"Control Home Light With Smart Phone By Using Arduino"

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Abstract

The aim of this project is to design and implement a home automation system that controls and organizes various home appliances. The user controls his home appliances using his smart phone. The home automation system processes user direct commands, user preferences and data received from various sensors to control home appliances.

The project is implemented in hardware and software components that interact through network connections. The main challenge is to implement the project in an economical way such that it can be easily deployed and used by homeowners.

An Arduino microcontroller and a mobile phone with an Arduino platform running on top of it are the hardware and software used. In order to achieve this, Bluetooth module is interfaced to the Arduino board at the receiver end while on the transmitter end , a GUI application on the cell phones send ON/OFF commands to the receiver where loads are connected.

I. INTRODUCTION

Nowadays, we have remote controls for our television sets and other electronic systems, which have made our lives real easy. Have you ever wondered about home automation which would give the facility of controlling tube lights, fans and other electrical appliances at home using a remote control? Off-Course, Yes! But, are the available options cost-effective? If the answer is No, we have found a solution to it. 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 devices using his/her smartphone.

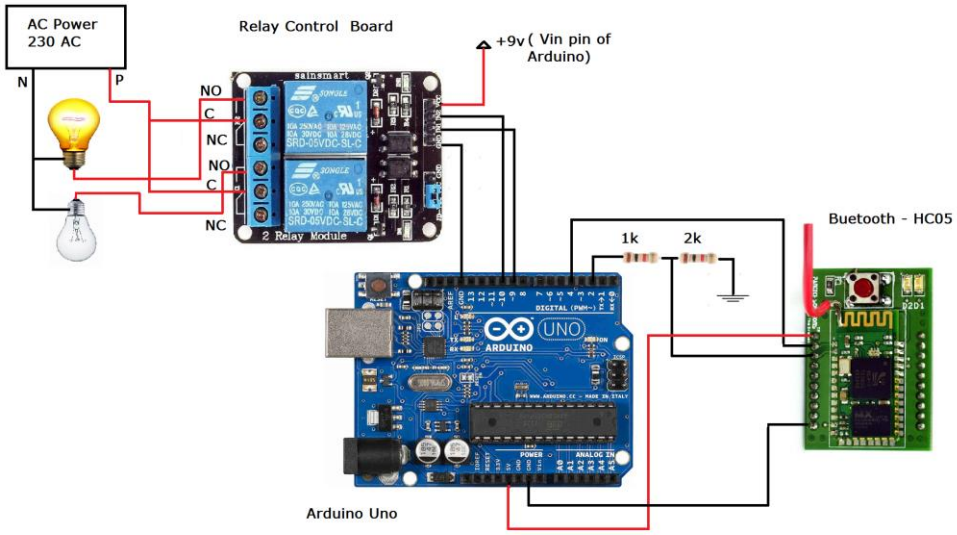
Time is a very valuable thing. Everybody wants to save time as much as they can. New technologies are being introduction to save time. To save peoples time we are introducing Home Automation system using Bluetooth. With the help of this system you can control your home appliances from your mobile phone. You can turn on/off your home appliances within the range of Bluetooth

II. OBJECTIVE

The objective of this project is to implement a low cost, reliable and scalable home automation system that can be used to remotely switch on or off any household appliance, using a microcontroller to achieve hardware simplicity, low cost short messaging service for feedback.

III. METHODOLOGY

Home automation describes a system of networked, controllable device that work together to make your home more comfortable, customized, efficient and secure. In this device there are five main parts Arduino, Bluetooth module, Relay drivers, android application and step down transformer. Firstly we provide power to the step down transformer, it step down the input voltage and given to the Arduino with VIN pin. The Bluetooth module is also connected with Arduino to Rx and Tx pin that provides the information to the microcontroller. Microcontroller reads the information and send to the relay drivers which work as switch. In Arduino we upload the program as per requirement then it performs some mathematical and logical operation to control the relay drivers.

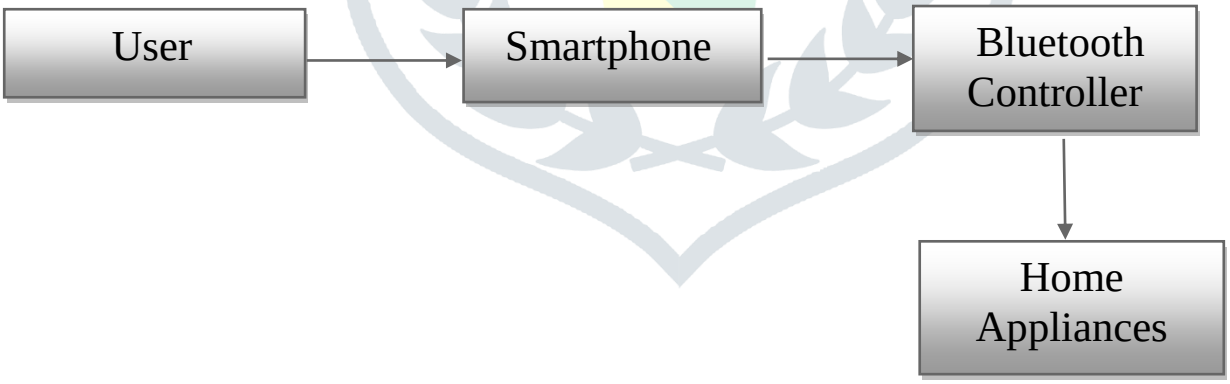


Fig(a). System Architecture

Android appliances are connected are to the Arduino Bluetooth(HC-05). In the fig(a) there are two switches which is connected to relay are connected to the home appliances.

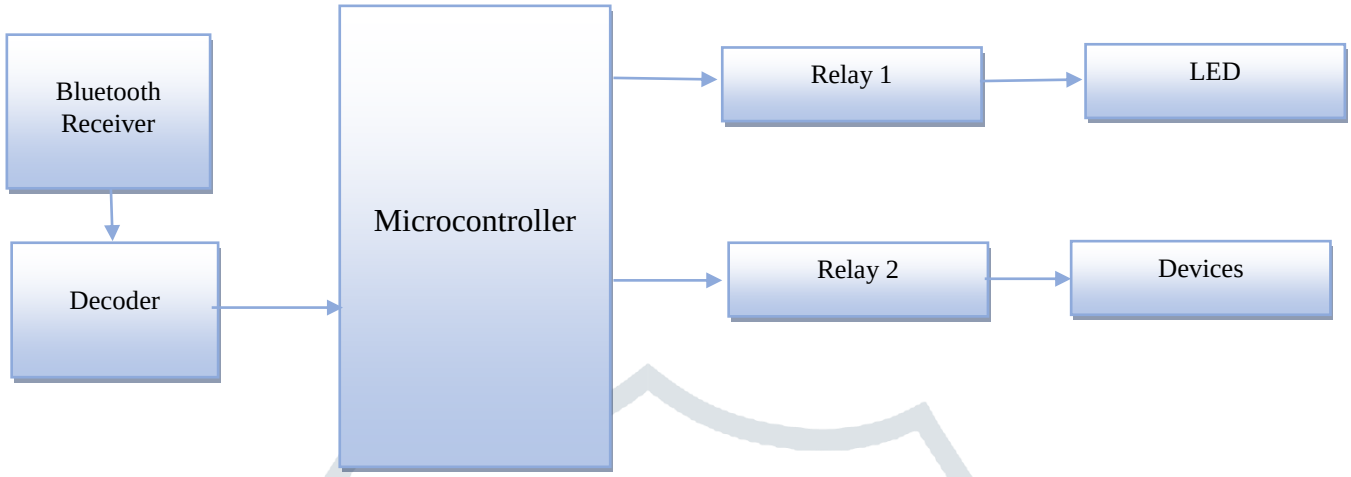
I. A)Overview

Home automation system achieved great popularity in the last decades and it increases the comfort and quality of life. In this paper an overview of current and emerging home automation systems is discussed. Nowadays most home automation systems consist of a smartphone and microcontroller. A smart phone application is used to control and monitor the home appliances using different type of communication techniques. In this paper the working principle of different type of wireless communication techniques such as ZigBee, Wi-Fi, Bluetooth, and GSM are studied and their features are compared with each other so the users can choose their own choice of technology to build home automation system. Moreover in this research work the survey of different home automation systems is discussed and their advantages and drawbacks are also highlighted. Home Automation is a term used to describe the working together of all household amenities and appliances. The basic aim of Home Automation is to control or monitor signals from different appliances, or basic services. A smart phone can be used to control or monitor the home automation system.



IV. ARCHITECTURE

Our projected system is associate degree Arduino primarily based home automation through with Arduino connected to a Bluetooth associate degreed controlled via a humanoid app or a social media network. This technique deals with safety in the home and sensible home technologies which is able to be cost-effective. diagram of the projected system is shown in Fig



The system has 2 components, namely; hardware and software system. The hardware system consists of Arduino Uno board, Bluetooth and residential appliances. The package consists of a java based mostly automaton application additionally C language is employed to piece the Arduino Uno board during this system, the elements used square measure the Arduino Uno board, Bluetooth. These hardware elements are utilized in order to manage the house appliances. The Bluetooth can facilitate in transmittal and receiving the input given by the user. Home automation is the process of controlling home appliances automatically using various control system techniques. The controlling device for the automation in the project is a Microcontroller. Microcontroller reads the data and decides the switching action of electrical devices connected to it through Relays. The Microcontroller is programmed used embedded 'C' language.

V. PROPOSED SYSTEM

A low value and economical good home system are conferred in our style. This method has 2 main modules: the hardware interface module and also the computer code communication module. At the center of this method is that the Arduino small controller that is additionally capable of functioning as a micro net server and also the interface for all the hardware modules. All communication and controls during this system labor under the microcontroller. It offers change functionalities to regulate lighting, fans/air conditioners, and different home appliances connected to the relay system. and every one these are often controlled the robot smartphone app or net applications.

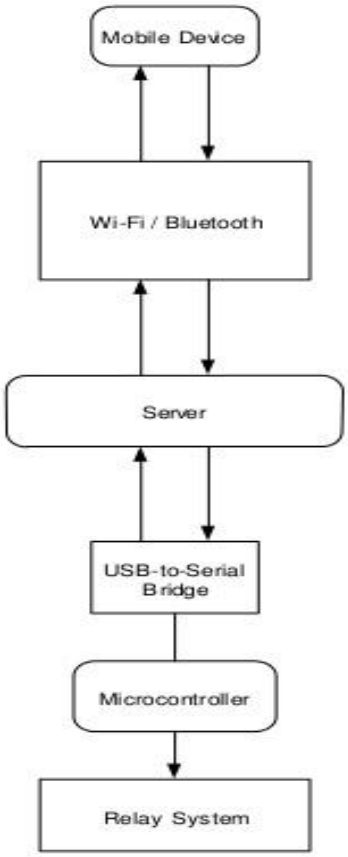
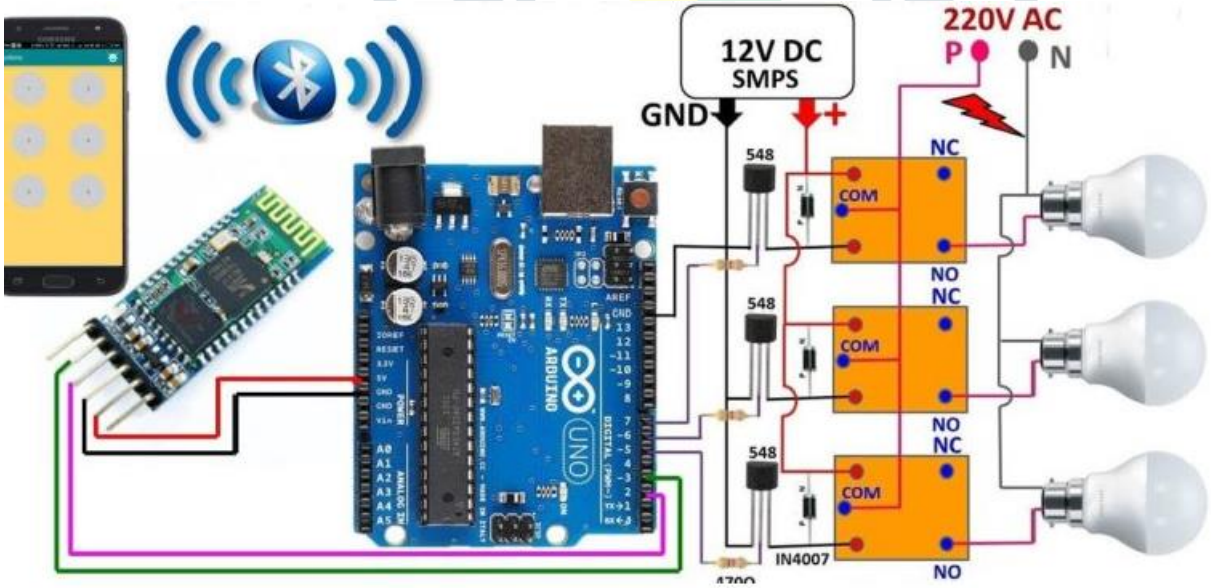


fig. Data flow diagram

Home automation is that the method of dominant home appliances mechanically exploitation varied system techniques. The electrical and electronic appliances within the home like the fan, lights, etc., may be management exploitation varied control techniques. The controlling device for the automation in the project is a Microcontroller. The data sent from PC over Bluetooth will be received by Bluetooth module connected to Microcontroller. Microcontroller reads the data and decides the switching action of electrical devices connected to it through Relays. The Microcontroller is programmed used embedded 'C' language.

VI. HOW IT WORKS?



In this project, we will design a simple home automation project using simple components using which different electrical appliances can switched on or off. The project is based on Arduino and we have used Arduino UNO for the project. If you are new to the Arduino, it is small board, fully assembled with a microcontroller. It is well suited for hacking and interacting with your environment. The home automation circuit is built around an Arduino UNO board, Bluetooth module HC-05 and a 3-channel relay board. The number of channels depends on the number of appliances you wish to control. Arduino Uno is powered with a 12V DC adaptor/power source. The relay module and Bluetooth module can be, in turn, powered using a board power supply of Arduino Uno. The software program for the home automation project is written in Arduino programming language. Arduino Uno is programmed using Arduino IDE software .Now ready to control the appliances.

VII. LIMITATION

This project work is complete on its own in remotely and automatically switching on or off of an electrical appliances not limited to household appliances and sends a feedback message indicating the new present state of the appliances.

VIII. CONCLUSION AND FUTURE SCOPE

Home Automation is undeniably a resource which can make a home environment automated. People can control their electrical devices via these Home Automation devices and set up controlling actions through Mobile. The Bluetooth client was successfully tested on a multitude of different mobile phones from different manufacturers, thus proving its portability and wide compatibility. Thus a low-cost home automation system was successfully designed, implemented and tested. In future this product may have high potential for marketing. Arduino based devices control using Bluetooth on Smartphone project can be enhanced to control the speed of the fan or volume of the buzzer etc.

IX. REFERENCE

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