IOT BASED SMART HOME.

[1]Bharadwaj Prakash Chathe.
[2]Monali Rajendra Lahamge.
[3]Pranita Tanaji Pawar.
[4] Prof: P.S.Bibave.

[1] *Bharadwaj Prakash Chathe , Student, Electronics & Telecommunication, SIR VISVESVARAYA INSTITUTE OF TECHONOLOGY, Maharashtra, INDIA*
[2]*Monali Rajendra Lahamge, Student, Electronics & Telecommunication, SIR VISVESVARAYA INSTITUTE OF TECHONOLOGY, Maharashtra, INDIA*
[3] *Pranita Tanaji Pawar, Student, Electronics & Telecommunication, SIR VISVESVARAYA INSTITUTE OF TECHONOLOGY, Maharashtra, INDIA*
[4] *P.S.Bibave, Assistant Professor, Electronics & Telecommunication, SIR VISVESVARAYA INSTITUTE OF TECHONOLOGY, Maharashtra, INDIA*

ABSTRACT

This paper presents the overall design of Home Automation System (HAS) with low cost and wireless remote control. This system is designed to assist and provide support in order to fulfill the needs of elderly and disabled in home. Also, the smart home concept in the system improves the standard living at home. The main control system implements wireless Bluetooth technology to provide remote access from PC/laptop or smart phone. The design remains the existing electrical switches and provides more safety control on the switches with low voltage activating method. The switches status is synchronized in all the control system whereby every user interface indicates the real time existing switches status. The system intended to control electrical appliances and devices in house with relatively low cost design, user-friendly interface and ease of installation Wireless Home security and Home automation are the dual aspects of this project. The currently built prototype of the system sends alerts to the owner over voice calls using the Internet if any sort of human movement is sensed near the entrance of his house and raises an alarm optionally upon the user's discretion. The provision for sending alert messages to concerned security personnel in case of critical situation is also built into the system.

Keyword : - *Home automation ,Smart home ,Home Appliances , Android .*

1. INTRODUCTION

In this ever growing field of electronics everything which is manufactured is too compact and easy to handle and to understand. The world is moving towards the automation; day by day as technology is improving new systems are introduced. Lockers are used to keep the money, jewelers, important documents etc. Locker security is most important for the safety of the valuables. There are many cases of bank robbery from the bank lockers. . In today life bank atm centers are also not safe enough as there has been some cases of money robbery from these atms. Taking this in account we have provided a reliable locker access system which provides safe and user friendly operation. In this project we are proposed programming code from arm7 controller embedded because we are more familiar with arm7 controllers and now a day's arm7 controller is demanding. We all know that the security is ours primary job in today world, but most human cannot and the ways to provide security to their confidentially belonging manually. As today fingerprint based system provides high degree of accuracy in terms security. Therefore, we have decided to introduce a system for locking which is based on the finger print scanning. Our project will provide high degree of security with no manual flaws. Our project basically, is a combination of embedded systems and biometrics. An embedded system is a combination of computer hardware and software, i.e. software is implemented on the hardware which has a key characteristic that it is dedicated for the particular task. Design engineers optimized the size and characteristics of the microcontrollers, the cost of the product also decreased which make it commercial.

Basically, embedded system is real time operating system which provides output without delay. In fingerprint locking system there is huge demand of high speed operating systems which is fulfilled by embedded systems.
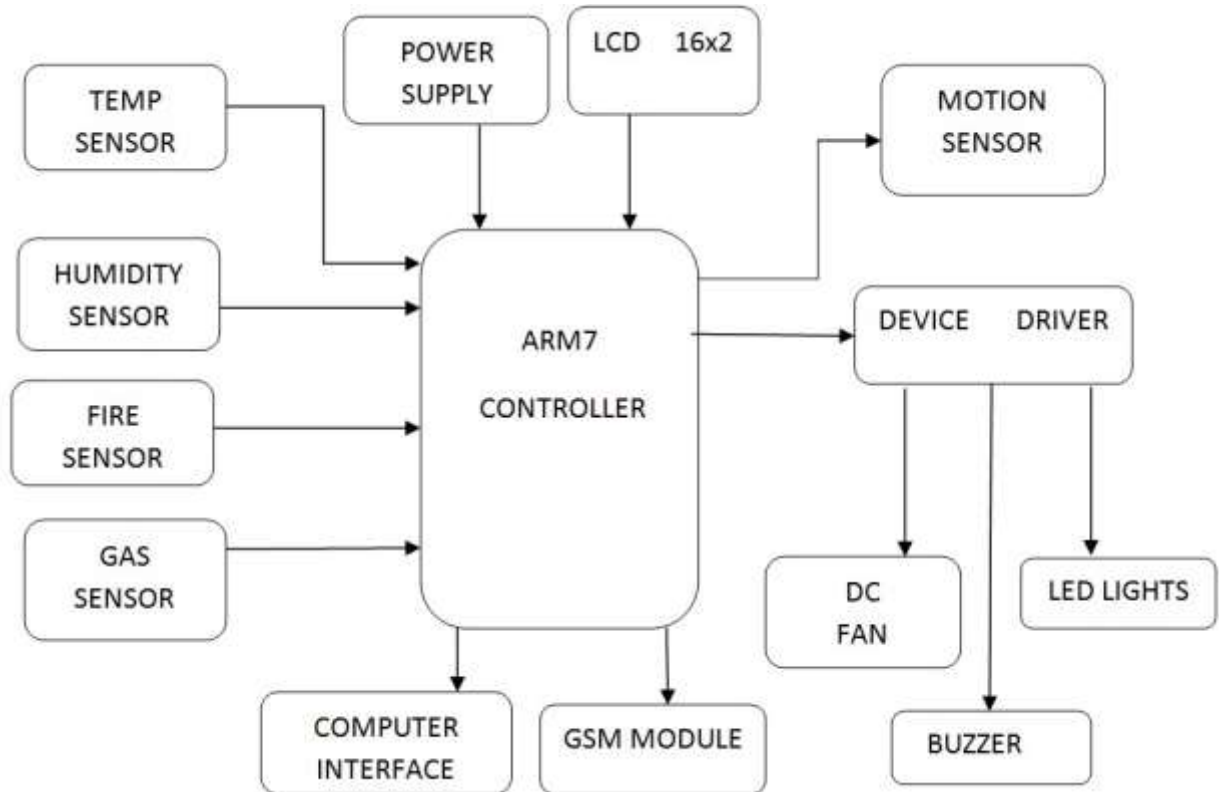
2. BLOCK DIAGRAM

Fig -1: Block Diagram

2.1 LPC2141/42/44/46/48
Battery is used for storing the energy come from solar .

2.2 Device Driver
A Program that control the device. Every device, whether it be a printer ,device disk drive , keyboard must have a driver program.

2.3. LM35 SENSOR

This day The LM35 series are precision integrated-circuit temperature sensor with an output voltage linearity proportional to centigrade temperature.Thus the LM35 has an advantage over sensor calibrated in kelvin.the LM35 is does not required any external calibration or trimming to provide typical accuracies of at room temperature or -50 to +150 degree selcius temperature range. the low output impedance,linear output,and pricise inherent calibration of LM35 make interfacing to readout or, control circuitry especially easy. Load calibration of the LM35 make interfacing to readout or control circuitry especially easy. The device is used with single power supplies, or with plus and minus supplies. As the LM35 draws only 60 μA from the supply, it has very low self-heating of less than 0.1°C in still air. The LM35 is rated to operate over a −55°C to +150°C temperature range, while the LM35C is rated for a −40°C to +110°C range (−10° with improved accuracy). The LM35 series is available packaged in hermetic TO transistor packages, while the LM35C, LM35CA, and LM35D are also available
in the plastic TO-92 transistor package.

Figure -2: How to work LM35.

2.4. GSM

This GSM Modem can accept any GSM network operator SIM card and act just like a mobile phone with its own unique phone number. Advantage of using this modem will be that you can use its RS232 port to communicate and develop embedded applications. Applications like SMS Control, data transfer, remote control and logging can be developed easily. The modem can either be connected to PC serial port directly or to any microcontroller.It can be used to send and receive SMS or make/receive voice calls. It can also be used in GPRS mode to connect to internet and do many applications for data logging and control. In GPRS mode you can also connect to any remote FTP server and upload files for data logging. This GSM modem is a highly flexible plug and play quad band GSM modem for direct and easy integration to RS232 applications. Supports features like Voice, SMS, Data/Fax, GPRS and integrated TCP/IP stack.

Figure -3: GSM Module.

3. APPLICATION

1.Appliance control and integration with the smart grid and a smart meter, taking advantage, for instance, of high solar panel output in the middle of the day to run washing machines.

2.Security: a household security system integrated with a home automation system can provide additional services such as remote surveillance of security cameras over the Internet, or central locking of all perimeter doors and windows.

3.LPG detection.

4.Indoor positioning systems.

5.Home automation for the elderly and disabled.

6.Any device controling.

4. CONCLUSION

In conclusion, this low cost system is designed to improve the standard living in home. The remote control function by smart phone provides help and assistance especially to disabled and elderly. In order to provide safety protection to the user, a low voltage activating switches is replaced current electrical switches. Moreover, implementation of wireless Bluetooth connection in control board allows the system install in more simple way. The control board is directly installed beside the electrical switches whereby the switching connection is controlled by relay. Furthermore, flexible types of connections are designed as backup connections to the system. The connected GUIs are synchronized to the control board. They indicate the real-time switches status. The system is designed in user-friendly interface. The easy to use interface on Window and Android GUI provides simple control by the elderly and disabled people. For future work, the Window GUI will be implemented with speech recognition voice control. The android GUI will be implemented as a remote Bluetooth microphone to the Window GUI. All the voice signal inputs to the smart phone will be transmitted to the Window GUI for signal processing. Also, the push buttons implemented in low voltage activating switches will be replaced by capacitive sensing switches. All the future work is expected without spend extra cost, even one cent from the current system.

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5. ACKNOWLEDGEMENT

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