GSM BASED HOME AUTOMATION AND GAS LEAKAGE DETECTOR

Rohit Bante[1], Pranjan Bhure[2], Kshitij Raut[3], Dr.Rambabu Vatti[4]
[1,2,3,4]Vishwakarma Institute of Technology, Pune

Abstract

This paper mainly focuses on home automation using GSM technology. It includes controlling of electronic devices like tv, light, refrigerator etc. it also gives an indication in case of gas leakage at home.

This is SMS based and wireless technology to take control of all home appliances. It revolutionize the standards of living. This system provides perfect solution to the problems faced by common people in day to day life. The system is more adaptable and cost-effective as it uses the GSM technology. It uses the commands to switch off and on the appliances. In case of LPG gas leakage it will warn you by sending a massage .overall this product helps to increase energy efficiency.

**Index Terms: (GSM). short message service (SMS), global system for Mobile communication.**

I. INTRODUCTION

The idea of home automation fascinating people from very early but due to lack of adaptable and reliable technology it was not that popular. It was very expensive in earlier years. Nowadays it is getting cheaper and more reliable due to enhancement in technology and its applications in the automation sector.

In the present years everyone wants wireless technology. In this project we have built a wireless GSM based circuitry design to control home appliances over the simple mobile phone with no need of internet facility. Only text messaging system is required in order to handle the appliances. As most of cellular companies are giving free text messaging, it makes this technology very cheaper. This product explains the use of GSM module SIM800 with Arduino. In this project we have elaborated the application of MQ5 smoke sensor in order to detect any gas leakage in the house.

II. SYSTEM DESIGN AND EXECUTION PROCESS
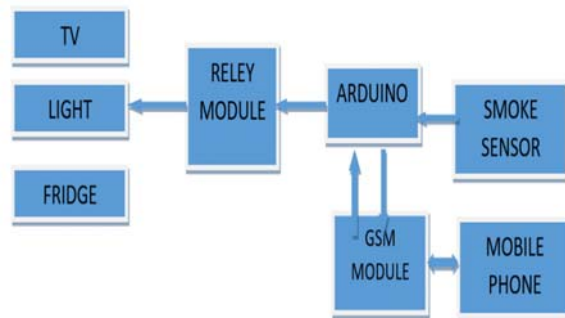
The core motivation of this project is to control over the appliances and detection of gas leakage in the house. we have used GSM module 800 as a receiving element in the home along with Arduino and relay module. we have added the application of smoke sensor in order to detect the gas leakage. As a flow diagram above shows the flow of commands we have to give the command through mobile phone by sending a text message, the receiving element is GSM module it will receive the message and transmits it to the Arduino. Arduino will convert the message into hardware understandable language and it will pass on the message to the relay circuit. And at final state relay will take control of the home appliances according to the given commands. As we have added the smoke sensor application

,consider a case when there will be gas leakage in the house. The smoke sensor will detect the gas and it will message back to the person that gas leakage is there

III. WORKING

In this project we are sending text message from any mobile phone through gsm module sim800 to the arduino With some commands such as #A.Light on* for switching On the light and #A.Light off* for switching of the light. The relays here are used for switching on and off of the appliances ,again with the commands such as #A.Fridge on* and #A.fridge off* we can switch on and off fridge respectively.With the command #A.all on and #A.all off we can switch on and off all the appliances respectively.

For gas leakage detector the MQ5 sensor will sense the leakage and will give output in terms of parts per million Which will be displayed in output window of arduino. When the range of gas sensor will be in between 200parts per million to 800 parts per million the buzzer alarm will beep and message alert will be sent automatically to the owner.The messange will be sent till the output of sensor Get reduced to 200 parts per million.

IV. RELATED WORK

In recent year large amount of research work is being done in GSM based home automation and gas leakage detection . Rozita Teymourzadeh [1] proposed the concept of home automation using AT commands and PIC16F887 microcontroller the project was implemented with four loads and showed almost 98% of accuracy.In other research B.M.O. Al-thobaiti [2] proposed the design of real time wireless home automation model using Arduino uno, The proposed consists of two operation modes. First mode was a manually-automated mode where the users were allowed to monitor and control their home appliances over Wi-Fi technology. Again another reseach D. Javale[3] proposed the working of home appliances on the basis of android adk(accessory development kit) here home appliances were connected to accessory development kit and communication was established between accessory development kit and mobile. P.kumar [4] proposed model on Arduino based wireless

intrusion detection using IR sensor and GSM.In this model IR sensor was being used for the detection purpose and mobile phone or remote with IR sensor was used for switching on/off the appliances. A.shrivastava [5] proposed the model for gas leakage detection using MQ6 sensor and radio frequency. When the gas leaks and exceeds it level MQ6 detects the gas leakage and gives signal to the microcontroller with the help of ADC and alert the owner to prevent accidents.
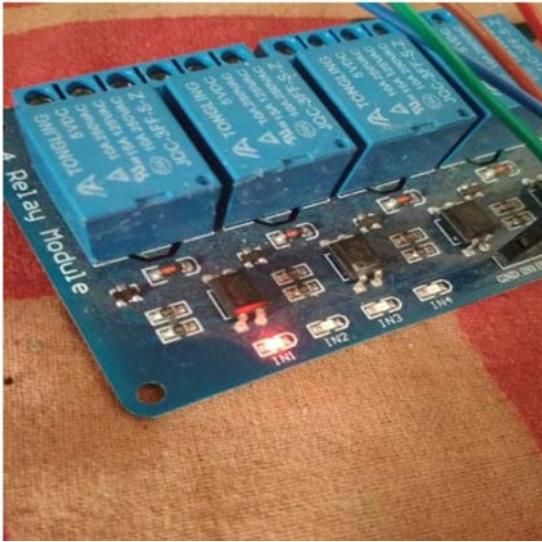
V.RESULTS

1.When the command #A.all on* is sent from phone through message we get output as follow:
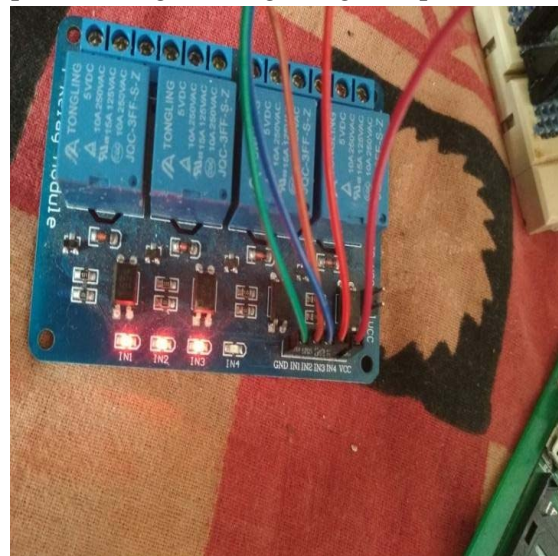
2. When the command #A.all off* is sent from phone through message we get output as follow:
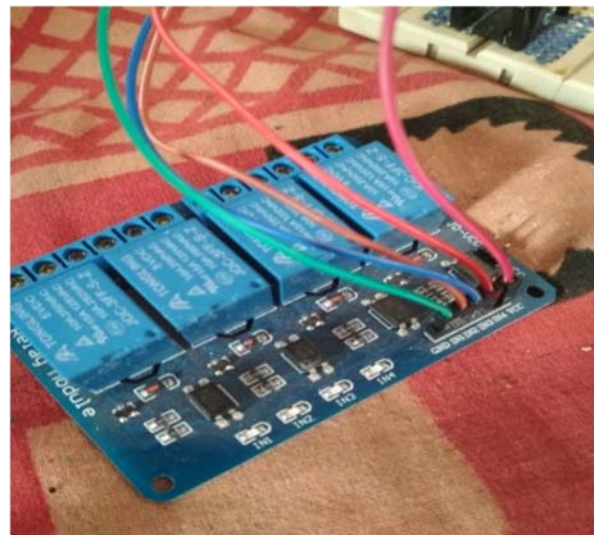
3.when the command #A.light on* is sent from phone through message we get output as:

VI. CONCLUSION

Nowadays Home Automation systems are hitting the markets. The development occurred in technology is the main reason behind the popularity of Home Automation systems. Everyone wants a smart home for that purpose, there are advanced technology devices are available in the market like ZigBee,x-10, Enocean, z-wave etc. The system consists of components which reduce the cost of the product. The proposed system is easy to install, easy to operate and is to understand, these things make this product a perfect one. As an application part, we can add a temperature sensor to it. We have tested a circuitry in the Proteus and implemented the circuit and it is working properly.

REFERENCES

1. "Smart GSM based Home Automation System" Teymourzadeh, R.; Ahmed, S.A.; Kok Wai Chan; Mok Vee Hoon Systems, Process & Control (ICSPC), 2013 IEEE Conference

2. B.M.O. Al-thobaiti, I.I.M. Abosolaiman, M.H.M. Alzahrani, S.H.A. Almalki, M.S. Soliman, "Design and Implementation of a Reliable Wireless Real-Time Home Automation System Based on Arduino Uno Single-Board Microcontroller", Vol. 3, No. 3, pp 11-15, July 2014.

3. D. Javale, M. Mohsin, S. Nandanwar, M. Shingate, "Home automation and security system using android ", and Computer Technology, Vol. 3, Issue 2, Pp. 382-385,2013International Journal of Electronics Communication

4. P. Kumar, "Arduino Based Wireless Intrusion Detection Using IR Sensor and GSM", International Journal of Computer Science and Mobile Computing, vol. 2, no. 5, pp. 417-424, May 2013.

5. A.Shrivastava, R.Prabhaker, R.Kumar and R.Verma, "Gsm based gas leakage detection system" International Journal of Technical Research and applications.