

Implementation of Home Automation System Using Android Smart Phone

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Abstract-

Now a day, each and every person is using android smart phone. Starting price of android smart phone is very low. In android, there is having so many features like what is all the need that wants to human in this world. Most of the peoples are using android smart phone but very few of them are using this HAS(Home Automation System)function. In this fast growing world the value of time is very much considerable in the case of emergency for this purpose this HAS function will be very useful. It is very low cost and wireless remote control. By using of android mobile we can control the home electrical appliances and devices.

1. INTRODUCTION

In android smart phone, there is having so many facilities like internet, gaming, chatting etc..

The person can open android smart home applications to view the status of our abode network. The user will send the information by squashing the toggle button to control home by using android smart phone. In the smart home, the user can select actions what should happen with electrical and/or electronic devices in the network. This control system implements wireless

technology to provide remote access from PC/Laptop or smart phone. This design remains existing electrical switches and it is more safety control on switches with low voltage activating method. The users communicate this process through GPRS that is enabled in android smart phone. This home automation system consist of microcontroller, GPRS module, relays as hardware and software consist with android smart home application. By using this system you can access the entire home appliance from anywhere.

2. HARDWARE SYSTEM DESIGN

For every process you need some of the hardware to give the perfect result for the application. In this concept some of the hardware's are very helpful for perfect processing that are,

A. Microcontroller

AT89S52 is a powerful controller which provides high flexibility and cost effective solution to embedded control applications. It provides some of the features like 8K bytes of flash, 256 bytes of RAM, clock circuit, 32 I/O lines, timer etc... The AT89S52 is designed with static logic for supporting software and also for power saving mode. The power saving mode saves

the function in RAM until the next interrupt or hardware get reset.

B.GSM (Global system for mobile communication)

Usually the GSM used by cell phones that provide low cost, long range, and wireless communication to work with applications that need connectivity rather than high data rates.

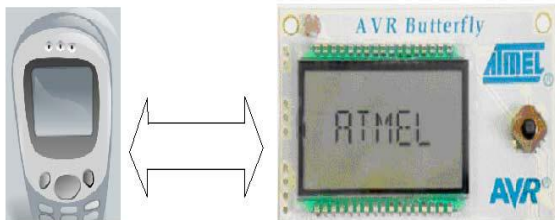


Fig.1 smart phone connecting with GSM

The protocol used by GSM modems for setup and it control based on AT-Command set. The GSM modems are supported with some of the services like text messaging, calling to particular phone number, insertion and deletion of some items in memory location etc... the main objective of this application is to show how to send and receive the messages. AT-Command set work for this implementation.

C. Relay

Relay work with electrical operation. Many relays use electro magnet switch for electrical operation. Relays are useful to control a circuit by low power signal. Current flow through the coil and it create a magnetic field and it changes the switch contact. The coil current can be on / off so the relays have two switch positions that are changeover switches. Relays allow one

circuit to another circuit which can completely separate from first.

D. LCD Display

LCD is an electronic display mode. LCDs are available to display fixed images which can display or hidden and it can be find in wide range of applications. A 16X2 is very basic modules that are used in various devices and circuits. LCD is easily programmable and it is very useful in economical status and there is no limitation to display special and custom characters.

E. Driver Circuit

Driver is an electrical circuit which is used to control another circuit. It controls such kind of component like high power transistors and devices in the circuit. Constant voltage circuit operates the input voltage range and the driver circuit requires current gain.

3. HOME APPLICATION CONTROL

The android application is used to communicate with the remote server using GPRS connectivity. This communication has done while paring the mobile through IP address. The users send the information by squashing the toggle button (single button used for dual process)

A. Input design

In input design we can view the status of home applicants using mobile phone. It is one of the most expensive operations of computerized system.

For example, there are four relays each relays are connected with one appliance like light, fan, AC etc...

B. Output design

Output designs refer the result of the function. Basically every output should be attractive and impressive to every user. This application designed with java features which make console output. Outputs are the most important use of information to the users.

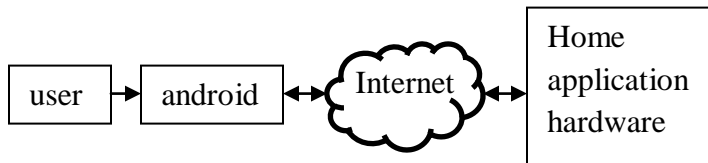


Fig.2 User and hardware communication

The better design should improve the system relationship. Only the output can give the better design as per user's need. This can be considered as most important stage to achieving the successful new system. This output implementation stage involves careful planning and investigation in existing system. Some of the testing helps to give perfect output like validation testing, performance testing, unit testing, integration testing etc... SDK tool mostly help for testing process in output design. Some of the android testing concepts are used to test the result which is given from android smart phone that are, activity testing, accessibility testing, service testing, UI testing etc...

This concept is user friendly and low cost. So every android smart phone can carry this system easily and control the home appliances.

4. CONCLUSION

The home automation system work perfectly by using GPRS. By using this system the user can successfully control home from a wireless mobile device. This process is not only the use of convenience of the common user it is also very helpful to elders and disables persons and this is one of the advantages of using this system.

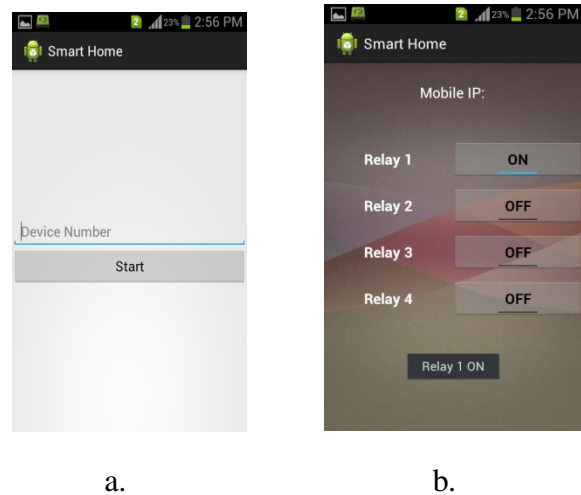


Fig.3 design of mobile application

This fig.3 (a) shows about the device number. It is nothing but the number of GSM which is inserted in hardware circuit board. By using this we can view the status of the home as shown in the fig.3 (b).

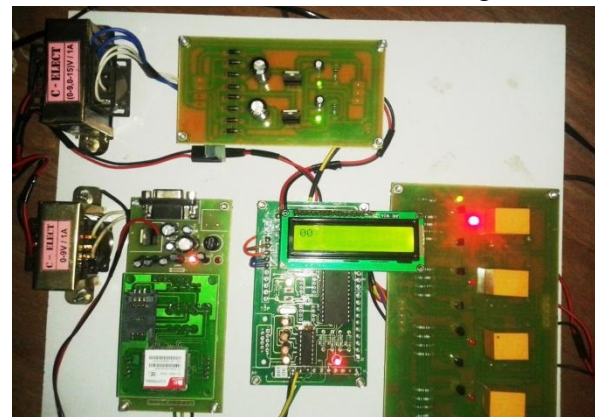


Fig.4 hardware circuit board

This circuit board should be connect with the main board of home. In fig4 we can view the digit as 00 in LCD that is programmed as ON and 01 for OFF the appliances. There are four relays in circuit board as sample, each relays consider as home appliance. The relay 1 gets on as shown in fig.3 (b) so the red light emitting in relay 1. Likewise, every relays can be operate by using of Android Smart Phone using GPRS system. Everyone can use this method by using the basic need of smart phones. Even tablets, laptops, and pc can also handle this system easily by using smart home applications. There is more security options are there in this system. Because only the user can handle this application by the concern mobile number. Also By using of mobile watch this system will give the successful result based on Bluetooth and GPRS network. So it is very easy to operate and it is user friendly.

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