GSM BASED HOME AUTOMATION USING ARDUINO

Abin Abraham Godwin[1], Vishal V.A[1], Sinciya P.O[2]

[1]UG Student, [2]Assistant Professor, Department of Computer Science & Engineering, Noorul Islam Centre for Higher Education, Kumaracoil, Kanya Kumari , Tamil Nadu, India- 629 180

ABSTRACT

GSM (Global system for mobile) based Home Automation using ARDUINO has been widely used in Internet Of Things(IOT). The automation techniques that can be applied at home to control home appliances remotely. Through engineering techniques easy drive and friendly environment can be ensured. Controllers and sensors are used for automation. Our main idea is to develop a system to provide people a living environment with security, convenience, comfort, environmental protection and intelligence. It will also be locally maintainable. This project is to design smart home services will bring people a new living experience, and creates a smart way of living, as it can provide intelligent, individual services according to the changing of environment, emergencies, status of user's, user's preferences and user's wishes. The main objective is to introduce a technology which will not only save money and time but also will prove to be beneficial and effective for the economy.

KEYWORDS: GSM module, arduino uno board, 5v relay, Lcd display, jumber wire.

I. INTRODUCTION

The new age of technology has redefined communication. Most people nowadays have access to mobile phones and thus the world indeed has become a global village. At any given moment, any particular individual can be contacted with the mobile phone. But the application of mobile phone cannot just be restricted to sending SMS or starting conversations. New innovations and ideas are generated from it that can further enhance its capabilities. Technologies such as

Infra-red, Bluetooth, etc which has developed in recent years goes to show the very fact that improvements are in fact possible and these improvements have eased our life and the way we live. Remote management of several home and office appliances is a subject of growing interest and in recent years we have seen many systems providing such controls.

"GSM based Home Automation System (GSM HAS)" implements the emerging applications of the GSM technology. Using GSM networks, a control system has been

proposed that will act as an embedded system which can control appliances and other devices locally using built-in input and output peripherals. Remotely the system allows the user to effectively control the house/office appliances and equipments via the mobile phone set by sending commands in the form of SMS messages and receiving the appliances status. The main concept behind the project is receiving the sent SMS and processing it further as required to perform several operations. The type of the operation to be performed depends on the nature of the SMS sent. The principle in which the project is based is fairly simple. First, the sent SMS is stored and polled from the receiver mobile station and then the required control signal is generated and sent to the intermediate hardware that we have designed according to the command received in form of the sent message.

II. RELATED WORK

A. Review on home automation by android application.

Tried to develop a home automation system that is affordable than the available similar products in market. Home automation involves the controlling and automation of electrical appliances such as lights fans,heating,air-conditioner and other home appliances such as refrigerator, dish washer etc. that uses Bluetooth or Wi-Fi. Home automation system consists switches and sensors connected to a central hub from which the systems is controlled with a user interface that is interacted via a wall mounted terminal, mobile phone software or via web interface.

A survey on Arduino IoT Home Automation System for IR

Worldwide Automobi and software has been designed to automate a favorite used devices such as TV, SAT, DVD addition to any other devices that can be controlled by an IR signal, locally and anywhere (wide world) via a hybrid mobile application will reduce the number of used controllers in the house by using a single mobile software that control devices using Internet via a WiFi module ESP8266 based on Arduino UNO.

An IoT based Home Automation Using Android Application

Home appliances can individually be controlled both from within the home and remotely. This is very helpful to physically challenged people. The practical goal of this paper has been to create a virtual, but practically usable, android home automation system. The android mobile is used to send the commands to the Arduino to control all the home appliances. The main feature of this system is to control the voltage levels of home appliance in home like speed of fan based on temperature, intensity of light based on light intensity etc.

Design of Small Smart Home System Based on Arduino

This paper is to offer a Small Smart Home System designed and created by utilizing WLAN network based on Arduino microcontroller. The system is able to monitor and control lights, room temperature, alarms and other household appliances. Results from testing the system show proper control and

control monitoring functions can be performed from a device connected to a network that supports HTML5.

III. EXISTING SYSTEM

The root problem of all our homes is safety and security and is the major concern in today's world, and hence an improvement in many sectors is of growing importance. Safety is a huge issue in densely populated urban areas and also power saving and improving overall power efficiency is key aspect. The convenience of physical handicapped people for living in home is another issue.

MITSIMLab stands for simulation-based laboratory. It is developed for evaluating the impacts of alternative home management system designs at the operational level and assisting in subsequent design refinement.

IV. SYSTEM ARCHITECTURE

ARDUINO accepts program codings and convert it to the action. Arduino sends message to the gsm. GSM accepts the message,gsm worked as a mobile phone. It is used to take messages and give it to the arduino.

1) Modules of the system

a) User interface module

In the user module after login, the application the user can see the status of the room that is the electronic appliances is on or off in the room. The interface of thesystem shown, after going to the particular room, all switches status shows the user can change the status. Also, change the AC temperature. The numbers are store in the database after registering.

b) Arduino hardware

It manages the current status of home appliances. According to GSM input, Arduino board changes the appliance state using a microcontroller. Its maintain the sensors using a microcontroller.

c) Server Module

In this module, the Server shows the communication between GSM and Arduino with User and handles all User Request. It maintains the Response The most important part validation maintains over here.

d) Database Module

In this module, Database takes the Data entry. Get data encryption or decryption, and gives validationwe use Arduino board, GSM kit, mobile phone .microcontroller ATmega328 built on Arduino board, which controls an Arduino operations.And Database is most important for it. It contains information about its status and operations. In this system, first, the mobile app sends a query to GSM kit via the signal medium. Then GSM kit sends the query to Arduino board microcontroller. The microcontroller controls a status as well as operations. Send back to the App which is the operation status and its updated result. And that related information SQLite database is stored and update as per time.

e) ARCHITECTURE DIAGRAM
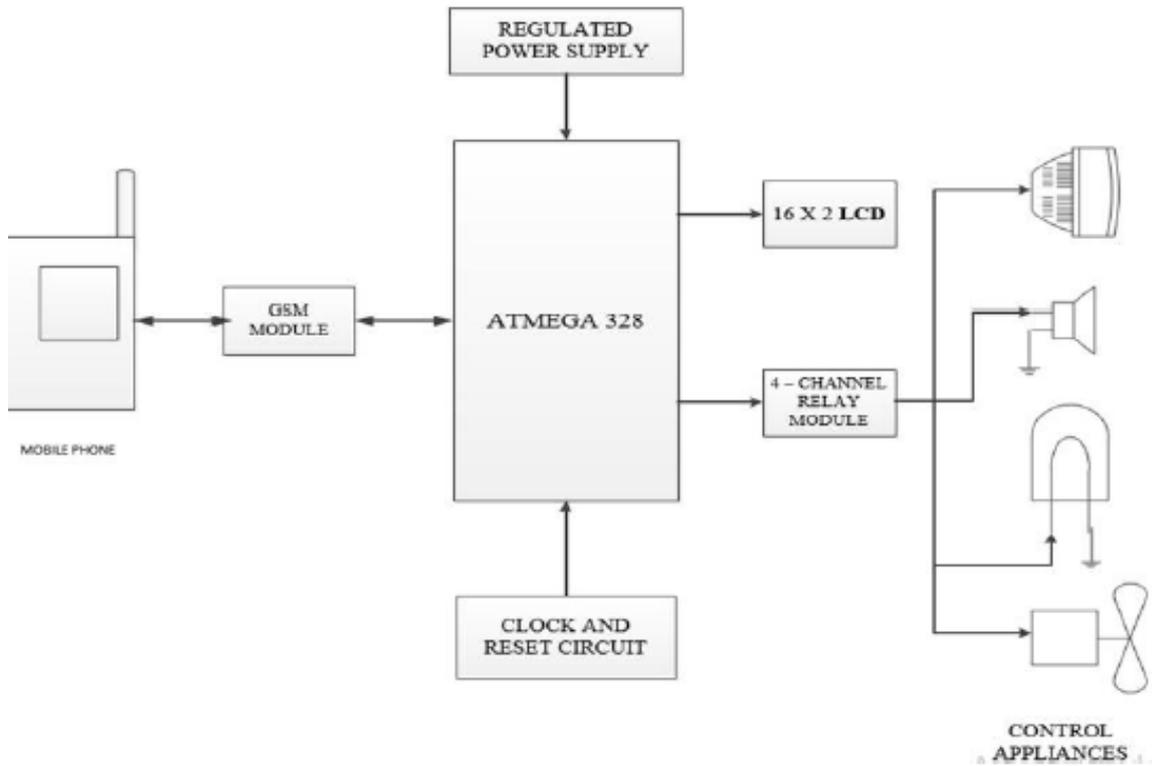
f). CIRCUIT DIAGRAM
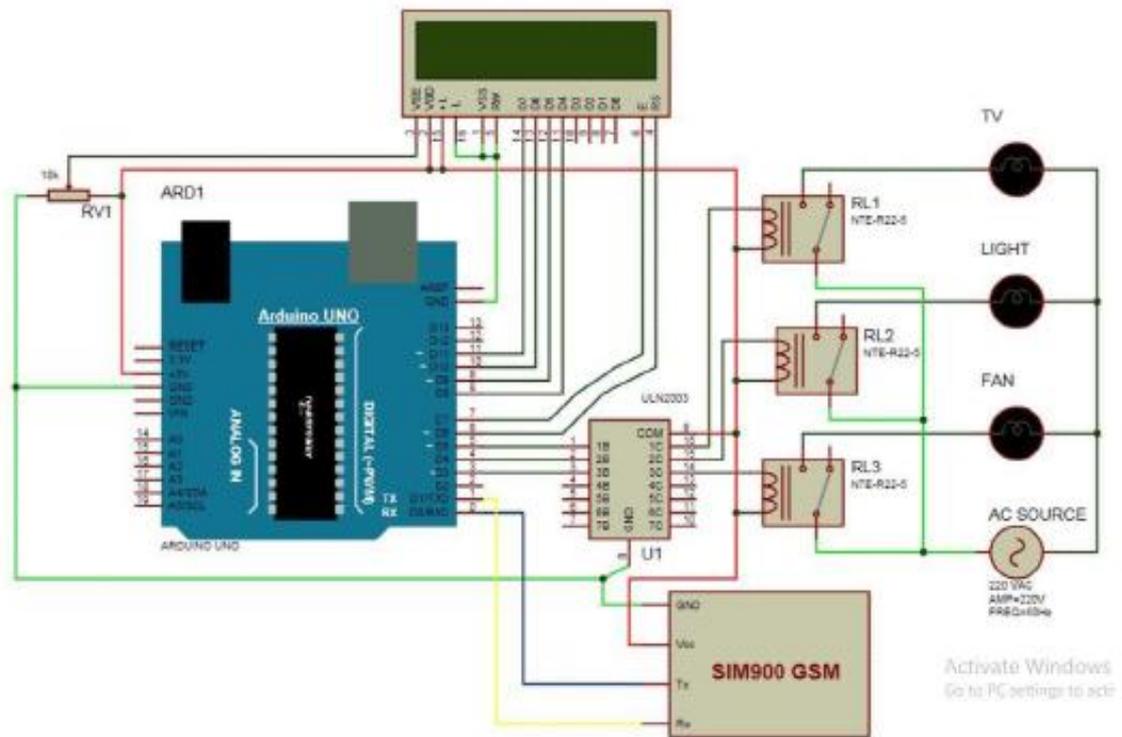
I.   ALGORITHM

Step 1:   Start the ARDUINO UNO.

Step 2:   Installize the LCD(liquid crystal display.

Step 3:   Installize GSM module to the arduino

And give separate electricity to switch ON.

Step 4:   Read the message, then check yes or no statement

Step 4.1: for code check //get message YES/NO

Step 5:   savethenumber as master (+91**********)

Step 5.1:send back registered message.

Step 6:   Read the message and check the number.

Step 7:   Check the master number

Step 8:   Check for the conditions

Step 8.1:   Display Result Light ON or OFF.

Step 9:   Stop.

V. CONCLUSION

The project we have undertaken has helped us gain a better perspective on various aspects related to our course of study as well as practical knowledge of electronic equipments and communication. We became familiar with software analysis, designing, implementation, testing and maintenance concerned with our project.

The extensive capabilities of this system are what make it so interesting. From the convenience of a simple cell phone, a user is able to control and monitor virtually any electrical devices. This makes it possible for users to rest assured that their belongings are secure and that the television and other electrical appliances was not left running when they left the house to just list a few of the many uses of this system.

The end product will have a simplistic design making it easy for users to interact with. This will be essential because of the wide range of technical knowledge that homeowners have.

VI. FUTURE SCOPE

The complete application software has been designed using android and java language. This system designed at low cost, and it is used to improve living performance in the home. The wireless connectivity thought the Android devices helps to the people especially to elderly and disable. People can control their electrical devices via these Home Automation devices and set up controlling actions through Mobile. It controls the electronic house equipment from anywhere in the world. It is useful for handicap

peoples and daily busy peoples. Also, this system is very useful in smart cities project.

This is very usefully in digital life.

REFERENCES

[1] Rozita Teymourzadeh, Salah Addin Ahmed, Kok Wai Chan, and Mok Vee Hoong, Smart GSM Based Home Automation System, IEEE Conference on Systems, 1315 December, Process Control (ICSPC2013), UCSI University, Kuala Lumpur, Malaysia,2013.

[2] A. W. Ahmad, N. Jan, S. Iqbal, and C. Lee, Implementation of ZigBee-GSM based Home Security Monitoring and Remote Control system, IEEE 54th International Midwest Symposium on Circuits and Systems (MWS-CAS), Seoul,pp.1-4, 2011.

[3] Y. Zhai and X. Cheng, Design of smart home remote monitoring system based on the embedded system, 2nd International Conference on Computing, Control and Industrial Engineering (CCIE), Wuhan, pp.41 44,2011.

[4] H. ElKamchouchi and A. ElShafee, Design and prototypeimplementation of the SMS-based home automation system, IEEE International Conference on Electronics Design, Systems and Applications (ICEDSA), Kuala Lumpur, pp.162- 167, 2012.