

ANTI- THEFT ALARM SYSTEM USING GSM

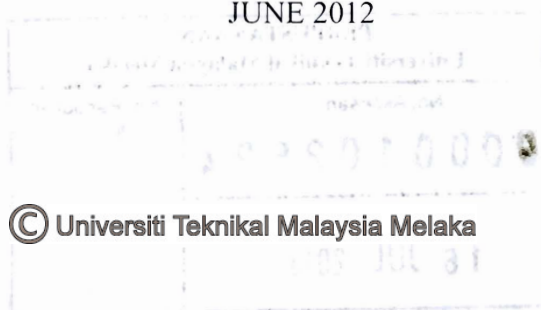
NORMAIZATUL NABILA BINTI ZAKARI

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

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UNIVERSITI TEKNIKAL MALAYSIA MELAKA

FAKULTI KEJURUTERAAN ELEKTRONIK DAN KEJURUTERAAN KOMPUTER

BORANG PENGESAHAN STATUS LAPORAN

PROJEK SARJANA MUDA II

Tajuk Projek : ANTI-THEFT ALARM SYSTEM USING GSM

Sesi Pengajian :

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Tarikh: 22 June 2012

Ketua Jabatan Elektronik Industri
Fakulti Kejuruteraan Elektronik Dan Kejuruteraan Komputer
Universiti Teknikal Malaysia Melaka (UTeM)

Hang Tuah Jaya, 76100 Durian Tunggal, Melaka

DECLARATION

“I hereby declare that this report is result of my own effort except for my own effort
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Signature : 

Name : Normaizatul Nabila Binti Zakari

Date : 22nd June 2012

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Signature : 

Supervisor : Siti Huzaimah Binti Husin

Date : 22 Jun 2012

DEDICATION

To my beloved family, friends, lecturers and anyone who helped me this far.

ACKNOWLEDGEMENTS

Many people have contributed to my learning experience at the Universiti Teknikal Malaysia, Melaka (UTeM). I would like to thank me to my final year project supervisor, Madam Siti Huzaimah Husin for her insight, thought of provoking question and guidance for my thesis. I also would like to thank my friends in helping me complete my programming of CCS C. finally I would like to thank my family members and friends who provide a loving, caring, encouraging and supportive atmosphere.

ABSTRACT

This project will focus on the security elements to protect the home from intruders, especially from the main entrance. Detectors will be installed on doorknobs, and if there is contact that will change the capacitance of the circuit, alarm will trigger. GSM will be installed to send a SMS to the owner informing the intruders. Most homes in Malaysia today do not have alarms that will notify the owner in the event of theft. Indeed, such alarms are available in the market but it is expensive compared to the normal alarm. Theft is increasing and this alarm is an alternative way to prevent theft.

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LIST OF ABBREVIATION

GSM	-	Global System for Mobile communications
PIC	-	Peripheral Interface Controller
SMS	-	Short Message Service
AT COMMAND	-	Attention Command (Hayes)
UART	-	Universal Asynchronous Receiver/Transmitter
GPRS	-	General packet radio service

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CHAPTER 1

INTRODUCTION

This chapter will discuss a brief about the introduction of the project. Where, it state about the purpose of the project, objective, scope of work, problem statement and advantage acquire from the project.

1.1 Overview

When the economy is deteriorating, the crime rate is getting worse as well. Under such circumstances there are people who decide to do things that are against the law in order to get money, such as invading other people's homes. However, they don't

steal just money, but electronic devices, video game systems, televisions, laptops or any valuable items, which they later sell.

This project is mainly focus on alarm system of safety element where it will trigger the alarm if there is any invasion or theft occurred. This alarm system introduces a combination of multiple electronic devices such as sensor, detector, and notification indicator (light) and technology that send a Short Message Services (SMS) to house owner.

The security system will attached to the entry of home such as door, windows, sliding door, room door and the alarm triggers if there is human being present. Normal alarm system can be intercepted easily and the alarm will not work to attract the attention of others. The idea of this security system is it will be place on the door knob of the main door, inside or out. So when there is a change of electrical capacitance due to human touch, the detector will activated the notification lamp, alarm and simultaneously send a warning SMS to user.

1.2 Objective

The main objectives of this project are:

1. To create a reliable alarm system.
2. To ensure that the system is capable of secure the house especially for main door only.
3. To alert the owner easier using SMS.
4. To build a simple inexpensive alarm.

1.3 Problem Statement

Today most homes are not equipped with an alarm system because the price is quite expensive. If the owner uses biometric security system, the whole price including the installation and all cost almost RM500 and more, depend on different security type. In addition, most alarm systems in the market today only trigger the alarm without the homeowner knowing that their home was invaded.

Therefore, this project aims to create an alarm system that is cheaper, more efficient and user friendly. 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.

Most of theft happens because no security measure was taken. According to statistics released in 2009, criminal cases continue to rise up, especially in residential areas which are frequently reported cases of burglary. This occurs because of the lack of supervision from the host, and board member of the housing area. [1] If the homeowner is left home to go to work, even with the door locked, thieves have another way to open a door, window or door of the kitchen without being noticed by anyone.

By using this kind of security system, the owner will receive a SMS as an burglar alert. The owner can make an emergency call to a police station to go check in their house. Another problem of usual security measure is the alarm could be triggered even after the owner at home. This will cause a disturbance to neighborhood. With this type of security, the alarm will activate only when the door knob, window or sliding door were touched.

1.4 Scope

This project will focus on how the alarm system works. The circuit will consist of a detector, notification lamp and alarm. It is used to detect human presence and then will activate the alarm. The alarm will trigger if human presence touches the door knob. As for the GSM modem, it is a wireless modem that works with a GSM network. It can send and receive data through radio waves. A GSM modem can be an external unit or a PCMCIA card (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. GSM modems support an extended set of AT commands. These extended AT commands are defined in the GSM standards. With the extended AT commands, various things can be done like read, write, delete, received SMS messages and also can send SMS messages. Basically, a GSM modem is used to interface between the hardware and the mobile phone. AT command is used for controlling the functionality of the modem which is to send and receive SMS messages.

1.5 Methodology

The methodology for this project, the circuit is first designed to trigger an alarm. After the completion of hardware, the program for PIC will be developed to send a command for GSM to activate. Troubleshooting and system testing of the circuit. The

system will be simulated to find either it can operate as required or not. The overall flow chart of the methodology is shown in figure 1.0.

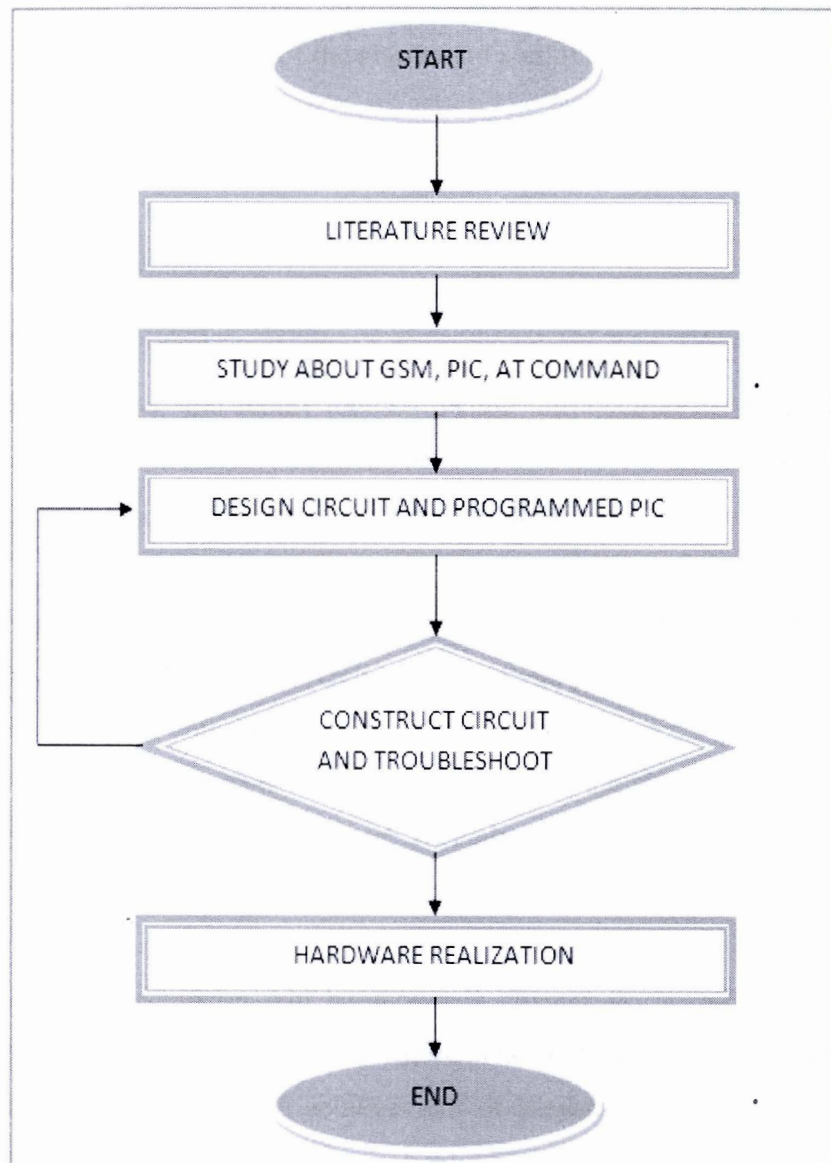


Figure 1.5.1: Flowchart of Methodology

1.5 Expected Output

As what is planned on the planning phase and the scope of the project, the SMS based security alarm is expected to be deployed in real test bed environment which will be able to interact with user. When the alarm is triggered, PIC then will send out the command SMS to send information of the alarm, and alert the house owner.

1.6 Report Structured

In the first chapter, the report focuses on the introduction of the project, the objective of the project, problem statement on why the project should be done, the scope and the method on how this project will be executed.

As for chapter II, the report focus on the literature review, the explanation of project perspective and method that already used in others projects that being marketed or other research including with the theory compliment to the project. The methodology will be explained further in chapter III, where it explained the method used to solving the problems exist in projects. This chapter will also explain the factor involved in certain method.

The result and discussion will be shown in chapter IV, where the finding of project will be organize using diagram and figure. The findings will also be explained briefly and compared with previous achievement of projects. The hypothesis of this project should be realized. The last chapter, chapter V, will end with the conclusion of the project that had been done. The analysis of project achievement and summary of research and project will be explained further in details in this chapter.

CHAPTER II

LITERATURE REVIEW

This chapter will discuss the literature review which contains the information gathered to gain knowledge and ideas in completing the project. Several sources have been taken such as books, thesis, journals and website.

This included the operation of the circuit, the influenced of choosing an element in the project, hardware and software which are useful in the project.

2.1 The Research of Alarm

Most of the equipment available in the market for security purpose is indeed growing. The market for this kind of products is also huge due to the recent cases of burglary, theft and robbery. Other than taking a security measurement such as hired a security guard, a lot of alarm system with different purpose is available. People tend to choose for low cost maintenance and less manpower, and alarm system would be the best choice for them.

The first ever documented invention of the doorknob according to internet resources appears in U.S. patent entries for the year 1878 when a patent for improvements on a door-closing device and Osbourn Dorsey invented it. Doorknob have been used around the world for centuries, and were first manufactured in the United States in the mid nineteenth century. Doorknobs have been made of many materials including wood, glass, ceramic, plastic and different types of metal. The door is an integral part of any door handle system.

As far as main entry security goes the doors role is to keep out undesirable. For interior doors, the door handle acts as a latch to keep the door closed for privacy. Doorknob locks are an important part of any home security system. It is also true that human by nature needs to protect themselves and this is the main objective of creating this research. Doorknob Alarm does not just a closing device it is also helps home owner if the lock has broken. This prevents a thief from being able to open the door by breaking the knob because of its alarming noise.