UNIVERSITI TEKNIKAL MALAYSIA MELAKA

DEVELOPMENT OF INTRUDERS AND FIRE ALERT AT HOUSE USING GSM

This report is submitted in accordance with the requirement of the Universiti Teknikal Malaysia Melaka (UTeM) for the Bachelor of Electronic Engineering Technology (Telecommunication) with Honours.

by

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FACULTY OF ENGINEERING TECHNOLOGY
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BORANG PENGESAHAN STATUS LAPORAN PROJEK SARJANA MUDA

TAJUK: **DEVELOPMENT OF INTRUDERS AND FIRE ALERT AT HOUSE USING GSM**

SESI PENGAJIAN: **SEMESTER 1 2017/2018**

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DECLARATION

I hereby, declared this report entitled “Development of Intruders and Fire Alert at House using GSM” is the results of my own research except as cited in references.

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Date : 15 JANUARY 2018

APPROVAL

This report is submitted to the Faculty of Engineering Technology of UTeM as apartial fulfillment of the requirements for the degree of Bachelor of Electronic Engineering (Telecommunication) with Honours. The member of the supervisory

is as follow:

……

MADAM RAEIHAH BINTI MOHD ZAIN

(Project Supervisor)

ABSTRAK

Amaran kebakaran dan penceroboh di rumah menggunakan GSM adalah sistem keselamatan rumah. Sistem utama adalah untuk menghalang rumah daripada penceroboh dan peristiwa kebakaran. Sistem keselamatan ini akan berfungsi apabila sensor gerakan (sinaran inframerah pasif), PIR yang diletakkan di dalam rumah dimana setiap kali ia mengesan sebarang pergerakan, lampu dan penggera akan dihidupkan. Tambahan pula, sekiranya berlaku kebakaran, apabila sensor suhu (LM35) mengesan haba dari api, maka lampu dan penggera akan dihidupkan. Semua program ini akan diprogramkan dalam Arduino Uno dan status semasa kes akan dihantar terus ke GSM (Global System for Mobile). Kemudian, telefon bimbit akan menerima mesej dari GSM. Projek ini akan berfungsi jika semua peranti boleh berfungsi semasa situasi kritikal seperti Arduino Uno boleh mengawal semua peranti dan modul GSM akan menghantar mesej ke telefon bimbit apabila sensor mengesan pergerakan atau suhu di rumah. Sistem ini akan diaktifkan apabila pemiliknya tidak berada di rumah dan pada waktu lewat malam.

ABSTRACT

Intruders and fire alert at house using GSM is a system for home security. The main system is to prevent the house from intruders and fire incidents. This security system will function when a motion sensor (passive infrared radiation),PIR is placed inside house, whenever it detects any movement, then the lights and alarm will turned on. Next, in case of fire, once the temperature sensor (LM35) detect a heat from fire, then the lights and alarm will turned on. All of these programs will be programmed in Arduino Uno, then the current status of the case which occurred will be send directly to GSM (Global System for Mobile). Then, a mobile phone will receives message from the GSM. This project will work if all devices can function during critical situations such as Arduino Uno can control all the devices and GSM module will send a message to the mobile phone when sensors detect any movement or temperature in the house. This system will be activated when the owner not at home and during late night.

DEDICATIONS

This special dedicated to

My beloved parents, to all my family, lecturers and friends,

Thanks for all the supports, encouragement and faith in my ability to finish this project.

ACKNOWLEDGEMENT

I would like to thank to Allah, Alhamdulillah because of His blessing, I finally complete and finish my final year project successfully. Also, with great pleasure I want to take this opportunity to express my heartfelt gratitude to all people who helped in making this Major Project work a grand success.

I was grateful to Madam Raeihah Binti Mohd Zain, lecturer of Faculty of Engineering Technology (UTeM) for her valuable suggestions and guidance during the execution of this project and also for giving me moral support throughout the period of our study in UTeM. I believe that, without her knowledge and assistance, this project would not have been successful.

My sincere appreciation also extends to all my friends and colleagues who shared their knowledge, ideas, opinions and tips regarding to my project. I would also like to thank all my family members, especially my parents for supporting and encouraging me to pursue this degree. Lastly, I offer my regards and blessings to all of those who supported me directly and indirectly in any respect during the completion of the project.

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LIST OF ABBREVIATIONS, SYMBOLS AND NOMENCLATURE

GSM	-	Global System for Mobile Communication
SMS	-	Short Message Services
CCTV	-	Closed-Circuit Television
PIR	-	Passive Infrared
MMS	-	Multimedia Message Service
LCD	-	Liquid Crystal Display
IR	-	Infrared

CHAPTER 1
INTRODUCTION

1.0 Introduction

This chapter is introduces about the idea to create a project. So, it focus on the project background, objectives, problem statement, scope and planning design of the project.

1.1 Project Background

Each area of residences has a problem every year related to the burglary or robbery and accident cause by fire. So, the house security is important to the house because there are lot intruders and fire incident cases happened at home and can alert a resident from any intruders or fire incident. This is important to safeguard the houses, especially when residents travels at certain period of time and during late night. So, before leaving the house, residents must make sure that their house are safe and sound while they are away or not around. When using this system, the house and residents life is more safety from intruder or fire incident. This project will create a system that solves this problem.

In this project, it will introduce a system that called Intruders and Fire Alert at House Using GSM. This project is used to create a system that can solve the problem at the residential area (house) which is burglary or robbery and accident cause by fire. This system work when a motion sensor (passive infrared radiation) is placed inside house, whenever it detects any movement, then the lights and the alarm will turned on. Next, in case of fire, once the temperature sensor detect a heat from fire, then the lights and alarm will turned on. All of these programs will be programmed in Arduino, then the current

status of the case which occurred will be send directly to GSM. Then, a phone will receives message from the GSM. This project will work if all devices can function during critical situations such as Arduino can control all the devices. Then, the GSM module will send messages to the mobile phone when sensors detect any movement or fire in the house.

This project is a combination of motion sensor (PIR), temperature sensor, buzzer as an alarm system, Arduino Uno and GSM for interfacing the circuit using network. The Arduino Uno act as a processor that will give instruction to other device. The GSM allow an Arduino Uno to interface using serial connection. The GSM module act as a medium to allow two different devices are connected without using wire. By project Home Security System Using GSM. Burglary or robbery and accident cause by fire problems can be solved.

1.2 Problem Statement

The house security is important to the house because there are lot intruders and fire incident cases happened at home and can alert a resident from any intruders or fire incident. This system can alert residents from intruders or fire incident happen. This is important to safeguard the houses, especially when resident travels at certain period of time and during late night. So, before leaving the house, residents must take responsible to their house for safety while they are away or not around. Therefore, this system will be create to solve the problem. This security will create which to protect a house and people life against danger and loss. When using this system, the house and residents life is more safety from intruders or fire incident.

1.3 Objectives

The objectives of this project is recommend to help community. To achieve this project, the objectives should be successes. First, the objective of this project are to alert resident when there are fire incident or intruders at the house. Second, to develop security system controller using Arduino Uno for home safety. Lastly, to develop GSM modem to notify for current status.

1.4 Project Scope

The scope of project is divide into two parts which is consist of the hardware and software development. This scope of project create to achieve the objectives of the project. So, the scopes that create must be follow. First, focus on hardware development where the GSM module to send current status, Arduino Uno to control system and sensor to detect intruders and heat. Second, focus on software development where this system use Arduino Uno software to control the system based on the coding. Lastly, this project focus on the residential area which is house.

1.5 Methodology

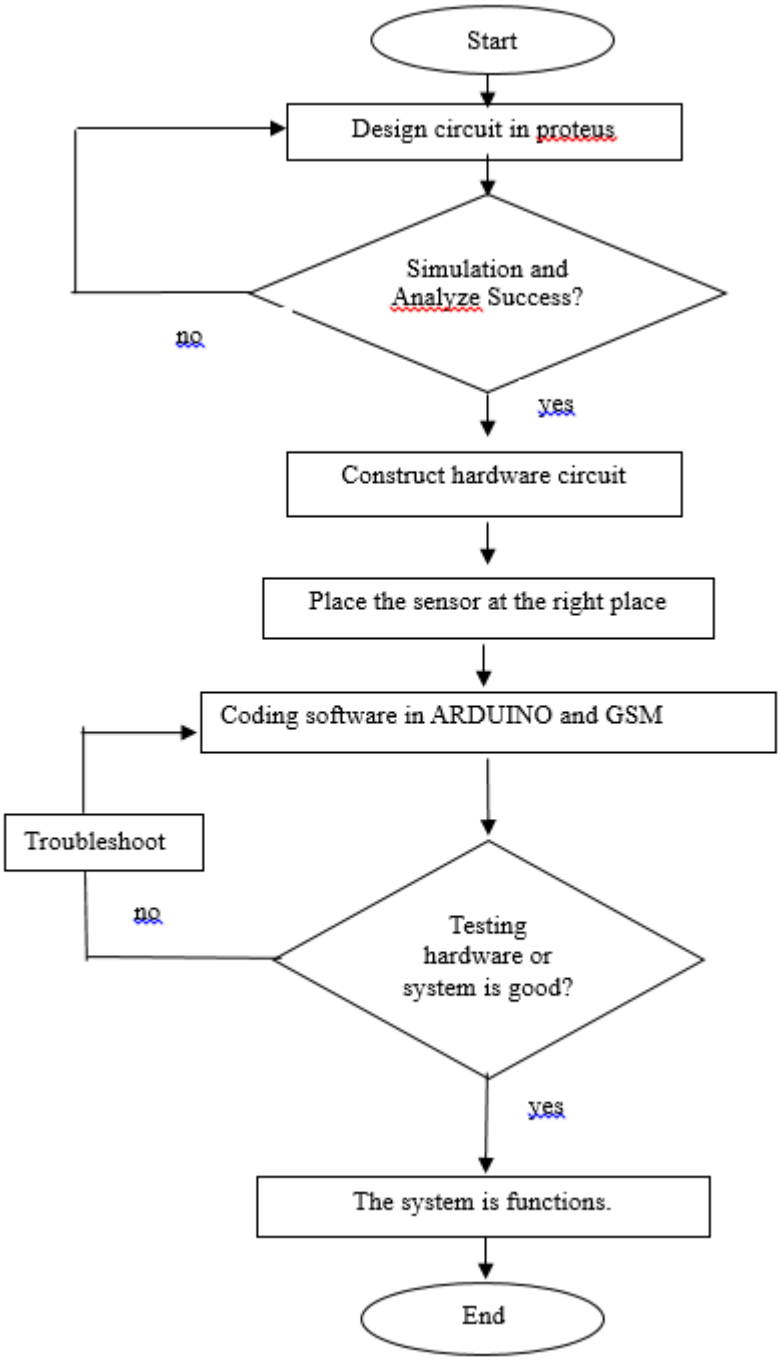

Figure 1.1 : Flow Chart of planning design

CHAPTER 2
LITERITURE REVIEW

2.0 Introduction

This part will exhibit the exploration work that comparative with this anticipate by journals, thesis, articles, research papers and different sources. The literature review is the perusing of the works of other before initiating on examination work to acquire enough significant data and information on comparable projects done by others.

2.1 Research on Previous Project

The research on previous project is research making for the projects that has been done by the others which same to this project that will create. So, based on the some research that have donned, there is more information about the house security system.

2.1.1 Android Mobile Based Home Security and Device Control Using GSM

This project produced by S. Rajadurai, P. P. Nehru and R. Selvarasu from Department of EIE Arunai Engineering College Tiruvannamalai, INDIA – 606 603. This project is about a home automation technique based on ARM controller. This technique uses an IR sensor to detect the person. If the IR sensor detects a person then the keypad will be activated to enter the pass code. A SMS will be sent

to the owner for authentication. Depending on the owner's replay the door will open. If the person enters a wrong password, an intimation message will be sent to the owner and at the mean time buzzer will be activated. Android application is used to control the electrical appliances. The firmware for this paper is written in embedded 'C' language and the machine codes for the program are stored in the non-volatile flash memory of the embedded controller.

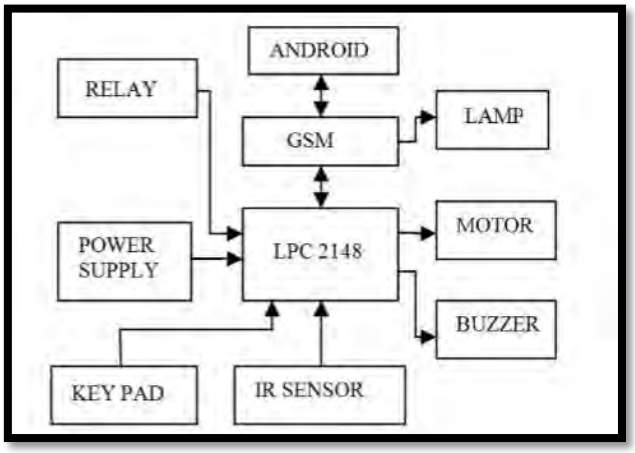

Figure 2.1 : Home security using GSM on Android mobile devices

2.1.2 Android Interface ased GSM Home Security System

This project produced by Rupam Kumar Sharma, Ayub Mohammad, Himanka Kalita and Dhiraj Kalita from Department of Computer Science and Engineering Don Bosco College of Engineering & Technology (DBCET) Guwahati, India. This project is about security home with android interface based GSM. For statement, the security of one's belongings when a person leaves his/her house is always a concern with increasing number of incidents of theft, robbery etc. Many automated systems has been developed which informs the owner in a remote location about any intrusion or attempt to intrude in the house. 8051 has been extensively used in past projects. However, this paper looks into the

development of an android application which interprets the message a mobile device receives on possible intrusion and subsequently a reply (Short Message Service) SMS which triggers an alarm/buzzer in the remote house making others aware of the possible intrusion.

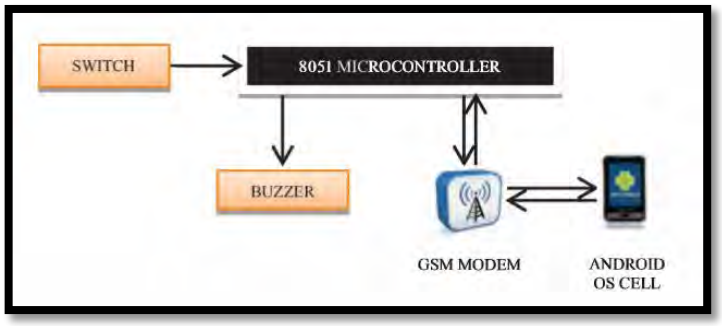

Figure 2.2 : Basic block diagram of the system

A hardware circuit with a switch and a GSM modem embedded is installed and connected to the door of the house. When the intruder tries to open the door, the switch triggers an interrupt and subsequently sends a signal into the microcontroller which subsequently triggers the GSM modem to transmit a warning SMS into already registered number in the modem. The SMS on the users is interpreted by the android application and if it finds that the SMS is from the designated number, the application immediately informs the person with a frequent pop-up menu. If the user positive acknowledge the pop-up in 1 minute, an acknowledgement is send back to the remote GSM modem. The modem outputs an interrupt to the microcontroller and the microcontroller subsequently triggers an alarm. If the user fails to acknowledge in the defined time interval, an automatic positive acknowledgement is send by the application to the modem and the activities follow.

2.1.3 Photosensitive Security System for Theft Detection and Control Using GSM Technology

This project produced by P. Satya Ravi Teja, V. Kushal and A. Sai Srikar from Student, Instrumentation and Control Engineering Department, National Institute of Technology Trichy, India and K. Srinivasan from Assistant Professor, Instrumentation and Control Engineering Department, National Institute of Technology, Trichy, India. This project is about the design and development of a theft control system for security lockers, homes, bank lockers, jewelry outlets, etc. The proposed system consists of an LDR (Light Dependent Resistor) based sensor which acts as an electronic eye for detecting the theft or attempt, and a signaling procedure based on SMS using GSM (Global Systems for Mobile communications) technology. The LDR circuit is interfaced using a relay circuit with an Arduino microcontroller board. In this method, the LDR detects a change in the light intensity when the bank locker is open and it powers the Arduino board when high light intensity is present. The board is pre-programmed in such a way that it sends a message to the account holder and concerned officials through the GSM modem that is interfaced serially. This indicates that the locker is open. The LDR circuit that is attached to the inner side of the locker, immediately detects any slight glimmer of light entering from outside. The remaining circuit (Arduino and GSM) comes outside the locker and is invisible to the burglar as it lies behind the locker case.

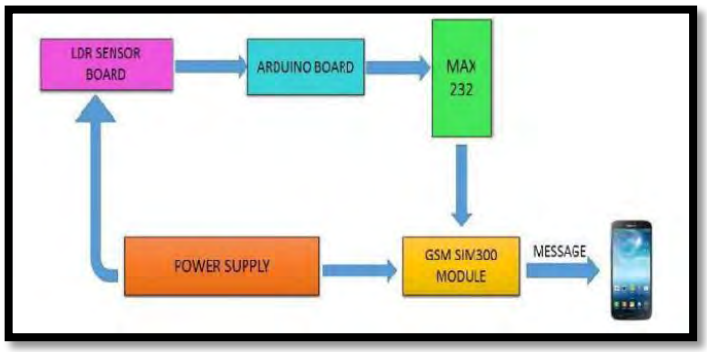

Figure 2.3 : Block diagram of process

2.2 Comparison Between This Project with Previous Project

Table 2.1 : Comparison this project with previous project

Title	**Android Mobile Based Home Security and Device Control Using GSM**	**Android Interface Based GSM Home Security System**	**Photosensitive Security System for Theft Detection and Control Using GSM Technology**	**Development of Home Security System Using GSM**
Source	IEEE Sponsored 2nd International Conference on Innovations in Information,Embedded and Communication systems (ICIIECS)2015	2014 International Conference on Issues and Challenges in Intelligent Computing Techniques (ICICT)	SPACES-2015, Dept of ECE, KL UNIVERSITY	
Sensor or input	IR sensor, keypad, power supply	Switch	LDR sensor, power supply	PIR sensor, temperature sensor
Controller	Microcontroller, android	Microcontroller	Arduino	Arduino Uno
Hardware	GSM, relay	GSM	GSM, Arduino	GSM, Arduino Uno, relay
Output	Buzzer, motor, lamp	Buzzer	SMS	Lamp, buzzer, SMS