

HOME AUTOMATION USING VOICE CONTROLLER

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Abstract: The main objective of this project is to develop a home automation system using an Arduino board with Bluetooth being remotely controlled by any Android OS smart phone. As technology is advancing so houses are also getting smarter. Modern houses are gradually shifting from conventional switches to centralized control system, involving remote controlled switches. Presently, conventional wall switches located in different parts of the house makes it difficult for the user to go near them to operate. It becomes even more difficult for the elderly or physically handicapped people to do so. Remote controlled home automation systems provide a most modern solution with smart phones. In order to achieve this, a Bluetooth module is interfaced to the Arduino board at the receiver end while on the transmitter end, a GUI application on the cell phone sends ON/OFF commands to the receiver where loads are connected. By touching the specified location on the GUI, the loads can be turned ON/OFF remotely through this technology. The loads are operated by Arduino board through opto- isolators and thyristors using triacs.

Introduction

Now a days, we have remote controls for our television sets and other electronic systems, which have made our lives really comfortable. We have come up with a new system called Arduino based home automation using Bluetooth. This system is super-cost effective and can give the user, the ability to control any electronic device without even spending for a remote control. This project helps the user to control all the electronic devices using his/her smartphone. Time is a very valuable thing. Everybody wants to save time as much as they can. New technologies are being introduced to save our time and provide comfort. With the help of this system, home appliances can be controller from mobile phone.

Project Description

Major components and technologies used in the project are as follows:

- 1) Arduino uno
- 2) 2 channel relay (5v)
- 3) bluetooth module hc05
- 4) power supply
- 5) load (bulb 220v)

- 6) connecting wires
- 7) smartphone (bluetooth enabled)

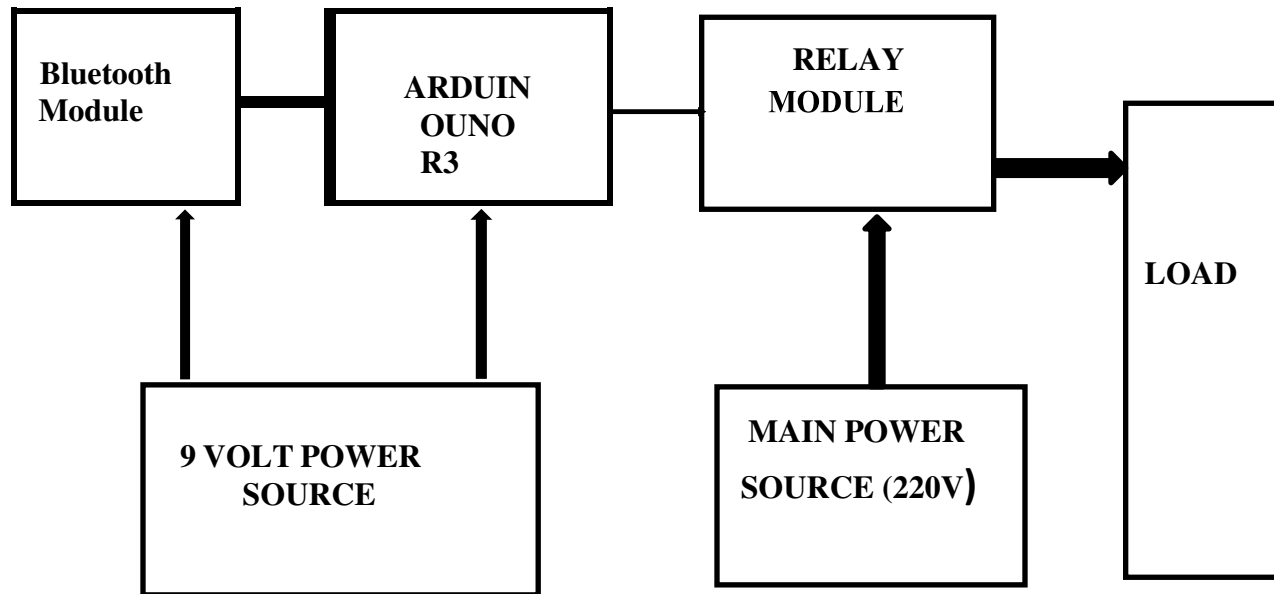


Figure1: Block Diagram of Home Automation System Using Arduino and Bluetooth Module



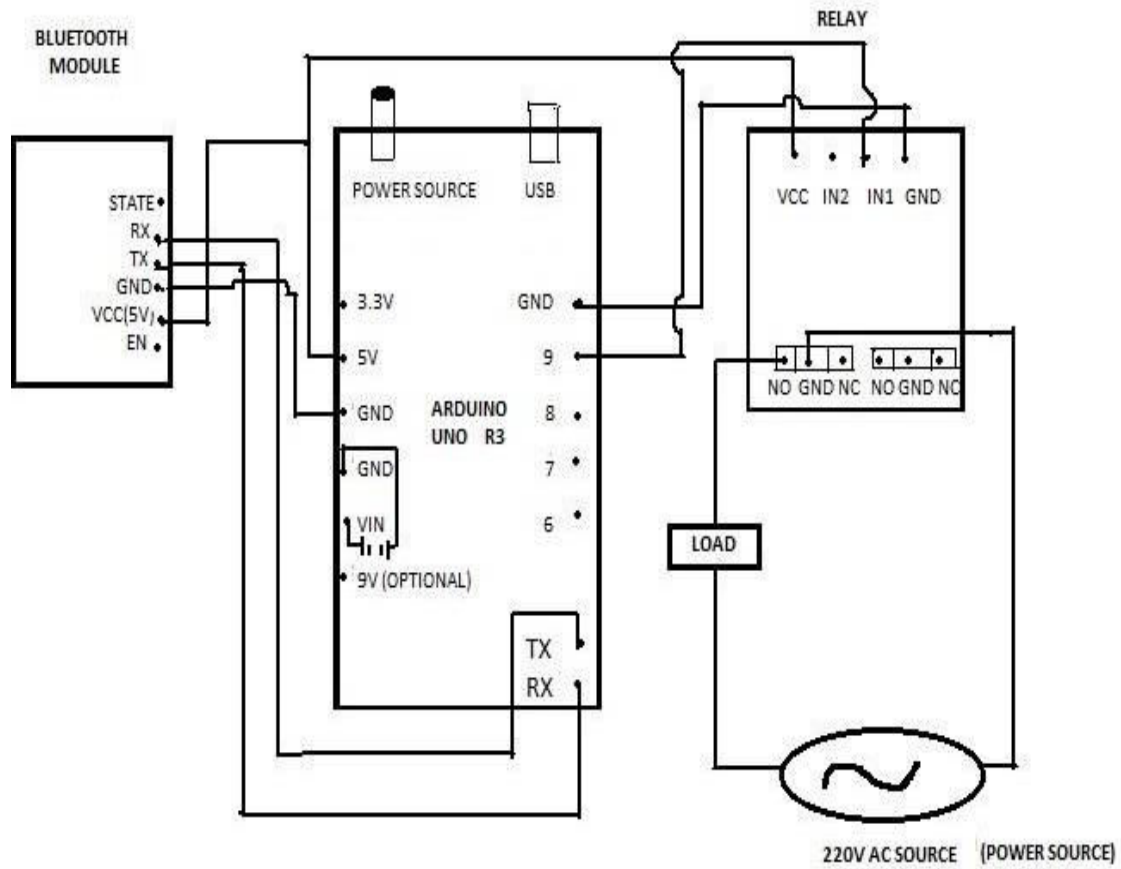


Figure 2: Circuit Diagram of Home Automation System Using Arduino and Bluetooth Module

Result and Discussion

With the procedures mentioned, the implementation of the project “Home Automation via Bluetooth using the Arduino Uno Microcontroller” is successfully completed and implemented. In this paper we have introduced design and implementation of a low cost, flexible and wireless solution to the home automation. The system is secured for access from any user or intruder. The users are expected to acquire pairing password for the Arduino BT and the cell phone to access the home appliances. This adds a protection from unauthorized users. This system can be used as a test bed for any appliances that requires on-off switching applications without any internet connection. The project is cost efficient and user friendly because it can be used by anyone with a simple click on an Android based mobile device. All the appliances of the house are controlled successfully via Bluetooth using an Android mobile phone.

An app named “Bluetooth Terminal” is used on the smart phone which is capable of sending text strings to a paired device. Another app named “BT Voice Control for Android” can also be used on the smart phone. The BT Voice app takes voice commands in US English and transfers them as text strings to a paired device. Either of the app will pair with the home automation system through HC-05 Bluetooth Module. Every module has a unique MAC address and a password for pairing with other devices. Like the Bluetooth module used in this project had a MAC address – 98: D3: 31: F4: 18: 22 and had a password “1234” for pairing with other Bluetooth devices.

The Arduino board receives the user commands in the form of numbers from the smart phone through Bluetooth interface. These numbers are assigned to the home appliances and the appliances are toggled either ON or OFF on receiving the numeric command. The Arduino sketch looks for the numeric commands from the Bluetooth module and operates relays to switch appliances.

Major Applications

1. Smart Homes, Smart Appliances
2. Lighting Control: Leaving the Dark Ages and Stepping into the Light
3. HVAC Regulation: No Longer Burned by Your Heating Bill
4. Lawn Irrigation Systems: The Grass is Always Greener

Conclusion

A novel architecture for a home automation system is proposed using the relatively new communication technologies. The system consists of mainly three components, a BLUETOOTH module, Arduino microcontroller and relay circuits. WIFI is used as the communication channel between androidphone and the Arduino microcontroller. We hide the complexity of the notions involved in the home automation system by including them into a simple, but comprehensive set of related concepts. This simplification is needed to fit as much of the functionality on the limited space offered by a mobile device's display. This paper proposes a low cost, secure, ubiquitously accessible, auto-configurable, remotely controlled solution. The approach discussed in the paper is novel and has achieved the target to control home appliances remotely using the WiFi technology to connects system parts, satisfying user needs and requirements. WiFi technology capable solution has proved to be controlled remotely, provide home security and is cost-effective as compared to the previously existing systems. Hence we can conclude that the required goals and objectives of home automation system have been achieved. The system design and architecture were discussed, and prototype presents the basic level of home appliance control and remote monitoring has been implemented. Finally, the proposed system is better from the scalability and flexibility point of view than the commercially available home automation systems.

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