



UNIVERSITI TEKNIKAL MALAYSIA MELAKA

**SMART SAFETY HOME SYSTEM
WITH GSM NOTIFICATION**

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

by

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DECLARATION

I hereby, declared this report entitled “SMART SAFETY HOME SYSTEM WITH GSM NOTIFICATION” is the results of my own research except as cited in references.

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APPROVAL

This report is submitted to the Faculty of Engineering Technology of UTeM as a partial fulfillment of the requirements for the degree of Bachelor's Degree of Electronic Engineering Technology (Telecommunication) with Honours. The member of the supervisory is as follow:

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PUAN.AZIEAN BINTI MOHD AZIZE
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ABSTRAK

Pada zaman kini ,manusia lebih cenderung untuk hidup dalam zaman era teknologi pantas ,dimana mereka boleh mengawal , mencari dan menerima maklumat hanya di hujung jari sahaja. Kini teknologi terbahagi kepada beberapa evolusi dalam telekomunikasi antaranya ialah GSM , 2G , 3G ,4G. Setiap evolusi mempunyai ciri-ciri pengubahsuaian yg tersendiri seperti zaman GSM,dimana pengguna hanya bole menerima dan menulis memberi dan menerima khimat pesanan ringkas. Manakala untuk evolusi 2G pulak system lebih dimajukan bahawa pengguna masih boleh menerima ,menulis dan membuat panggilan tetapi pada masa yang sama mereka bole menerima MMS berkala dan bergerak ,bergitulah seterusnya evolusi teknolgi . Tercetusnya idea projek „ Smart Safety Door System with GSM Notification “ ialah kerana , memudahkan penjagaan dan keselamatan rumah dari jarak jauh . Projek ini menggunakan evolusi teknologi GSM. Tatacara kerja fungsi peojek ini ialah ,dalam Projek ini ,pengahantaran data daripada Arduino ke GSM untuk pengguna menerima maklumat yang lebih mudah dan pantas . Pada masa yang sama beberapa litar digunakan untuk mengendalikan projek ini , antaranya ialah sensor pengesan pergerakan, sensors pengesan asap, buzzer ,litar kawalan arduino dan modern sistem GSM .Antara Isyarat lain yang digunakan dalam projek ini ialah penggera . Penggera terhasil setelah pengguna menerima isyarat sms dan penggera berbunyi memberi isyarat kepada penduduk sekeliling untuk megambil tindakan seterusnya. Akhir kata , berharap agar projek ini dapat memberi kemudahan kepada pengguna untuk menerimanya dan meggunakanya.

ABSTRACT

Nowadays, people like to choose life in the technology tracks . There are like to choose the technology life because everything at your fingertips, can search ,find and receive the data in fast time . It can save the time and cost . Now the technology has a few evolution start from the GSM,2G,3G and 4G. Every evolution has own characteristic like the GSM, people can call and write and receive SMS only. For the 2G users can receive the MMS on the phone and the so on the next evolution more to upgrade. This idea was first mooted This project “Smart Safety Home System With GSM Notification” because its make easy to user to safety their house from the long distance . This project use the evolution of GSM. The work procedure of the project is, in this project the data transmission from the Arduino to GSM to users receiver the data in the easy and fast time . At the same time , in this project , use a few circuit to complete the full operation ,like a sensor motion , sensors smoke detector ,buzzer ,Arduino Controller Circuit and modem GSM system .Function for the buzzer in this project is to tell the neighbor or resident to take the fast solution before the house owner come at home .

Special Dedicates to

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My lovely Sibling

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My Lovely Friends

*Who were always there for me throughout
the ups and downs to end this beautiful
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CHAPTER 1

INTRODUCTION

1.0 INTRODUCTION

In advance telecommunication technology, people make it an easier and faster to do a something in a long distance with the short time. People always use the technology to complete the work or control the safety houses, cars and so on . This project “Smart Safety Home System With GSM Notification” is on the project use the technology in telecommunication, the evolution in telecommunication will apply in this project is GSM. With the technology, everything at your fingertips makes it easier.

Normally , the safety alarm system has a few types and different function. Not all type the alarm safety alarm system ,link with the telecommunication technology, example like an alarm safety system at the house , alarm safety system at the office ,safety alarm system at the car and so on . At the same time, the technology for safety alarm system is different , it bases from user to choose , its start from the simplest alarm safety system until advanced alarm safety systems. Based on the few research and literature review, the idea wants to innovation from the simplest safety alarm system to more upgrade with the telecommunication technology track. The „Smart Safety Home System With GSM Notification” is one an innovation and upgraded project based on the future in telecommunication technology track.

In the Smart Safety Home System with GSM Notification has a few main component and circuits are used, example like a sensor, smoke heat detector , Arduino, alarm and power supply The sensor is one of the circuits are use to complete the project, In this project the type of sensor is use is PIR detected sensor . The function is to detect motion the person into the house In the same time this project use the smoke heat detector , to detect smoke in the house, to prevent a house fire .The microcontroller application is using in this project is Arduino System . This system has an own software to setup . The Arduino is will be a function ,after receiving the data from the sensor, automatic Arduino sent the hint to a resident with the automatic the alarm will be turned on and sent the signal to GSM system and GSM system sent to notify to user or owner . All component will be active after the owner turn ON the activated button. This project is users can save the time and cost to care their house from the long distance area with the short time.

1.1 PROBLEM STATEMENT

According to from Utusan Malaysia Online, Kuala Lumpur 25/8/2011[1], research from PDRM about the burglary and house fire , from the average police report most the case happened when the resident is not at home. Most of the reasons people not at home are working time , back to hometown , school holiday time going for a holiday and so on. Nowadays people in the residential area are more to adopt the attitude of closed neighboring, it makes it hard to ask their neighbors to care their house if nobody at home.

The evolution of technology today , people like practice life in the technology style and tracks. With this project Smart Safety Home System with GSM Notification ,it makes easy and fast to notify user for the safety of their home and can early detection and action of a house fire can cause total damage .

Based on this project , this project is “ Smart Safety Home System With GSM Notification” it makes it easier for the user to monitor care the house from the long distance location with the SMS notification .

1.2 OBJECTIVE

This Project has a three main objective to achieve this project a complete and success. The objective will be include about the telecommunication and related with the course study.

2. To study about function of ARDUINO, sensors, alarm, and GSM System
3. To designs a low-cost Smart Safety Home System.
4. To implement GSM in the System to alert of the fire and burglary

1.3 SCOPE OF PROJECT

Based on this project, the scope will be decide based on the function of the component in this project. The power supply in this project use a 240V/50Hz it’s a normal rate voltage for the house in Malaysian without the Air-Cond , many lamp or load in the house such as a Bungalow rate house. The function of the power supply is, main of the supplier for the project be a function.

Type of the sensors in the project is PIR sensors, the function of the sensors is detected motion of person while try to into at the house when owner not at home. Besides that, the smoke heat detector is used to detect the smoke early to prevent the

damage. The Arduino Uno are using in this project because it becomes controller whole project to become a success.

Another scope of the project is about the notification ,the function for notification gives a hint to the resident about burglary and fire tell to the owner of the house. Type of notifying are use for this project is GSM 900A type an SMS, when has a something at home the owner get the notify about home. Another signal notifies to a resident is an alarm, in the case just using the Alarm Sound(Siren), to tell the resident to take an action early about the happened.

1.4 PROJECT OUTLINE

This project outlines will briefly explain the about the organization of the report that divided with the several chapters to make more clearly and structured. There will involve with five chapters that involved in Introduction to the Project, Literature Review, Methodology, Expected Result and Conclusion.

Chapter 1

In is a chapter about the introduction of overall project concepts. This chapter will make clear about the Project Background, Problem Statement, Objectives and lastly the Scope of the project. This chapter is very important because it can be a guideline to done and success the project a very well , follow as the planning .

Chapter 2

Chapter 2, about the Literature Review , the literature review for a project that covers the previous studies, researchers and finding that related to the project. This chapter ,theory, and the application will be discussed use inside the researchers ,and references the project process.

Chapter 3

The chapter 3 is ,about the Methodology. The methodology is one of the projects which presented all the steps, projects flow chart, and block diagram. It includes how to design the project . The projects process in how it works will be discussed in this chapter.

Chapter 4

Chapter 4 ,about the result, from hardware simulation and analysis. The hardware simulation is prototype , produces and Arduino software. The overall results will be purposed in this chapter. The simulation and the have a result, it will proceed in the table part .

Chapter 5

This is the last chapter in this project overview , it is a is conclusion . It a concluded the objectives that stated before. The conclusion is based on the result obtained at Chapter 4 and objective . In addition, it also will have a discussion and also on a recommendation for future work from the researchers and result and innovation the project .

CHAPTER 2

LITERATURE REVIEW

2.0 INTRODUCTION

In this chapter, the concept and theory of this project are about a safety at home are related to the technology in telecommunication version by the evolution of GSM and so on . This situation the literature review also will explore and gather the some similarities and comparison between the available projects, researches, studies, and devices that using the technology telecommunication . It work as an initial process to generating ideas about the projects, provide extra understanding and valuable information.

2.1 ALARM SECURITY SYSTEM

The security alarm system is one of designed to detected person into at building or area without to unauthorized entry. It just one of part of safety at home or building with security. Sometimes this security alarm system is used in the industrial , military properties ,residential, commercial to protection their building with the against burglary in the same time the security alarm system as well as personal protection against intruders and in securing property ,raising awareness and providing a warning of a potentially dangerous condition or situations. At the market has a few type of alarm security system, example like an Alarm System Keypads ,Implement Card Access

Control System also know Key card access system ,Burglar Alarm System, Car Alarm System and etc. There are a lot of alarm security available in the market, some of there are attached by example, The card Access System, Car Alarm System and Keypad Alarm Security System and so on.

The Card Access Alarm System is, this type an advanced key from the owner to achieve complete control their safety home security. With the card access control system ,the organizations can issue programmed key cards to personal. This card grants individual access to select areas site but not let them enter other parts of the facility. Beside that

Car Alarm System is one of security alarm safety at cars. This security, just using the simple security at the cars control by the alarm. Users like to use this alarm system in the car because it just simply a simple instruction to use, just press the button automatically the car will be locked.

Keypad Alarm Security System is are same with the other security alarm system, its still can using at the building,room,office or resident place.The operation for keypad alarm security system is users can press the button or keypad on the box security. The users key in the correct the pin number to open the door to entry. If the user keys in the wrong pin number , the door cannot be open,successfully

2.1.1 APPLICATION ALARM SECURITY SYSTEM

A research Paper By Alfred Mazhindu, explains title about Wireless Burglary Alarm System[3]. Through the expansion of the social order and the standard of living, it has driven the high level of crimes, particularly home. Raid and business premise robberies which happen daily. Definitely fencing, burglar bars on doors and windows are now distant from the necessity of home security, other than that these systems should be switched with well modernized and brainy alarm system.

These modernized systems can stop the criminal activity before it takes the course, it could track and observe the line of attack of criminal. The project of wireless burglar alarm system can continuously be upgraded as the technology changes frequently and ideas are of developments are always pop up daily. Therefore, there are many ideas and designs on the market now[3]. This project requires more time to test and evaluate the system, as an associate design engineer there is always problems arises when designing such types of system i.e. it is the duty of an engineer to solve the problem by debugging circuitry and programming perfectly to a degree of accuracy.



Figure 2.1 : The Model Project Wireless Burglary Alarm System

2.2 ARDUINO

The ARDUINO is one of the electronic components using the microcontroller interface . The ARDUINO is a small microcontroller board with USB plug connect to your computer and a number of connection sockets that can be wired up external electronic , such as motors , relays light sensors, laser diode loudspeakers ,microphone

and etc. The ARDUINO can connection direct from the computer or direct from the 9V battery. In the same time, the ARDUINO operation is be programmed by computer, after that disconnect the operation and allowed to work independently. ARDUINO is an open-source design to microcontroller interface board[4]. Power supply for Arduino can use any voltage between 7 and 12 volts. Small supply such 9V, typically will work just fine for portable application and normally the user probably power it from the USB for convenience. Table 2.1 below show type and the characteristic of Arduino.

Features	Arduino Uno	Arduino Due	Arduino Mega	Arduino Leonardo
Processor	16Mhz ATmega328	84MHz AT91SAM3X8E	16MHz ATmega2560	16MHz ATmega32u4
Memory	2KB SRAM, 32KB flash	96KB SRAM, 512KB flash	8KB SRAM, 256KB flash	2.5KB SRAM, 32KB flash
Digital I/O	14	54	54	20
Analogue I/O	6 input, 0 output	12 input, 2 output	16 input, 0 output	12 input, 0 output
Explanations	The Uno is the most common board and the one labeled as the classic Arduino. This board comes with everything new users need to learn about the electronics and programming required to start this hobby. It is compatible with most available	The Arduino Due is the second iteration of the classic Arduino and offers more features for advanced users. The Due's processor is faster, has more memory, and more I/O ports. It does not support many shields. Because of the faster CPU, the Arduino Due runs on a lower voltage:	The Arduino Mega comes in two types, the Mega 2560 and the MEGA ADK. The ADK is similar to the 2560; however, it also has a programmable USB host chip installed. It uses the same 5V power supply as the Uno, so many	The Leonardo is not a common board, but has similar features to the Uno, including the 5V power supply and the processing power. It is a good board for those who need more input and output ports than the Arduino Uno,

	Arduino shields.	3.3V over the Uno's 5V. This means it cannot always support the same devices	of the Arduino shields are also compatible with the Mega; however, because of the placement of some of the pins, not all of them are usable.	but do not need the horsepower or size of the Due. It uses a micro-USB adapter instead of the Uno's full-size USB port.
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Table 2.1 Show types and the characteristic of Arduino.

Based on the characteristic of the Arduino, this project the Smart Safety Door System with GSM Notification, the type of are use is Arduino Uno because the-the input for this project a below than 6 input and It is compatible with most available Arduino Shield[4]. What are Arduino Shield, the Arduino Shields are boards that connect to a number of different Arduino models,they extend the abilities of the basic board by adding features such as wireless network access, cell access, or the ability to prototype circuits and this project are use the type of Arduino shield is The GSM Shield has a slot for a cell phone SIM card.

This allows users to create an alert system where they would receive a text or phone call from the Arduino. The shield could also allow performing functions when it received a call or a text from the user. This component has an own software to programmed the data, to begin using the ARDUINO ,first, download the ARDUINO site (www.arduino.cc) and the download the software for the user. It makes easier to users using this programmable ARDUINO[4].

2.2.1 APPLICATION OF ARDUINO

A research paper by Namera Binti Ibrahim, the title is Smart Housing System, its explain about the telecommunication technology in device and equipment in the house. This Project applied about to detect the light and control the curtain. The Project user ARDUINO UNO microcontroller as it integral part to control the housing the appliance and electronic system. The concept of networking device and equipment in the house because of increasing the need for the system by disabled people and needed easier to the users.

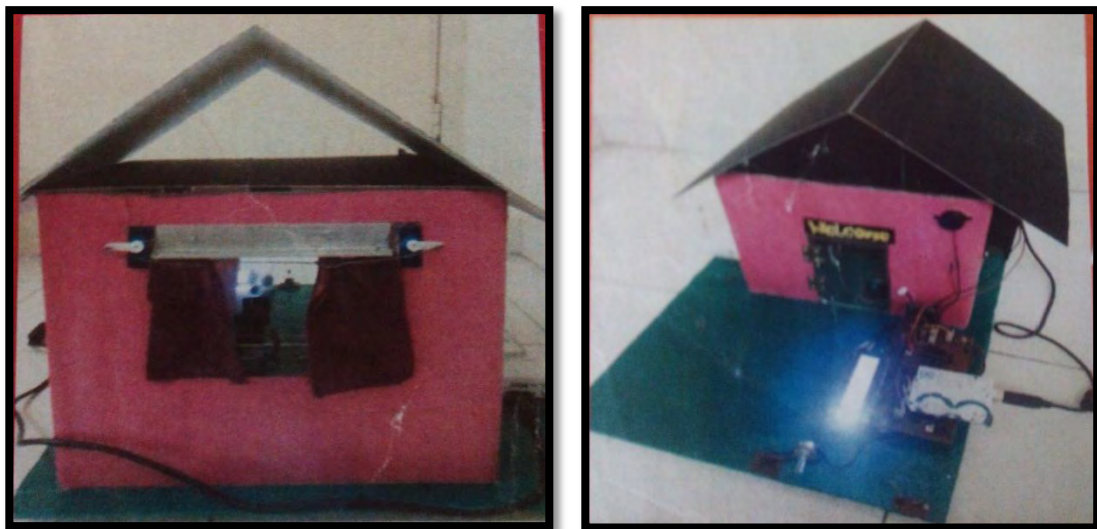


Figure 2.2 The Module Project Smart Housing System.