) With Honours

Faculty of Electronic and Computer Engineering
Universiti Teknikal Malaysia Melaka

May 2011

UNIVERSTI TEKNIKAL MALAYSIA MELAKA

FAKULTI KEJURUTERAAN ELEKTRONIK DAN KEJURUTERAAN KOMPUTER

BORANG PENGESAHAN STATUS LAPORAN

PROJEK SARJANA MUDA II

Tajuk Projek : HOME SECURITY SYSTEM VIA SMS

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ACKNOWLEDGEMENT

Alhamdulillah, firstly I am grateful to almighty Allah S.W.T because at last I have finished my Final Year Project and my thesis successfully. It is difficult to finish this report without the help from whoever that involves either directly or indirectly.

I want to thank my supervisor, Cik Najmiah Radiah Bt Muhamad for providing me her assistance and encouragement to go ahead with my project and for requesting approval to use laboratory tools to perform my project. I have furthermore to thanks my Faculty of Electronic Engineering and Computer Engineering (FKEKK) to provide me adequate tool and equipments to carry out my project. My special thanks to all my family for supporting me through their prayers and words of encouragement to complete this project. Last but not least, I wish to thank everyone who is involved in helping me, directly or indirectly, throughout my project.

ABSTRACT

Nowadays, many robbery cases happen at our place caused by we are not having security system. These cases have been one of the most serious problems that happen in our country, Malaysia. Therefore developing this project entitles Home Security System via SMS provides security to the house owner from any intruders or any form of robbery. This project will functioning to detect the presence of human. A metal chain attached to a box holding the electronics is placed around the inside doorknob of a door. Anyone grabbing the knob from the outside is detected by the electrical capacitance change that occurs from the human hand contact between the knob and the box. When detected, alarm will trigger and an SMS will be send to the home owner. The method used to send the sms is by using the GSM modem. A GSM modem is a wireless modem that works with GSM networks. It sends and receives data through radio waves. A GSM modem can be an external unit or a PCMCIA card or also called PC Card. An external GSM modem is connected to a PC through a serial cable, a USB cable, Bluetooth or Infrared. Like a GSM mobile phone, a GSM modem requires a SIM card from a wireless carrier in order to operate.

ABSTRAK

Pada zaman sekarang, kes rompakan banyak berlaku di tempat kita disebabkan tidak mempunyai sistem keselamatan. Kes-kes ini telah menjadi salah satu masalah yang paling serius yang berlaku di negara kita, Malaysia. Oleh itu, penghasilan projek yang bertajuk Sistem Keselamatan Rumah Menerusi SMS ini menyediakan satu sistem keselamatan untuk pemilik rumah bagi mengelakkan kecurian dan segala bentuk rompakan. Projek ini akan berfungsi untuk mengesan kewujudan manusia dimana satu wayar disambungkan pada tombol pintu dimana litar penggera ditempatkan. Apabila sistem ini mengesan sentuhan, penggera akan berbunyi dan SMS akan dihantar kepada pemilik rumah. Kaedah yang digunakan untuk menghantar sms adalah dengan menggunakan modem GSM. Sebuah modem GSM adalah modem wayarles yang bekerja dengan rangkaian GSM yang menghantar dan menerima data melalui gelombang radio. Sebuah modem GSM boleh menjadi unit luaran atau kad PCMCIA atau juga disebut PC Card. GSM modem luaran disambungkan ke PC melalui kabel siri, kabel USB, Bluetooth, atau IR. Sebagaimana telefon GSM, modem GSM memerlukan kad SIM dari operator untuk beroperasi.

TABLE OF CONTENTS

II THEORITICAL CONCEPTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDIX

CHAPTER I

INTRODUCTION

This chapter will give a basic introduction to how the idea of this project generates. The chapter contains introduction, problem statement, objectives of the project, scopes of work, brief methodology, flow chart and report structure.

1.1 Project Introduction

Home security systems are installed to prevent property theft and loss due to robbery or burglary [1]. By detecting an unauthorized intrusion, security systems are designed to notify someone, whether it's a nearby neighbor or someone in a monitoring office, of the presence of the intruder. By detecting the intrusion and sounding an alarm, a security system will often scare an intruder away [1].

Home security systems are reasonable in cost and can be added to almost any house or apartment. Using one can make us safer and more secure. There are several important reasons to consider getting a home security system. First, when thieves break into a house, they are not likely to be concerned with the personal safety of anyone in the house. Beyond theft, there are people who are interested in breaking into houses just to hurt those inside. Home security systems deter and help prevent these types of attacks.

Second, in tough economic times, thieves are more likely to be brazen about breaking into homes for valuables. The house may be broken at any time. Third is having a home security system can help us sleep better and give us peace of mind, knowing that if someone were to break in, we would be alerted. Any strange noises in the middle of the night can likely be relegated to the house settling or something less serious [2].

Based on that, this home security system via sms introduce the safety element which it using the combination of electronic element such as sensor, detector, notification lamp, alarm and a technology that can send a warning sms to the owner. When this security system is attached to our home for example at the main door, sliding door, window or room, it will functioning to detect the presence of human. A metal chain attached to a box holding the electronics is placed around the inside doorknob of a door. Anyone grabbing the knob from the outside is detected by the electrical capacitance change that occurs from the human hand contact between the knob and the box. Nowadays, many robbery cases happen at our place caused by we are not having security system. For example, if we are leaving our house, when someone come they can easily enter our house without any attention from us. Although they not having the key, they may be can open the door by using other method. But if this system is attached to the main door, when they are touching the door knob, the detector will activated the notification lamp, alarm and simultaneously send a warning sms to us. Its make our house in safe condition. The method used to send the sms is by using the GSM modem. A GSM modem is a wireless modem that works with GSM networks. It sends and receives data through radio waves. A GSM modem can be an external unit or a PCMCIA card or also called PC Card. An external GSM modem is connected to a PC through a serial cable, a USB cable, Bluetooth or Infrared [3]. Like a GSM mobile phone, a GSM modem requires a SIM card from a wireless carrier in order to operate. Futhermore, this security system not only can be used in our home but in various places like in building, office, shop and etc.

1.2 Problem Statement

Most of the house today not have a security system because its expensive. Therefore by this project, i propose a cheaper security system and can be installed easily at everyone house. Second, the security system that have today is not good enough where it only activate the alarm. Also it may going bad if the robber just break off the alarm system. If the owner are not at their places at that time, they still do not know what is happen to their places until they back to the home. However by using this home security system, although the alarm not operate, they still will receive a warning sms although they are not at home. After that they can make an emergency call to the police to check their house. Other problem of home security system today are after the activation, the alarm system will not deactivate when you arrive home. So it may caused an interruption to your neighbours [5]. But with this home security system, the alarm only activate when someone touching the door knob, window or sliding door.

1.3 Project Objective

The main purpose of this project are to design a Home Security System Via SMS. Therefore, the objectives as below should be achieved.

i. To create a low cost safety system and practical. So it can be used for all people.
ii. To create system that have capability to give secure to our house.
iii. To make easier to people to alert about their places only through SMS.
iv. To improve the old home security system [5].

1.4 Scope Project

As concern with scopes of work while doing this project, so it must be create properly. The scope of work are listed below:

i. Study on the PIC microcontroller and the control system of the circuit [6].
ii. Study on the application of the GSM modem.
iii. Construct and develop the model of the circuit design (hardware).

1.5 Project Methodology

i. Develop detector circuit
ii. Develop voltage regulator circuit
iii. Develop PIC circuit
iv. Develop the programming
v. Interface programming into hardware

This project methodology will be described detail in chapter 4.

1.6 General Flow Chart

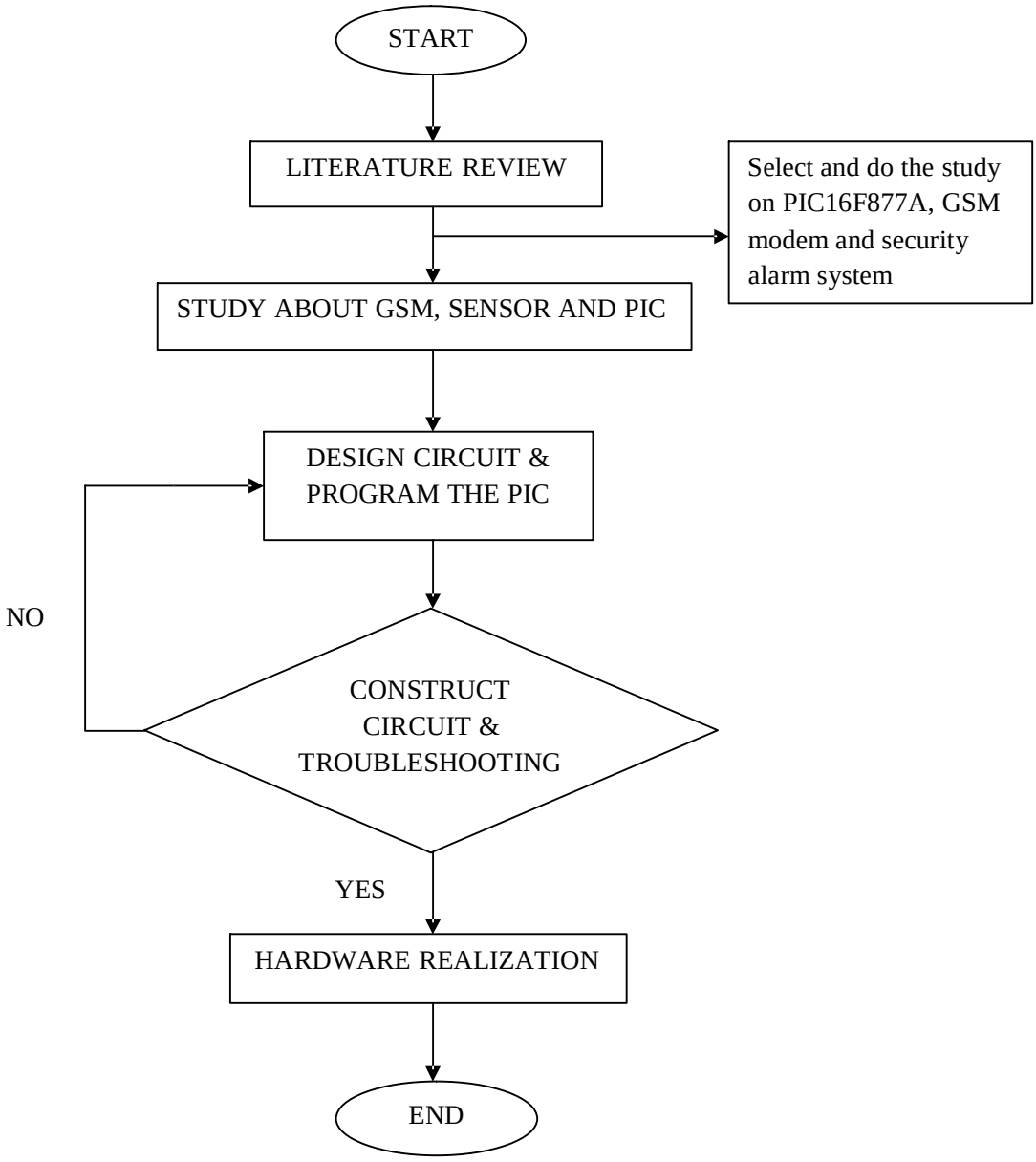

Figure 1.1: General Flowchart of the Project

1.7 Report Structure

This report is documentary delivering the ideas generated, concepts applied, activities done and finally the product of project itself. It consists of 6 chapters that will explain and discuss more details about this project.

The first chapter gives a basic introduction to how the idea of this project generated. The chapter contains introduction, problem statement, objectives of this project, scope of works, brief methodology, general flow chart and report structure.

Chapter two explained the theoretical concepts applied in this project. In this part, there are some detail about the background study of short messaging system (SMS), background knowledge of PIC C compiler, the PIC microcontroller for this project, what is GSM Modem and applications of other components.

Chapter three covered the literature review that related to this Home Security System via SMS. It covered several projects that was developed before and find the advantages and disadvantages from that project.

Chapter four introduces the methodology of the project. Project methodology give details about the method used to solve problem to complete the project. The chapter contains the flow chart which explains the overall method taken along the project carry out.

Chapter five will be covered all the results from designing process including a discussion about the project. The chapter concludes with discussion on the hardware and software development of this project.

Chapter six will be the conclusion of the PSM project. The chapter concludes with some recommendation that can be implemented in the future.

CHAPTER II

THEORITICAL REVIEW

This chapter explained the theoritical concepts applied in this project. The chapter concludes the background study of Home Security System Via Short Messaging System (SMS). The suitable PIC microcontroller for this project, GSM Modem and application of others component are explained in this chapter.

2.1 Introduction to SMS

SMS appreared on the wireless scene in 1991 in Europe. The European standard for digital wireless, now known as the Global System for Mobile Communications (GSM), included short messaging services from the outset [3].

In North America, SMS was made available initially on digital wireless networks built by early pioneers such as BellSouth Mobility, PrimeCo, and Nextel, among others. These digital wireless networks are based on GSM, code division multiple access (CDMA), and time division multiple access (TDMA) standards. Network consolidation from mergers and acquisitions has resulted in large wireless networks having nationwide or international coverageand sometimes supporting more than one wireless technology.

These new classes of service providers demands network-grade products that can easily provide a uniform solution, enable ease of operation and administration, and accomodate existing subscriber capacity, message throughput, future growth, and services reliably. Short messaging service centre (SMSC) solutions based on an intelligent network (IN) approach are well suited to satisfy these requirements, while adding all the benefits of IN implementations [9].

SMS provides a mechanism for transmitting short messages to and from wireless devices. The service makes use of an SMSC, which acts as a store-and-forward system for short messages. The wireless network provides the mechanisms required to find the destinations station(s) and transports short messages between the SMSCs and wireless stations.

In contrast to other existing text-messages transmission services such as alphamumeric paging, the service elements are designed to provide guaranteed delivery of text messages to the destination. Additionally, SMS supports several input mechanisms that allow interconnection with different message sources and destinations.

A distingushing characteristic of the service is that an active mobile handset is able to receive or submit a short message at any time, independent of whether a voice or data call is in progress (in some implementations, this may depend on the MSC or SMSC capabilities). SMS also guarantees delivery of the short message by the network. Temporary failures de to unavailable receiving stations are identified, and the short message is stored in SMSC until the destination device becomes available [9].

SMS is characterized by out-of-band packet delivery and low-bandwidth message transfer, which results in a highly efficient means for transmitting short bursts of data. Initial applications of SMS focused on eliminating alphanumeric pagers by permitting two-way general-purpose messaging and notification services, primarily for voice mail. As technology and networks evolved, a variety of services have been introduced, including e-mail, fax, and paging integration, interactive banking, information services such as stock quotes, and integration with Internet-based applications.

Wireless data applications include downloading of subscriber identity module (SIM) cards for activation, debit, profile-editing purposes, wireless points of sale (POSs), and other field-service applications such as automatic meter reading, remote sensing, and location-based services. Additionally, integration with the Internet spurred the development of Web-based messaging and other interactive applications such as instant messaging, gaming, and and chatting [11].

2.1.1 Benefits of SMS

In todays competitive world, diffentiation is a significant factor in the sucess of the service provider. Once the basic services, such as voice telephony, are deployed, SMS provides a powerful vehicle for service differentiation. If the market allows for it, SMS can also represent an additional source of revenue for the service provider [11].

The benefits of SMS to subscribers center on convenience, flexibility, and seamless intergration of messaging services and data access. From this perspective, the primary benefit is the ability to use the handset as an extention 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 the following:

i. Deliver of motifications and alerts
ii. Guaranteed message delivery
iii. Reliable, low – cost communication mechanism for concise information
iv. Ability to screen messages and return calls in a selective way
v. Increased subscriber productivity

The following enhanced subscriber benefits are provided with more sophisticated functionality:

i. Delivery of messages to multiple subscribers at a time
ii. Ability to receive diverse information