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SAM: Bluetooth Controlled Security Alarm System

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Abstract: Home Automation is a part of "Internet of Things", also known as "Domotics". The Internet Of Things is a concept, which aims to make physical objects connected to the internet which eases handling or controlling security systems and many electrical appliances. In this work, a security alarm system has been designed by using ARDUINO UNO, an 8-bit ATMEGA 328p microprocessor which controls the door, security cameras, and other types of sensors used in home. The system contains a buzzer alarm which can be buzzed in case a door is opened. The alarm is controlled by Bluetooth SPP Manager. Most of the home automation projects are used for controlling the appliances such as light, fan, etc. In this work, a novel idea of security alarm system, SAM, has been proposed to increase the security of the home in case someone is away.
*Keywords: Arduino Uno, Bluetooth, IoT, Security*

I. INTRODUCTION

Security is one of the primary concerns every day. Most of the existing IoT based home automation system, controls fan, light, door, etc. In this work, a Bluetooth controlled home security alarm system, SAM, has been proposed which makes use of an Arduino Uno, Bluetooth module, Bluetooth SPP Manager, and a buzzer. In this work, an added feature has been added which alarms the outdoor human about the status of the home lock and the indoor human about the status of the door. It also involves remote door locking in case someone forgets to lock the door. The message will be displayed in the phone. In existing Bluetooth based home automation system [1], the home appliances are connected to the Arduino UNO board at input output ports using relay. The program of Arduino UNO board is based on high level interactive C language of microcontrollers; the connection is made via Bluetooth. The password protection is provided so only authorized user is allowed to access the appliances. The Bluetooth connection is established between Arduino UNO board and phone for wireless communication. In this system the python script is employed and it will install on any of the Symbian OS surroundings, it is portable. One circuit is meant and enforced for receiving the feedback from the phone, that indicate the standing of the device.

1) *The Proposed Work:* The proposed model is based on controlling the door of home and sound alarm in case of unwanted opening. Bluetooth module has been used to give commands to control the door lock by using an application. In this work, the Arduino board plays an important role. In this work, Bluetooth technology has been used so that it can be controlled by smart phones.

2) *System Specification*

a) *Hardware Used*

i) *Arduino UNO:* The ARDUINO is a microcontroller board which is based on ATMEGA328-p.It has 14 digital pins in which 6 pins are PWM inputs and 6 pins are analog input.
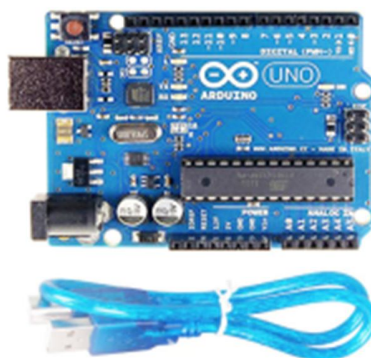
ii)   *Bread Board:* A board for making an experimental model of an electric circuit.
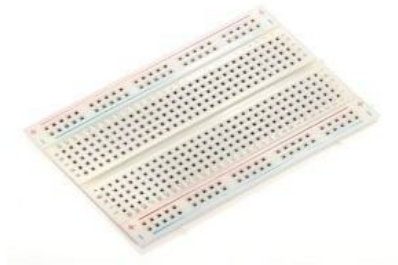
iii)   Jumper wires: Jumper wires are simply wires that have connector pins at each end , allowing them to be used to connect two points to each without soldering

iv)   *Buzzer:* A buzzer or beeper is an audio signalling device which may be mechanical, electromechanical, or piezoelectric.


v)   *Door Sensor:* A reed switch consists of a set of electrical connectors placed slightly apart. DOOR Sensors have one reed switch and one magnet, creating a closed circuit. If someone opens an armed door or window, the magnet is pulled away from the switch, which breaks the circuit and triggers an event.


b)   *Software Used*

a)   *Arduino IDE:* Arduino consists of a physical programmable card (often referred to as microcontroller) and a software, or IDE (Integrated Development Environment) that runs on a machine. It is used to write and transfer code to the physical board.

b)   *Bluetooth SPP Manager:* Bluetooth SPP Manager is an application, which provides communication between two Bluetooth devices. Therefore, it uses the RFCOMM Protocol, also referred to as Serial Port Protocol (SPP) to transmit information between devices. It is possible to establish varied properties of the Bluetooth devices around and hook up with them as long as they support SPP. It is also achievable to open up a Bluetooth server, to accept incoming connections from any other device. This app has an Integrated Real Clock Manager. With this, it is possible to send the current or predefined time to a remote device and can so be used for instance to set the RTC of a microcontroller and show the current time on a LCD.
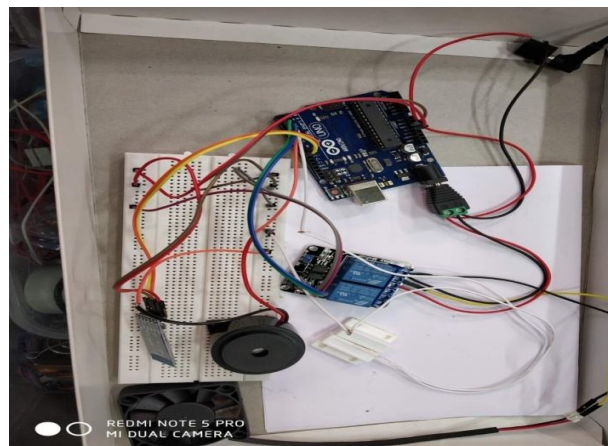
II. DATA FLOW DIAGRAM
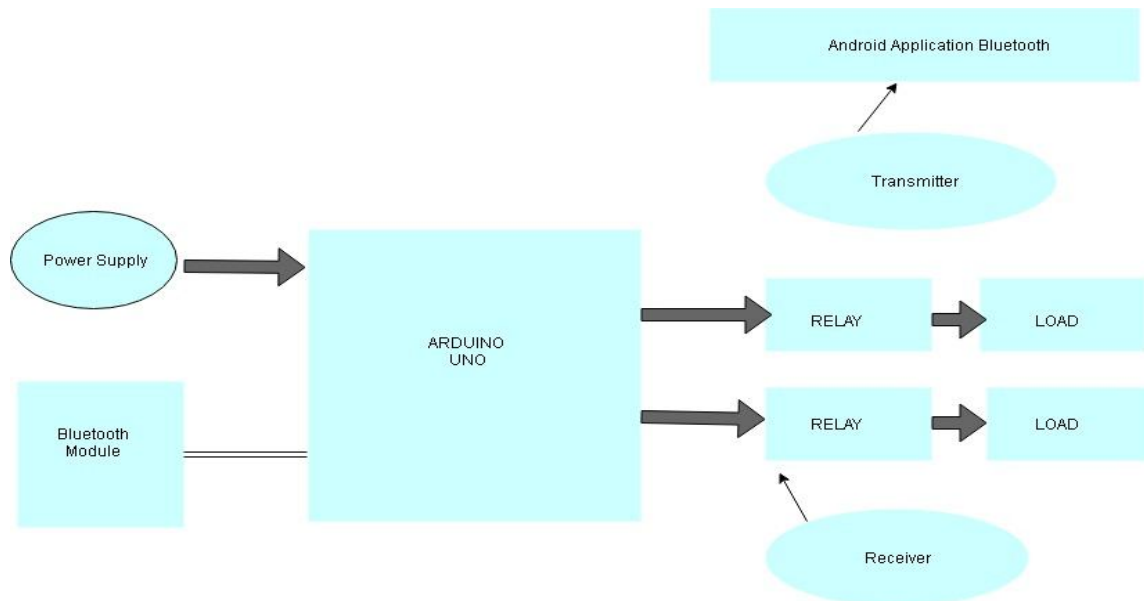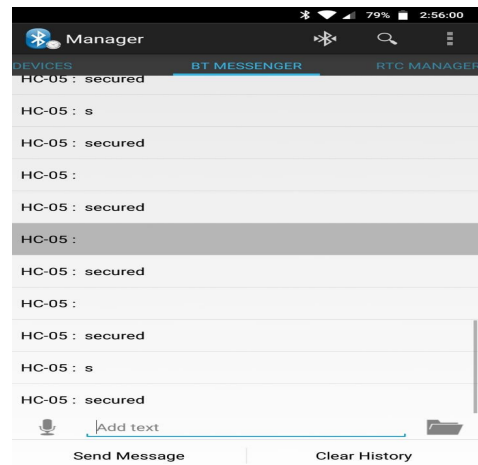

III. CIRCUIT DIAGRAM
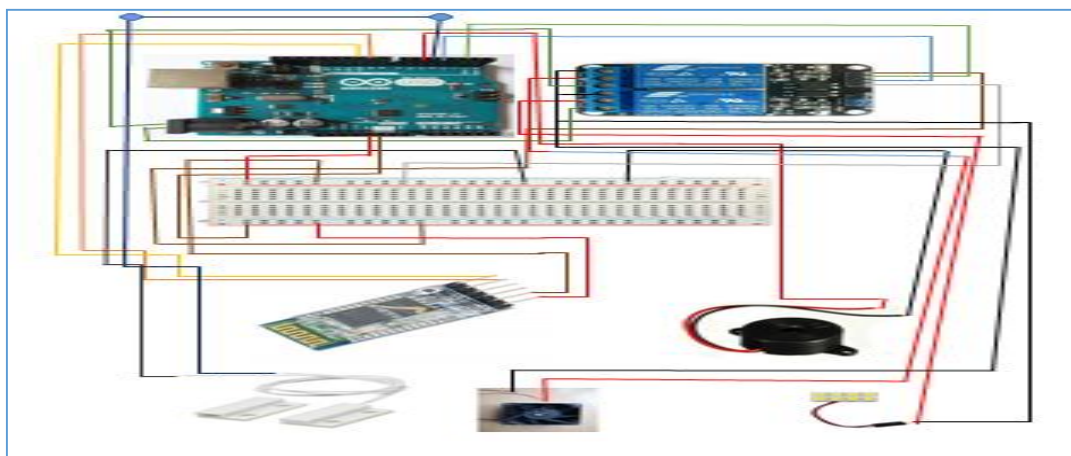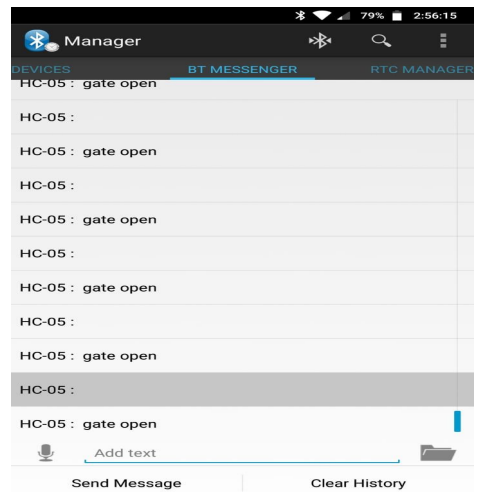

IV. RESULT & OUTPUT
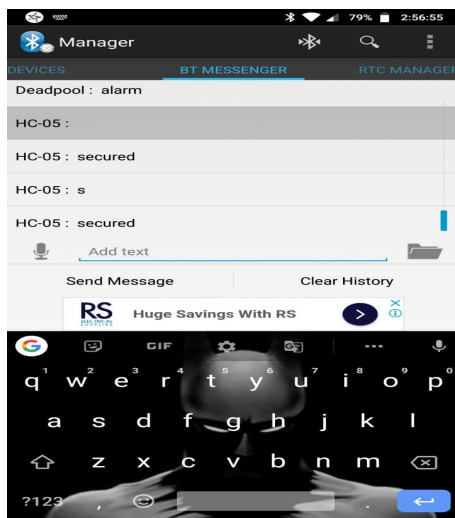
Door Closed

Message in Bluetooth Manager

Door Open

Message in Bluetooth Manager

Type "Alarm"

Buzzer Sounds

V. CONCLUSION

IoT can play a major role today in almost all the areas of human life such as health, agriculture, security, etc. In this work, IoT has been used for a preliminary security project wherein if the door is open and the user is far, then a buzzer will alarm. The user will receive a notification. The future scope of this work is automatic door closing.

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