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## SAFETY HOME BY USING SENSOR PIR AND MODULE GSM ARDUINO

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### Abstract

A house is one of the basic needs of human life. A house should provide a sense of security for the owner. Now a days, the existing home security system is still less perfect, it can be seen from the number of crimes increase everytime, especially the crime of theft and robbery. Therefore, to minimize the crime we create a home security system based on Arduino Uno Microcontroller, pear sensor, and other supporting components such as, bluetooth module, buzzer, gsm module, led. Rfid, servo motor and buzzer as output, the system will produce sound, and the led will turn on automatically when the movement is detected in the house. The system is equipped with SMS service as a means of notification to the home owner.

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*Key-word: - Arduino Uno, Buzzer , LED, Sensor pir, modul bluthoot, modul gsm dan rfid.*

### 1. Introduction

#### a. Background

Environmental security system is a system of protection for citizens in the environment and surrounding areas from the disturbance of crime either coming from outside the environment or from within the environment itself. A good environmental security system must start from the smallest environment then continue and integrate between small environmental security systems with greater environmental security systems. The smallest environmental security system is the home security system (Arif widodo 2008). According to (Hermawan 2012) designing remote control on-off for android applications. The results of this study indicate that the transmitter's maximum distance is 18 Meters, when we are outdoors. Based on research conducted (Arifin 2013) in the laboratory Microprocessor Electrical Engineering Unissula using 4 pieces of sensor PIR KC7783R get sensor results can reach the widest coverage when placed diketinggian 200cm from the floor with a slope of 75 °. 500cm distance is the furthest point for detecting humans, whereas to detect mice maximum 180 cm, 230 cm cat and 210 cm candle flame. Air temperature changes in the laboratory of 22 ° C to 31 ° C do not significantly affect sensor detection. Internet of Things (IoT), a term that lately began to be crowded but still many who do not understand the meaning of this term. Actually, until now there is no standard definition or definition of the Internet of Things, but in short the Internet of Things can be spelled out is where the objects around us can communicate between each other through a network such as internet (Arie M 2003). The Inventory App Is A Visual Programming Used to develop Android-based apps with the support of drag-drop tool features, the user interface of an app using the GUI (Graphical User Interface) builder. (Sri Sulistiyani 2013).

The Integrated Development Environment (IDE) is the software we use to build a program. There are so many IDEs that we can use in learning the basic science of this programming. To program with C++ language we can use DJGPP, dev C++ or Visual C++ Express Edition (Erico Darmawan 2014). SMS is one of the text messaging services developed and standardized by a body called ETSI (European Telecommunication Standards Institute) as part of GSM Phase2 development, contained in GSM 03.40 and GSM 03.38 documentation. This SMS feature enables digital cellular terminal devices such as mobile phones to be able to send and receive text messages (Ahmadi, 1996)

An environmental security system would be good, if every house in the neighborhood already has a good security system. It will minimize the crime in the environment, so the crime that appears can be detected early. The security system in a house is divided into two types, namely:

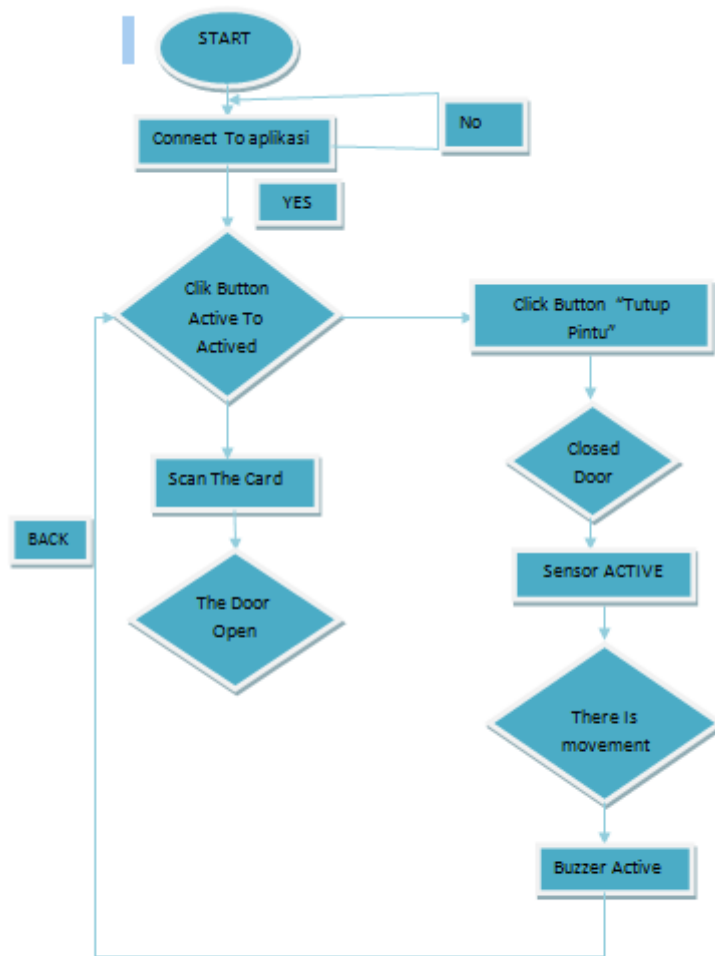
1. Manual security system, which is a security system where the security process does not involve technology, such as activities of patrolling by residents of houses, installation of padlock or chain and so on
2. Automatic security system, which is a security system where the security process using technology, such as the installation of motion sensors, installation of Rfid module, installation of SMS Gateway and so forth (Tri Rahajoeningroem 2013).

Along with the rapid development of technology, the use of automatic security system has become an option at this time, in addition to the cost of the cost is not too expensive and the operation is not too complicated. The current issue of security continues to be of concern, as the level of crime and form every year is always increasing, so that the security system of the environment and home security system will be very interesting as an analysis material. In this paper written the presentation and documentation that will be used for industrial needs and learning media microcontroller and robotic. Certainly the results of this project can help and alleviate human work in the field of industry. The home security system in this paper consists of the main components:

An arduino microcontroller is a chip that has CPU, Memory Input Output integrated with a digital analog system to control circuit controller (Verma, 2013; Sahib, 2014). The sensor used is a motion sensor (pear). Pir (Passive Infrared Receiver) is an infrared-based sensor. bluetooth module Works to connect rfid devices into the application. Rfid Serves as controlling the servo motor or moving the servo motor. Servo Motor, serves as a tool to open the door or as a door holder. And the gsm module serves as the sender of sms gateway to the home owner.

## **2. Methodology**

The initial stages of the design of home security systems using pear sensors and gsm arduino module consists of installation of all components on the walls of the house in accordance with its function, merging from one part to another and wiring into the arduino. Then after all the parts are installed and the cable is also mounted into the arduino followed by entering the program that has been designed. Each component is paired according to designed use, arduino part, sensor part, Rfid part and servo motor, Bluetooth module part as explained in Figure 1 The main part of the security system is on the arduino system Figure 2



**Figure 1** Flowcart assembly process of Home Security System



**Figure 2** Arduino Mikrokontroler

Arduino uno microcontroller Works as a tool to process inputs and outputs of each component device, and in this arduino we put the program in, to run every device.



**Figure 3** Module bluetooth

Bluetooth Module serves as a device that connects microcontroller to the application, Without this device we can not control our device from our android app



**Figure 4** rfid devices

Rfid serves as a device to drive the servo motor, where here the servo motor can open and close by using android app and using the card. Servo motors serve as a propulsion tool for opening and closing doors, where servo motors serve as a driving force for opening and closing doors



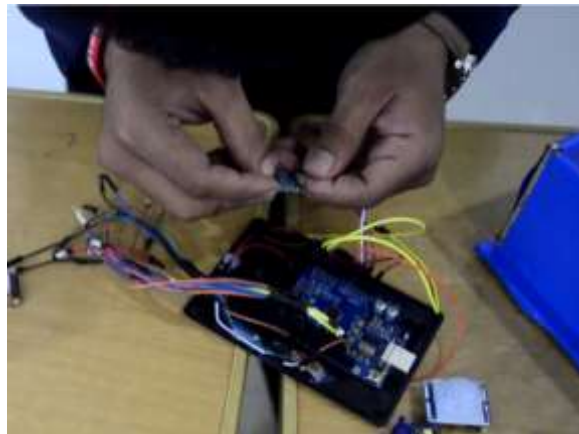
**Figure 6** Motor servo

Installation of this GSM module serves to inform homeowners that there are other people into his home, the information provided in the form of text messages



**Figure 7** Module GSM

The process of wiring on the bluetooth module to the arduino microcontroller component see figure 8



**Figure 8** Installation process

After all components are installed, then attach the arduino to the casing and trim the cables on each component figure 9



**Figure 9** The process of fireplace and casing installation

After All the components inside the casing is installed, then we put the pear sensor and buzzer on the prototy mini home made figure 10



**Figure 10** Pear sensor and buzzer installation process

Once the Pir Sensor and buzzer is installed, then attach the casing cover of the fire cover and servo motor near the door like gambar 11



**Figure 11** Installation Cable cover and servo motor

### 3. Safty Hoe By Using Snsor Pir dan module GSM ARDUINO



The results of experiment obtained better security results because of the buzzer that will issue a sound when the pear sensor detects the movement of people in the house when the main door has been locked from outside using android applications that have been integrated with home safety equipment. then with the GSM module then the home security tool can send a message to the home owner directly.

### 4. Conclusion

By using documentation in the form of vidio presentation of the project results in this paper can be used for learning media on home security system based on microcontroller. Because in the vidio described the stages of assembly, the installation of components and the program into arduino components

### Acknowledment

To Safety Team Home Syamsudin, and Fernando As Cameraman

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