INTRUDER ALERT VIA SMS FOR MOTORCYCLE

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Tajuk Projek : <u>INTRUDER ALERT VIA SMS FOR MOTORCYCLE</u>

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Saya   <u>NIK MOHD AMINUDDIN BIN NIK IBRAHIM</u>

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To

Mom and Dad

Your prayers keep me moving forward

Teachers

Fill my heart with the truth and knowledge

Beloved friends

Make my world happens

Every Muslims

May Allah bless you all here and hereafter

-Al-fatihah-

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ABSTRACT

This project is designed to prevent intruder and theft of motorcycles. This project was made to overcome a lot of motorcycle theft occurred in our country. The project was able to detect the intruder over motorcycle through short messaging service (SMS) using a combination of hardware and software. This project will work if there is a vibration that occurs over motorcycle, vibration sensors can be detect and will send information to the motorcycle users through t SMS, the system says there have intruder at the motorcycle user. Besides the alarm (Alarm) will also be sound. Data taken from the detector (sensor) and compared with data that has been program in PIC16F873 Microcontroller product which will provide information to users through the Global System for Mobile Communications using Short Messaging Service for this gadget to solve the thieves problem at this time.

ABSTRAK

kecurian motorsikal. Projek ini di buat untuk mengatasi masalah kecurian motorsikal yang banyak berlaku di negara kita. Projek ini mampu mengesan kejadian pecerobohan keatas motorsikal melalui khidmat pesanan ringkas(SMS) dengan menggunakan kombinasi antara perkakasan dan perisian. Projek ini akan berfungsi jika terdapat getaran yang berlaku keatas motorsikal, pengesan getaran (Vibrator Sensor) akan megesannya dan menghantar maklumat kepada pengguna motorsikal tersebut melalui sistem SMS yang mengatakan terdapat penceroboh keatas motorsikal pengguna tersebut. Selain itu penggera (Alarm) juga akan berbunyi. Data diambil dari pengesan (sensor) dan dibandingkan dengan data yang telah diaturcara di dalam PIC16F873 microcontroller dimana keluaran akan memberi maklumat kepada pengguna melalui Global Sistem Untuk Komunikasi Bergerak (Global System for Mobile Communication) menggunakan Khidmat Pesanan Ringkas (Short Message Service Dengan adanya alat ini masalah kecurian yang kerapkali berlaku pada masa sekarang dapat di atasi

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This project is designed to prevent intruder and theft of motorcycles. This project was made to overcome a lot of motorcycle theft occurred in our country. The project was able to detect the intruder over motorcycle through short messaging service (SMS) using a combination of hardware and software. This project will work if there is a vibration that occurs over motorcycle, vibration sensors can be detect and will send information to the motorcycle users through t SMS, the system says there have intruder at the motorcycle user. Besides the alarm (Alarm) will also be sound. Data taken from the detector (sensor) and compared with data that has been program in PIC16F873 Microcontroller product which will provide information to users through the Global System for Mobile Communications using Short Messaging Service for this gadget to solve the thieves problem at this time

1.2 Problem Statement

Nowadays a lot of motorcycle theft incident that occurred in our country, most motorcycle that is lost around the colleges students IPTA / IPTS. This problem occurs because there is no tool available on the motorcycle to detect intruders or thieves systematic, if the user only hopeless in their keys such as "solex, lock disc, and so on. is not sufficient because the thieves motorcycle have many tactics to unlock the key.

1.3 Project Objectives

The main goal of this project is to reduce the risk of theft of motorcycle users; it can also help the authorities tackle the problem of motorcycle theft more effectively. To achieve the project objectives, several key objectives were listed, the following are the main objectives of this project:-

    i.   Designing a tool to overcome the intruder and theft of motorcycle
    ii. Facilitate users to ensure the motorcycle is safe
    iii. Reduce the incidence of theft.

**1.4	Project Scope**

In order to achieve the project objectives, scope of work has been set. In addition the scope of work will be guided so that the system will produce no real conflict with the objectives of the project. The following list in the scope of work for this project:

1. To study about the project
2. Building a system based on software and hardware
3. To determine the type of control device and generate control programs.
4. Produce printed circuit boards.
5. Combination hardware and software

CHAPTER 2

LITERATURE REVIEW

2.1   Introduction

In this chapter will explain in detail about the research field projects. Some concept of a project is described. This is because an understanding of the work will help in preparing this final year project.

Field of study phase is to describe all the processes that occur in doing a project such as search, data collection and analysis has been found. All processes will be done through the resources available from books, journals, technical reports, forums, websites and others. Its main purpose is to acquire knowledge and ideas about topics that have been issued and unaware of the weakness and strength of literature review

2.2   Alarm

Throughout the human evolution, the necessity for security and the need to sound an alarm when the security has been jeopardized have been always with us. The danger might have come from natural disasters such as earthquakes, fire or flood, or merely as an enemy attack. Mankind devised different warning methods, ranging from trumpeting of horns up to red alerts in case of nuclear attacks.[4]

The first electronic automation of alarms did not start until the industrial revolution in the early and mid 1800's when cities started to fill with people and the need for order and security has become imperative. Fire was one of the major concerns to many cities, whereby most cities were divided into districts. Every district would have a 'lookout tower' with a 'call box' that when manually operated would telegraph a unique identification code to the central unit, called 'lookout post', in the case of fire or any other danger. Upon inspecting the code, the lookout post can immediately determine the location of the fire and consequently take direct measures to stop the disaster by means of sending a fire brigade. This is called the 'Central Station' concept and is illustrated in Figure 2.2.1.
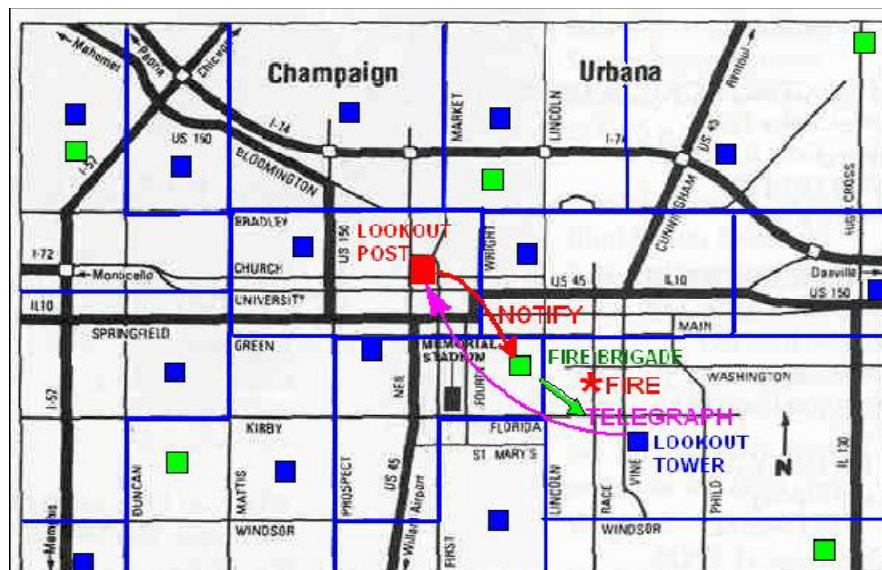
'Central Station' system with lookout post (red square), lookout towers (blue squares), districts (blue line borders) and fire brigade locations (green squares).

Patented burglar alarms first appeared in 1853, when Augustus Pope of Sommerville developed the first electromagnetic alarm that was intended for home usage. The alarm used magnetic contacts and switches to protect windows and doors. All switched were connected to a battery and a vibrating bell, which was installed in homeowner's bedroom. By closing any of the switches the bell would ring. As time progressed, burglar alarms improved continually.

Enunciators with colored tags were used to indicate the status of doors and windows and timing devices were added to enable and disable the alarm during certain time periods. Similar ideas can be found in modern alarm technologies.[4]

2.3   Micro-Controller

There is various types of micro-controller that can be used to control the movement of DC Motor. Among the micro-controller that can be used is the Motorola 68K Microprocessor and Flash memory. PIC (Peripheral Interface Controller) is a micro-controller with flash memory (flash memory) where it can be programmed and deleted repeatedly [1].

PIC has advantages beside compared to Motorola microprocessor and EPROM memory is built in an IC (Integrated Circuit) compared to the Motorola microprocessor. RAM and ROM IC is different with the processor and it must be through the process of connection between the processor and memory. Figure 2:1 shows the block diagram for Motorola Microprocessor.
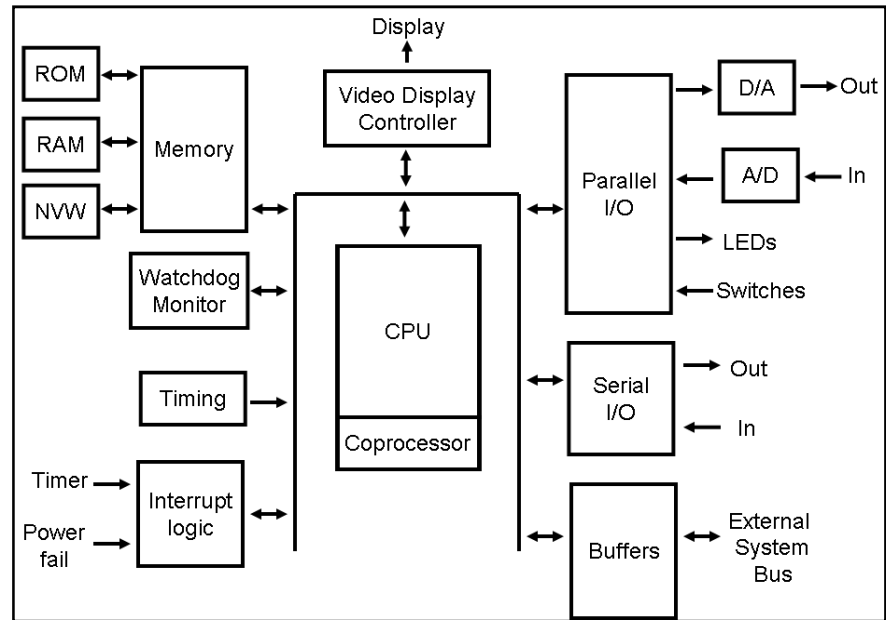
Figure 2.1: Motorola Microprocessor Block Diagram [6]

PIC is a family of micro-controller RISC (Reduced Instruction Set Computer) which was issued by the microchip Technology Inc.. The main function of the micro-controller is receiving information and giving instructions to other components or equipment to perform tasks that have been programmed in the micro-controller. PIC is widely used in the field of automation and robotics which is growing in terms of advanced technology invented and produced. Figure 2:2 shows the diagram for the PIC
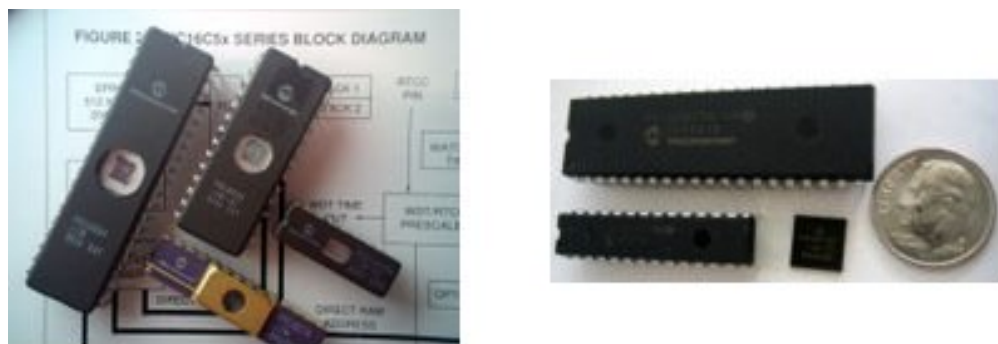

Figure 2.2: PIC

PIC must be programmed in software to enable it to operate. Programs used by the PIC using C language which will be in the 'compile' from the easily understood language to machine language before downloaded to the PIC using the interface such as USB, serial port and parallel port. Software programs can be built in mathematical calculations or analysis and it can be exchanged or changed in accordance with the instructions or tasks that are required. [9]

The PIC has built-in memory, so it can store and execute commands directly without the use of external memory. The latest PIC uses flash EEPROM memory of (Electrically-Erasable Programmable Read-Only Memory) to save all information and software programs. Before the use of EEPROM, PROM (Programmable Read-Only Memory) and EPROM are widely used to store information and programs.

There are various types of PIC available in the market and production technology developed PIC growing. The latest PIC available in the market is:

1. PIC 16F84A - one of the most popular models
2. PIC12C508/509 - Size 8pin, internal oscillator, commonly used in small gadget like iPod
3. PIC16F88X - PIC 18pin high-quality
4. PIC16F87X - better than the PIC16F84 series has many functions and is often used in the project brief

2.4   History of GSM

In 1982, the Department of Posts and Telecommunications (CEPT) Europe held a conference to establish the Group Special Mobile (GSM) to develop a standard system for mobile phones that can be used throughout Europe. In 1987, a memorandum agreement was signed by 13 countries to develop public telephone system throughout Europe. Finally, the system created by SINTEF and selected Maseng Torleiv chosen as a leader.

In 1989, operating system, GSM responsibility was taken over by the European Telecommunications Standards Institute (ETSI) GSM specifications and the first phase was launched in 1991 by Radiolinja in Finland in collaboration with the maintenance and technical infrastructure of Ericsson. In late 1993, more than one million subscribers who use GSM mobile phone network operated by 70 companies in 48 countries.

Connectivity to the mobile networks is achieved using a GSM modem. The system supports multiple GSM modems and is configured so that there is one message queue for each modem physically attached to the server. Each modem contains a valid SIM card. Each modem can be configured to process messages for a certain network operator e.g.: If you have a modem with a 086 SIM card, you could specify that messages for delivery to the 086 network are sent using that modem. This provides greater reliability and performance in the actual delivery of messages. It is also possible to specify the default modem for phone numbers on other networks.

The GSM modems are capable of bandwidth of 9600 bps. Negotiation with the mobile operator and transmission of message takes about 4 second per message. This

means there is an upper threshold or 900 messages per hour per modem. The increase in volume may be increased in proportion to the number of modems added.

Almost all GSM modems (and this includes many cell phone handset) use RS-232 as a transport protocol. On top of this, they use a protocol call the AT command set to communicate with their controlling devices. AT was defined by the European Telecommunication Standards Institute [7], and was defined to be a backward compatible set of extensions to the Hayes AT Command set [8]. Device manufacturers are free to add their own extensions to this command set, and such extensions usually have an identifying prefix. In addition to the standard AT commands, GSM modems support an extended set of AT commands. These extended AT commands are defined in the GSM standards. With the extended AT commands, you can do things like:

- Reading, writing and deleting SMS messages.
- Sending SMS messages.
- Monitoring the signal strength.
- Monitoring the charging status and charge level of the battery.
- Reading, writing and searching phone book entries.
- The number of SMS messages that can be processed by a GSM modem per minute is very low -- only about six to ten SMS messages per minute.

2.5   Short Messaging System

Short messaging system or SMS (Short Message Service) is a service offered through mobile phones to send or receive short messages. A SMS short message consists of a maximum of 140 bytes. In other words, one can accommodate 140 order 8-bit characters, 160 characters 7-bit or 70 characters for 16-bit Japanese, Chinese and Korean characters using Kanji. In addition to these 140 bytes, there are other data that includes. There are several methods to send messages longer than 140 bytes, but a user must pay