International Journal of Innovative Research in Science and Engineering
Vol. No.2, Issue 10, October 2016
www.ijirse.com
ISSN (O) 2454-9665
ISSN (P) 2454-0663

ACTIVATION, AUTHENTICATION AND VALIDATION OF USER FOR HOME SECURE ACEESS USING RFID AND GSM TECHNOLOGY

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ABSTRACT

*Today it is very important to have home security system to get installed in our home premises, peoples spend a lot of huge amount on big chunk flats but when question rises about home security they turn their back by spending less amount, as such the security is only for their purpose and need. So having the security issue in mind we have develop with this project with the name "**ACTIVATION, AUTHENTICATION AND VALIDATION OF USER FOR HOME SECURE ACEESS USING RFID AND GSM TECHNOLOGY** "as the name suggest the complete project is concerned with implementing the idea into a real project. So we have debate to use LPC2148 controller, and try to fill out all the pit holes that may lack to cover all security need that a person can need in harsh conditions. In this project we are using RFID technology for the door open and close, when the RFID tag placed on the reader, reader will sends the receiving data to the controller then the controller will compare the receiving data with saved data if both are same then OTP send to the phone number which we are already stored in the controller through the GSM. And also we are providing some security from any breakage of window glasses etc. with the sound sensors. Security systems are trust worthy than a person is concerned because there is always a technological promise that a system can offer and a person can trust. As too complete security application the project size, visibility and make it more users friendly only to the authenticated person to whom the project is design, we are also committed to give different security solution as per client need.*

Keywords: Lpc2148, RFID card & reader, GSM module, Sound Sensor, keypad .

I. INTRODUCTION

Security is the aim of this project so instead of using controller we have planned to use processor. So the processor used in this project is that 32 bit ARM7 with GSM, RFID card, 4x3 KEYPAD and some basic components. The following project is a prototype to the complete considers idea. The GSM module used in the project is to sends SMS to the house owner in case of any emergency and OTP for opening the door after placing the valid RFID card.

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II. LITERATURE REVIEW

2.1 Existing System

In the existing system they used only the RFID technology as a security system for opening the door in home security applications with 8051 and also some basic controller.

2.1 Proposed System

In this proposed system we are using LPC2148 controller, it consumes very less power and high speed. And also we are providing some additional features to this project like GSM technology for sending OTP to owner when we opening the door. And we are providing some security like information of breaking any window glasses to the owner through the GSM. The breaking of glass is detected by the sound sensors.

BLOCK DIAGRAM

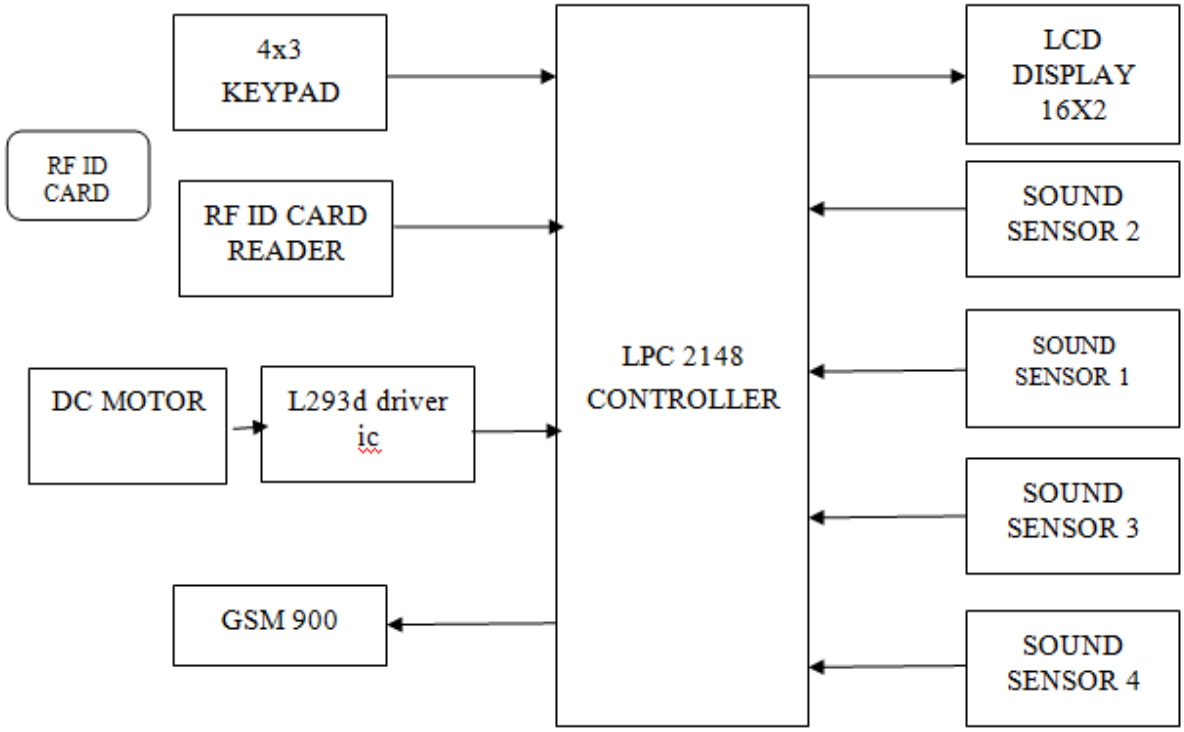

Fig 1: block diagram

2.3 Lpc2148 Microcontroller

The LPC2148 microprocessor belongs to ARM 7 family. The LPC2148 board is a 32 bit ARM7TDMI-S microprocessor with real-time emulation. It consist of 8 kilobyte to 40 kilobyte of on chip static RAM and 32kb to 512kB of on chip flash memory, the microcontroller works with 12 MHz crystal frequency

The processor also support different protocols suite such as ISP (In System Programming),10 bit ADC affords variable analogue output , 32-bit timers with external event counter (with 4 capture and match channels).

ISSN (O) 2454-9665
ISSN (P) 2454-0663

The processor also has RTC inbuilt thus extra hardware for the timer is not required.lpc2148 has 2 serial terminals which is called as UART0 and UART1.The same controller also has SPI and I2C bus with a speed of (400kbit/s).

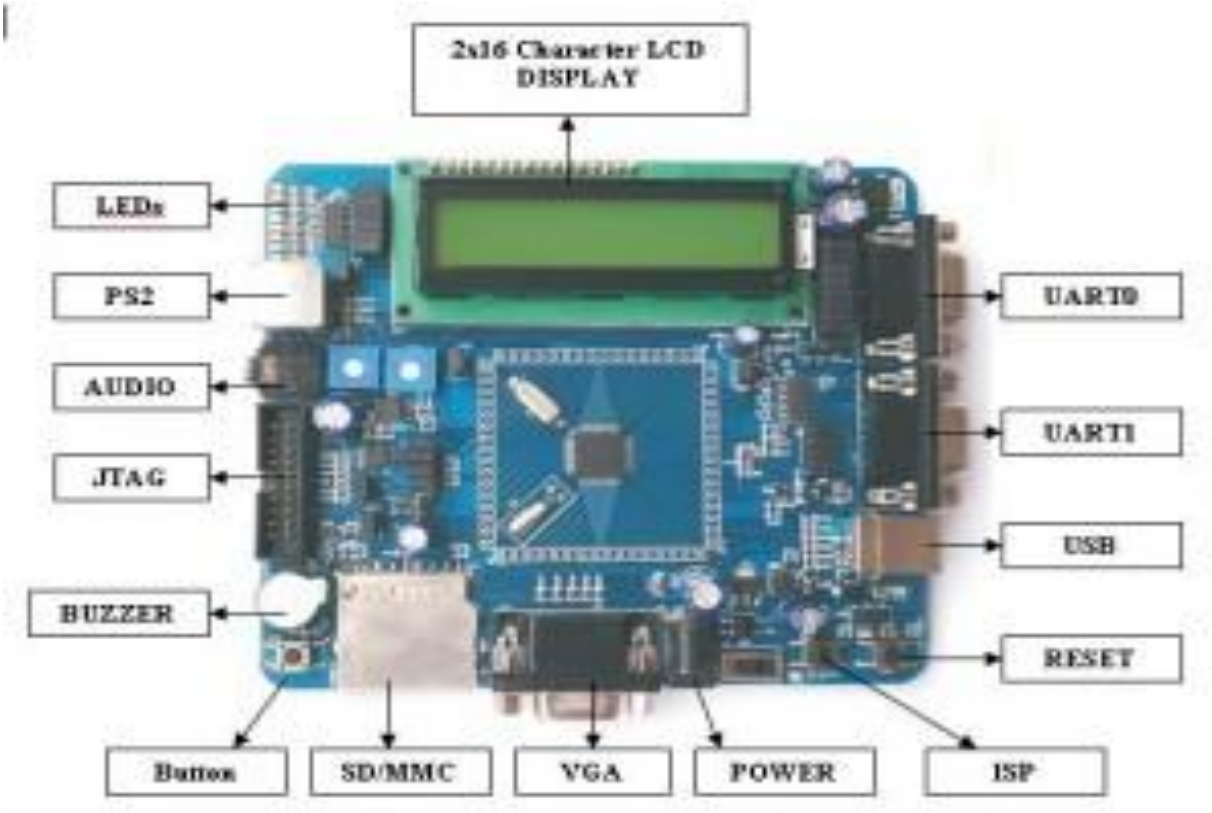

Fig 2: ARM7 **LPC 2148 Development Board**

The development board for the lpc2148 is shown above is used in the project which is interface with the GPS and RF module.

2.4 Sim 900 Gsm Modules

Fig 3: SIM 900D GSM MODULES

The module shown in the above fig is SIM 900D is a powerful GSM module for SMS and call control. The manufacture of the module is SIMCOM which presents an ultra-compact and reliable wireless module sim900d. The module is a complete quad-band GSM/GPRS module with a SMT type and is designed with a powerful single-chip processor. The device is integrated with ARM926EJ-S Core, allowing the customer to have small dimension and cost-effective solutions. The same module is also compatible with SIM340DZ. The same module delivers GSM/GPRS 850/900/1800/1900MHZ performing for voice, SMS, data, and Fax in small form factor

III. RFID CARD & READER MODULES

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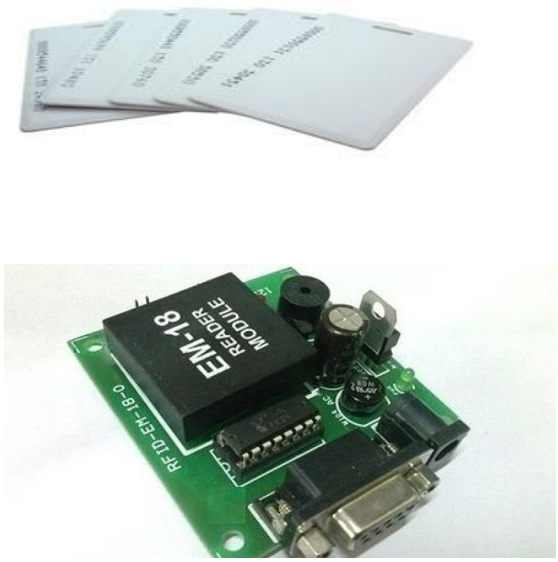

Fig 4: RFID CARD&READER

Radio-frequency identification (RFID) is an automatic identification method, relying on storing and remotely retrieving data using devices called RFID tags or transponders. An RFID tag is an object that can be applied to or incorporated into a product, animal, or person for the purpose of identification using radio waves. Some tags can be read from several meters away and beyond the line of sight of the reader. Most RFID tags contain at least two parts. One is an integrated circuit for storing and processing information, modulating and demodulating a (RF) signal, and other specialized functions. The second is an antenna for receiving and transmitting the signal. Chip less RFID allows for discrete identification of tags without an integrated circuit, thereby allowing tags to be printed directly onto assets at a lower cost than traditional tag.

Fig 5: SOUND SENSOR MODULES

IV. SOUND SENSOR MODULES

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Sound Sensing and Detection module is very simple Microphone with a power full amplifier. The module offers threshold level window in which the sound can get latch. The threshold level can be adjusted with the help of a pot resistance of 10k connected to the circuit. The module gives output in terms of HIGH /LOW voltage.Working voltage: 3.3V-5V.

4.1 L293D

The l293d are using high-current gain and half-H drivers. The l293d gain of currents up to 1A at voltage from 4.5vto 36v.both devices are designed to drive inductive loads such as relays. its connecting dc bipolar stepping motors as well as other high current/voltage loads in positive-supply application.TTL inputs are compatible.

Fig 4:l293d driver IC

4.2 Key Pad

A keypad is a set of buttons organized in numbers and letters, digits and other symbols however not a complete set of alphabetical letters. If it mostly contains numbers then it will conjointly be known as a numeric data input device. Keypad area unit victimization typewriting of security purpose area unit found on several alphabetic keyboards and on alternative devices such as calculators. It's given that an data input device, sometimes half of a typical keypad, consisting of a separate grid of numerical and function keys organized for economical information entry.

International Journal of Innovative Research in Science and Engineering
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Fig 5 : 4X3 keypad

V.SOFTWARE DESIGN

In this proposed project, we are using lpc2148 microprocessor and need to use the following software equipment to program for it.

1. Keil uvision 5.

2 flash programmer.

The keil micro vision is an IDE embedded c programming language. In this ide, we need to import all the utilities and libraries according of the controller. This IDE is very less difficult and is user friendly way to apply. It consists of all the c/c++ compilers, assemblers and debuggers in it. Here we need to generate a hex file to run the processor. The hex file consists of only binary numbers which is dumped in to the microprocessor.The flash magic is the programming software. The c/c++ software is written in ide may be processed into hex documented i.e. Hex file. By using the same hex file into the microcontroller and perform the task with application

VI. WORKING DESCRIPTION

In this project we are using RFID technology for the door open and close, when the RFID tag placed on the reader, reader will sends the receiving data to the controller then the controller will compare the receiving data with saved data if both are same then OTP send to the phone number which we are already stored in the controller through the GSM. And also we are providing some security from any breakage of window glasses.

VII. RESULT

Here the results are shown our project “Activation, Authentication and Validation of User for Home Secure Access Using RFID and GSM Technology” whenever a person placed a RFID tag on the RFID reader then the GSM will sends the OTP number to the owner through GSM, then the particular person need to enter the OTP number by using keypad then the door will be opened. And also this project is detecting the breakage of things inside the house by the sound sensor.

ISSN (O) 2454-9665
ISSN (P) 2454-0663

VIII. CONCLUSION

The conclusion of this project is that we can provide the security to the homes by using RFID for open the door and the GSM works as the communication device between owner and their home for getting the securing information.

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