# Home Automation System

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[1]*Received: 12 May 2024; Accepted: 25 May 2024; Published: 26 May 2024*

**ABSTRACT**

The purpose of this project is to our time and time.The project name is “HOME AUTOMATION SYSTEM”. In this project we are using the Bluetooth Module, arduino, relay to make our project .Our team purpose to make this project is to control the home appliances remotely to on and off. People have less time to handle any work so automation is simple way to handle any device or machine will work to our desire. This paper aim is to develop and design a Home automation using Arduino with Bluetooth module. Home automation system gives a simple and reliable technology with Android application. Home appliances like fan, Bulb, AC, automatic door lock are controlled by Home automation system using Arduino Uno with Bluetooth module. In this project we make our home beautiful and easily use the our home appliances. we control the easily in our home TV, bulb, fan.

**Keywords:** *Arduino Nano; Bluetooth Module; LED; Relay; capacitor*

## INTRODUCTION

Home Automation system makes it possible to automate tasks related to security well-being and comfort through a system installed in a home or building in other words it integrates technology into the design of space.. Home automation is a project which aims to track control of daily home electrical appliances to the fingertips, providing users with inexpensive lighting methods, improved energy efficiency, and minimal energy usage. Apart from just lighting problems, the concept furthermore, it allows you to have complete control over your home security as s build a centralized home entertainment system, among other things with the rapid increase in usage of resources and also population is increasing day by day, there is a serious urge to save and conserve our resources in all ways available. The failure to manage and monitor the devices from remote locations is the major causes for energy loss. Not only in remote but urban areas too are lacking such systems that contribute energy as security crisis. As the country is developing, the security issues are growing along with it. Such systems not only help in energy conservation but also security managements and many more.

In the modern day’s everyone uses smartphones and the internet. Therefore, every smartphone has Bluetooth System. In this project, we will design a simple Arduino Bluetooth Control Home Automation using the HC-05 Bluetooth module, which is used to switch ON or OFF different electrical appliances remotely.. Here we will control 4 different home appliances using Smartphone App through Bluetooth communication.

## LITERATURE REVIEW

Pei Zheng, Lionel Ni, , Morgan Kaufmann publisher, San Fransisco. 2006 [1]. "Smart Phone and Next Generation Mobile Computing is essential reading for any professionals and students involved in this dynamic field. The book provides a comprehensive treatment of fundamentals and covers the most recent technology advances. It describes not only how, but also why, through many insightful examples." --Dr. Wei Zhao, National Science Foundation "This book presents a detailed and comprehensive exposition of All important technologies related to mobile communication and pervasive application development using smart phones. This is a timely publication and it would be a very useful resource for educators, researchers, and developers in this field." --Professor Anand Tripathi, University of Minnesota" This book is something else. It is not often that you see a book that is as up to date as this one while also covering a broad swath of wireless technology...this book is very much up to date and a good reference to all the most

[1] *How to cite the article:* Panchal S., Pawar S., Pawar V., Kulkarni P., Joshi A. (May, 2024); Home Automation System; *International Journal of Advances in Engineering Research*, May 2024, Vol 27, Issue 5, 58-61

current wireless technologies." --Electronic Design, Louis E. Frenzel, July 2006. 2. R. John Robles and Tai-hoon Kim, "Applications, Systems and Methods in Smart Home Technology [2]. LoRa devices are also well-suited for many common smart home applications on the market today, such as smart lighting, door and window sensors, motion sensors, smart locks, smart irrigation, and more. The lower power consumption of LoRa devices offers a compelling alternative to Wi-Fi or Bluetooth based battery-operated IoT devices. Frequently recharging or changing batteries on sensors can be inconvenient, particularly when sensors are placed in hard-toreach areas. Worse, home security devices that drain battery power quickly can pose a risk, failing at the very moment when they are needed. LoRa 1

## MATERIAL

The equipment required to run the project are procured from the local vendor, Pandharpur, Solapur. Maharashtra, India. Arduino Nano, LED, Bluetooth controller, Relay, Resistor, Capacitor, Copper Wire, Copper Clad.

## METHODOLOGY

Home Automation is the way toward controlling home machines consequently utilizing different control framework systems. The electrical and electronic machines in the home, for example, fan, lights, outside lights, fire caution, kitchen clock, and so forth., can be controlled utilizing different control systems.

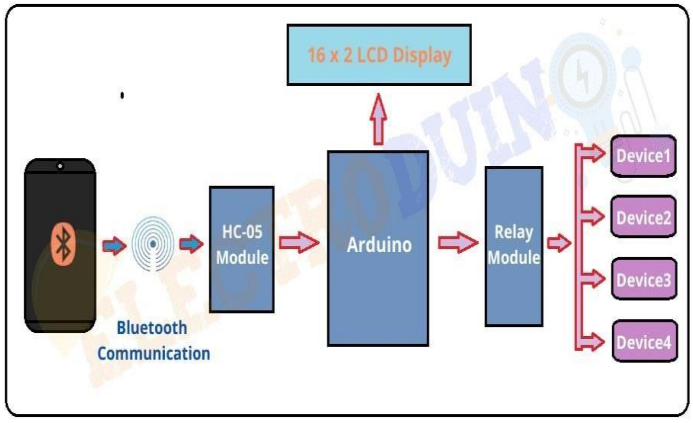


Fig.1. Block diagram of Home Automation system.

In this project we are used Arduino, HC-05 Bluetooth module, 4 Channel Relay Module, , and "Bluetooth Controller" app. Where Arduino is the main microcontroller of the project that's controlled all other components. The HC-05 Bluetooth module is used to receive data from a smartphone. The relay module is used to control AC devices. Also, we need to download and install the Bluetooth Controller App on our Smartphone, which is sending data to the HC-05 Bluetooth Module.

Here we will send data from the smartphone using the Bluetooth controller App, then the Bluetooth module receives this data and pass this data to the Arduino. Now, Arduino is decoding this data, and sending commands to the relay module to control the devices. At the same time, we can see the status (turn ON or turn OFF) of the home appliances on the display.

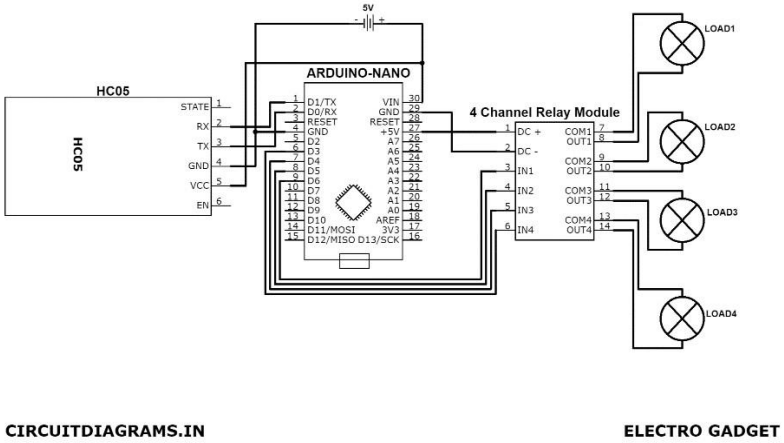


Fig.2. Circuit Diagram of Home Automation system

## RESULT AND DISCUSSION

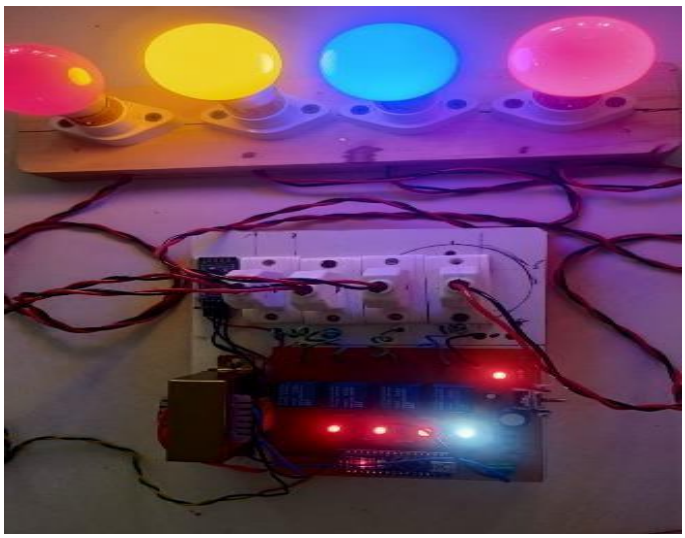

fig.3 Home Automation system

Home automation makes it possible to automate tasks related to security, well-being, and comfort through a smart system installed in a home or building. One of the main advantages of home automation systems is energy efficiency.

A home automation system will monitor and/or control home Appliances like Bulb and TV on and off. It may also include home security such as access control and alarm systems. The phrase smart home refers to home automation devices that have internet access.

## CONCLUSIONS

This project reduces human efforts, helpful for handicapped or disabled people and save the energy power. The devices connected to the Arduino board can be controlled by voice commands, eliminating the need to control using the application interface. Disadvantage: Since a user defined NLP algorithm is used, there can be times when the assistant is not able to recognize your commands properly.

**ACKNOWLEDGEMENT**

We would like to thank our project guide Prof. Joshi A.A. for their support, expert guidance, and mentorship throughout the project. We are grateful to our beloved Principal Dr. Patil S.P. and Dean Academics.

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