International Journal of Advanced Information Science and Technology (IJAIST) ISSN: 2319:2682
Vol.4, No.5, May 2015 DOI:10.15693/ijaist/2015.v4i5.32-34

Smart Home

NITIN JAIN
Assistant Professor/Department of ECE
NIT, Allahabad, India

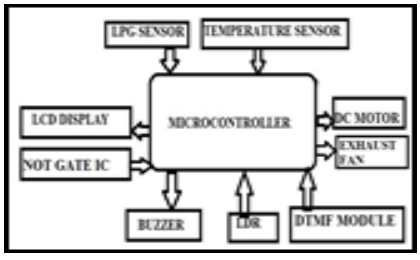
ASHWANI PANDEY
B.Tech degree in electronics and communication engineering from BBD.

***Abstract*—Smart home technology come into picture by more than a decade to introduce the concept of Microcontroller and the various equipment attached to this in the house. The international smart home association states: smart home is desegregationist of technology and useful through microcontroller for a better quality of living. Many equipment that are used with micron roller can also be desegregated in smart home systems .In this paper we present the technology and equipment that can be desegregated or applied in smart home system.**

INTRODUCTION-

The paper illustrates the design and implementation of my "Smart Home project. The Smart Home consists of many modules in it. The Gas sensor module detects the gas leakage in kitchen. The gas sensor is sensitive to Methane and Butane gas. These Gases are found in remarkable amount in LPG gas used in homes. The next module is the temperature sensor module which has LM 35 as the temperature sensor. As soon as there is a temperature rise due to presence fire, the temperature sensor detects it and converts the rise of temperature in terms of analog output. This analog output goes to the microcontroller. If the analog voltage is matched with its binary conversion saved in the memory of the microcontroller, the microcontroller commands the buzzer to ring and alert the residents that there is fire alert. The next module is the LDR module which detects the presence of darkness in room. If there is darkness in the room the circuit of the LDR module is opened and the signal goes to the microcontroller to switch on the light bulbs. Another module called the DTMF module controls the door access of the house. The password controls the access to the door.

PROJECT SPECIFICATION-

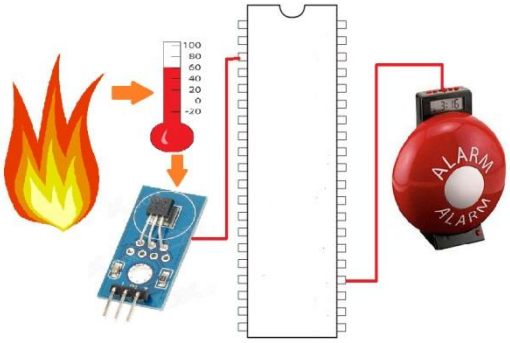


-

. PROBLEM DESCRIPTION

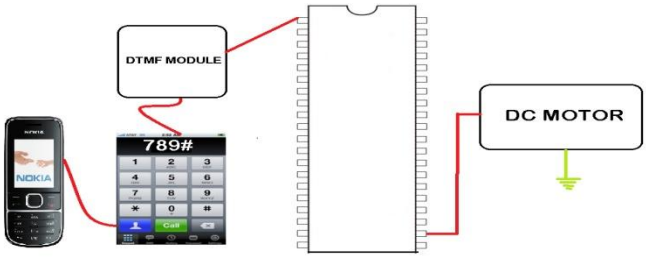
- To detect fire and ring the buzzer
- To detect the gas and ring the buzzer.
- To ensure password protected door security system.
- To turn on lights only when they are needed at night.

TEMPERATURE SYSTEM-



- The fire alarm system consists of a temperature sensor that is connected to the microcontroller.
- When the temperature goes above the threshold temperature the alarm is blown which confirms that there is a fire alert which should be immediately taken care of.
- The temperature sensor used here is LM-35 heat sensing IC.

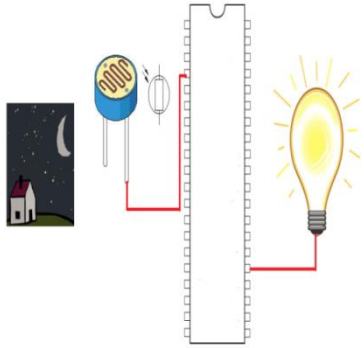
DOOR SECURITY SYSTEM-

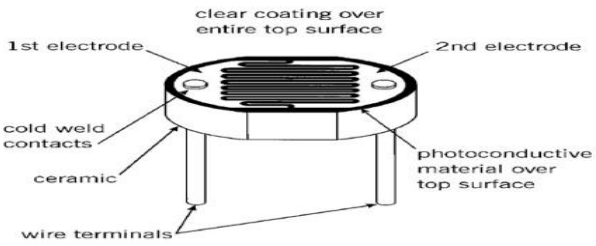


- The door security system consists of a DTMF module which is connected to a mobile phone permanently.

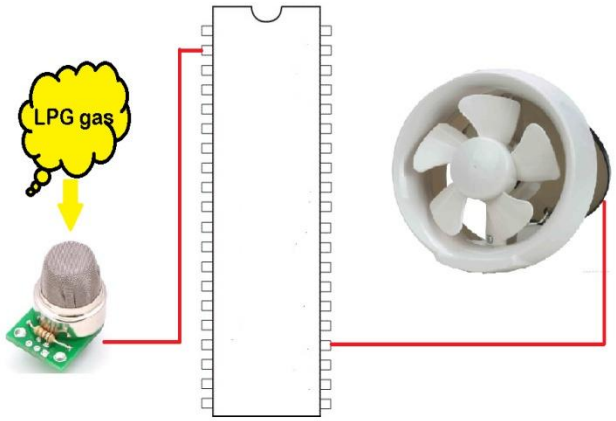
- The user has a mobile phone through which he enters the predefined password which is coded in the microcontroller program.
- The user calls on the mobile phone that is connected to the DTMF module.
- As soon as the user calls the call is automatically received at the other end. The user now enters the code number the frequency beep corresponding
- Toeach number is received by the DTMF module which sends the signals to MCU.
- If the code is correct the signal is sent from the MCU and the DC motor opens the door knob.

LIGHT CONTROLLING SYSTEMS-





- The LDR module consists of the Light Dependent Resistor.
- As soon as the intensity of light decreases the LDR increases its resistance i.e., makes it open circuit. At open circuit the output is high, correspondingly the controller switches on the home lights.



- If the concentration of the LPG gas exceeds the threshold value that is stored in the program fed in the controller, the gas sensor detects the gas and sends the signal to the microcontroller.
- The microcontroller switches on the alarm and the exhaust fan immediately so that the hazardous gas in blown off the kitchen.

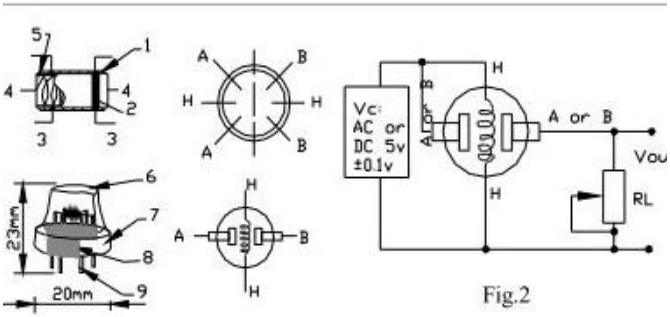


Fig. 1 Fig.2

In conventional common home due to lack of technological support, several disasters may occur due to human errors or carelessness. The world has gone through a phase of numerous fire hazards often by gas leakage therefore there is a need to provide such a technical support to the society so that somehow these fatal hazards can be avoided .Now a days burgling has been a serious problem, a security solution is always required. The conventional manual alarm systems are not that efficient therefore an automatic system for the purpose has to be developed. In India there are still several rural areas that are running out of electricity supply, hence it is obvious that the generation is less than the demand of power. Therefore it's our moral duty conserve the power for our future generation. This project SMART HOME serves all the above very needs. As far as the future scope of the project is

concerned for a fire alarm system a wireless or wired connectivity can be provided between homes and the fire brigade stations. The system has to be enabled with GPS so that the fire brigade workers can easily locate the sufferers. To locate the exact suffered area ZigBee can also be a useful technology. Futuristic scopes in gas leakage detection system may be that the power supply of the claimed home can be cut prior to any electrical execution. Some artificial intelligence may also be added that would monitor the situation and take corresponding action. In case of LDR cloudy weather may create a problem due to low intensity of light falling on LDR. To overcome such problems the system can be provided with internet connectivity so that it can monitor daily weather updates and thereby taking decisions on the basis of whether the weather is sunny or cloudy, differently. DTMF technology turns out to be a restriction as it operates with a mobile handset that may suffer through several problems of network charging and others. Therefore using RF instead of DTMF may be proved more beneficial for the purpose. More futuristic scopes may be using finger print, face and voice command recognition.

REFERENCES-

- All datasheets from www.datasheetcatalog.com
- About AT-16L from www.atmel.comAndwww.triindia.co.in
- Mohd Helmy Abd Wahab 2010 "Design and Development of DTMF for Attendance System", 978-1-4244-5651-2/10, 2010,
- QunHou,, Wuhan, Hubei, 2010 "Research and Implementation of Heat Rate (LM 35)Monitoring System MCU", CHINA,
- GilatAmos, MATLAB Introduction with Applications", John Wiley & Sons,2nd Eddition,2004.
- Embedded C Programming and the Atmel AVR; Richard H Barnett, Sarah Cox, Larry O'Cull; 560 pages; 2006;
- Atmel AVR Microcontroller Primer : Programming and Interfacing; Steven F Barrett, Daniel Pack, Mitchell Thornton; 194 pages; 200
- "Tracking and Imaging systems" by G.B. T.B. Binnne and L. Lee Gas leakage and Detection Mechanisms in Electromechanical Systems.
- Interface application through www.infratech.de/sensorik/
- Datasheet of LM 35
- Datasheet of MQ-5
- Datasheet of CM8870
- U. Gopinathan and DJ Braddey's "Coded aperture for efficient pyroelectric motion of electron for LDR.
- Dr. S. Laparkanu and GS Hardley's "Frequency Modulation and Demodulation and Systhesis"
- Er. Hou Shang in 1968 gave "Specific Electronic under monitored conditions"
- PC Hobbs, "thermal infrared Butane sensing" in 2001.

Authors Profile

ASHWANI PANDEY received the B.Tech degree in electronics and communication engineering from BABU BANARSI DAS EDUCATIONAL SOCIETY GROUP OF INSTITUTIONS affiliated to U.P.T.U LUCKNOW

NITIN JAIN is currently working as Asst Professor and Head of EC department in BABU BANARSI DAS GROUP OF EDUCATIONAL INSTITUTIONS LUCKNOW he has completed his M tech in EC from NIT Allahabad his area of interest is wireless Communication, protocols. Applications.