WWW.IJRPR.COM

International Journal of Research Publication and Reviews

Journal homepage: www.ijrpr.com ISSN 2582-7421

Bluetooth Controlled Electronic Home Appliances System

K. Umapathy, K. Pranathi, L. Raman Sarma, M. Nisanth

Department of ECE, SCSVMV, Kanchipuram, India

A B S T R A C T

Bluetooth is used for exchange of data using UHF radio waves. It is a short range wireless communication technology. In this paper, we are designing controlling of home appliances using smart phone via Bluetooth technology. The project is built on Arduino Uno using Bluetooth module HC-05 and Android application. It is mainly built for physically handicapped people, so that they can remotely control home appliances.

Keywords: Bluetooth module HC-05, Arduino Uno, Embedded C, Android application

1. Introduction

Smart phone is the perfect example of what is enabling economic growth in the technology sector. It plays a key role in our project since it is easily accessible and convenient to everyone. Many handicapped people are facing difficulty in operating conventional wall switches. So this project provides a solution to operate any home appliances remotely. In this project, the home automation is designed in such a way that it can be controlled by any smart phone by an application named Bluetooth Terminal. This application can efficiently send text strings to the connected devices. The Arduino Uno board receives information from the android application using Bluetooth interface to switch home appliances. Wireless communication is an important resource, especially during a critical situation. So it is important for us to respond quickly and comprehensively in time and it is more important to build proper network which performs well in any situation.

2. Literature Survey

The existing systems [1] focus on idea of home computerization where the checking activities are controlled through brilliant gadgets introduced at various areas at home. Home-computerization frameworks and innovations considered are executed with Arduino or Raspberry pi, electronic, Bluetooth-based, PDA based, ZigBee based, cloud-based and the Internet with execution. These systems also [2] focus on the concept of using android phone which gives the ability to control their home appliances from anywhere at home. It presents the design which uses an Arduino Mega 2560-R3 board. So this design and implementation is of low cost.

They [3] had chosen the factors of communication medium such as range, security, data rate, cost and accessibility. In present generation, Bluetooth is more convenient and accessible in any smart phone. So the Bluetooth acts as a perfect medium for transferring data between the smart phone and the host. The Arduino Uno is programmed using embedded C. So embedded means programing of software in hardware.

3. Proposed Work

The Arduino UNO is interfaced with the Bluetooth module, LCD, relays and power supply board. We have to install an application in the smart phone . The android application “Bluetooth terminal” which is installed on Smartphone sends information via text strings to the paired Bluetooth module which is connected to Arduino Uno. And the Bluetooth module HC-05 has its own MAC address and its own specified password used for pairing up with other

devices. Then the input numbers are fed to the system using the Bluetooth technique. These input data are in turn forwarded to the home appliances for transiting their states.

At the point when the circuit is turned on, the Arduino modified with predefined libraries and changes transfers to OFF position .Initially the condition of all home appliances is indicated in OFF situation on the LCD. Then respective input received from Bluetooth device is transferred in the form of strings and respective electrical loads changes their state with respect to input received from the Bluetooth module. If an appliance is in OFF condition then the status of load is displayed in the LCD and the respective number is passed through Bluetooth app on receiving the same number in Arduino Uno and it makes relays to HIGH trigger and switch ON the appliance. Again the status of change in that load will be displayed in LCD. The LED will glow due to forward bias which indicates supply to the appliances.

If an appliance is in ON condition then the status of load is displayed in the LCD and the respective number is passed through Bluetooth app on receiving the same number in Arduino Uno and it makes relays to LOW trigger and switch OFF the appliance.

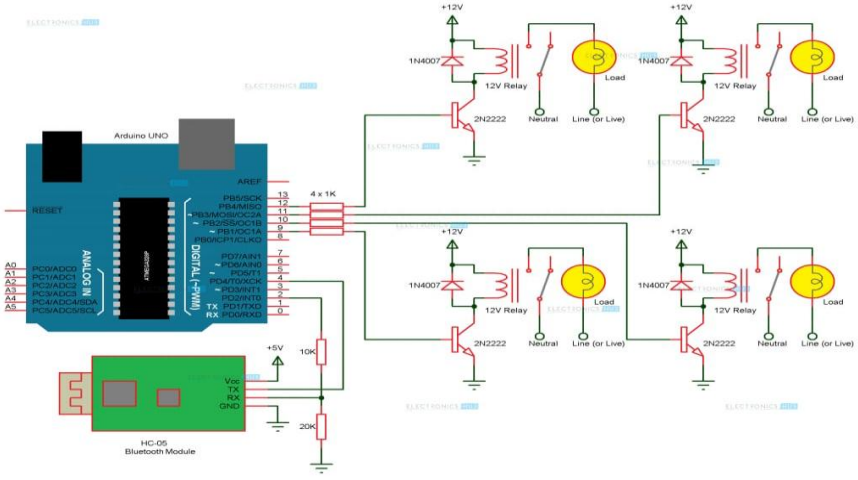

Figure 1 Proposed system

Arduino UNO is for the most part utilized microcontroller board in the group of Arduino. It is ATmega328P based microcontroller board. The significant element of this Arduino UNO is it is accessible in Dual-inline-bundle (DIP), separable ATmega328 microcontroller. Programming of this board is stacked effectively by utilizing Arduino PC program.

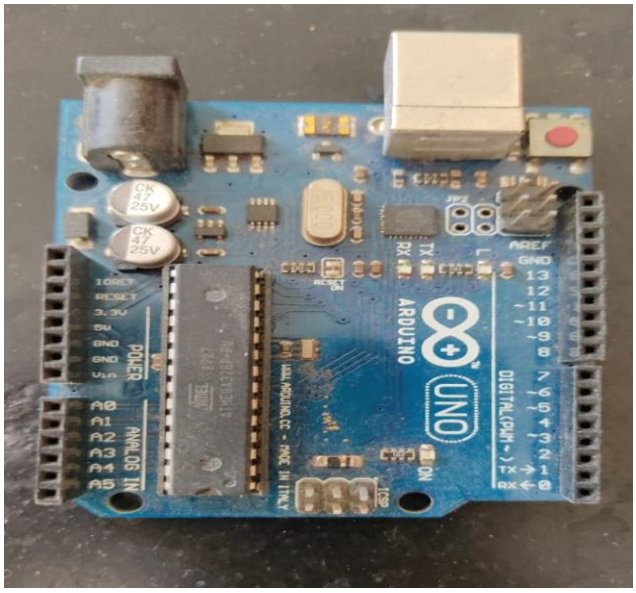

Figure 2 Arduino UNO

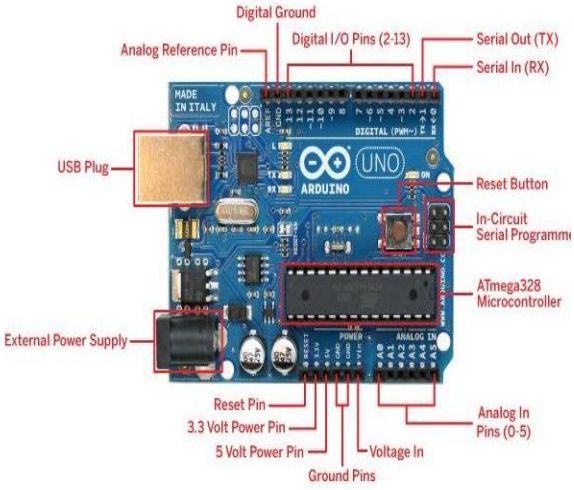

Figure 3 Arduino Pin Configurations

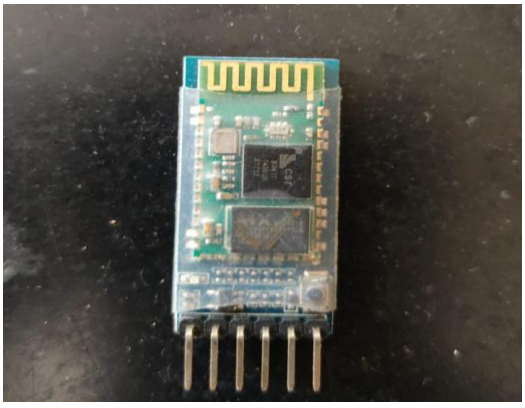

Figure 4 (a) Bluetooth Module HC-05

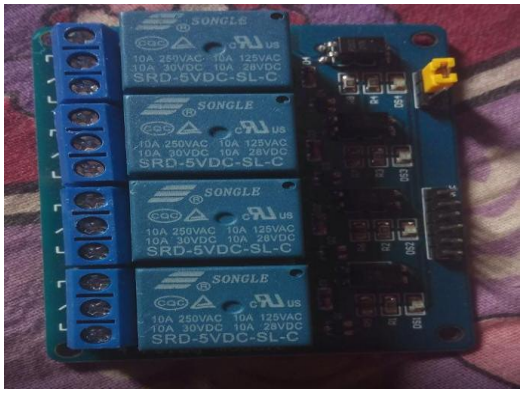

Figure 4 (b) Relays

Bluetooth module specifications:

- Power supply: +3.3V DC 50mA
- Emission power: <=4dBm, Class 2
- Speed: Asynchronous 2.1 Mbps(Max)/160
- Range: <100m
- Operating Voltage: 4V to 6V

- Operating Current: 30mA
- Sensitivity S: <=-84dBm, Class 2
- Default communication: Slave
- Default mode: data mode
- Baud rate: 9600,8,N,1

4. Results and Implementation

After toggling of the appliances, immediately the data will be obtained by the Arduino UNO, pointer will sparkle as demonstrated in Fig 5 (b), the output will be shown in below LCD.

Figure 5 (a) Display on the LCD

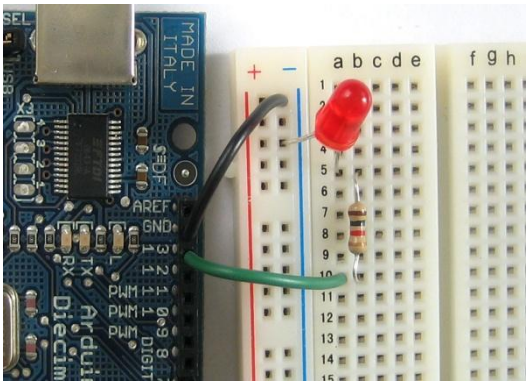

Figure 5 (b) LED Indicator

5. Conclusion

Thus this paper helps in solving the problem of being immovable for the disabled people. In this home automation system, the home appliances will switch ON with the respective input received from the Bluetooth interface and the state of the home appliances are displayed in the LCD. The android application has to be installed in the user's Smartphone.

REFERENCES

[1] Prof. Santwana Gudadhe et al, "Home Automation Systems using Android Applications,", International Journal of Innovative Research in Science, Engineering and Technology, Vol. 8, Issue 4, April 2019.

[2] Amirah Aisha Badrul Hishama et al, "Bluetooth-Based Home Automation Using an Android Phone", Universiti Teknologi Malaysia, Article: 20 May 2014.

[3] Nikitha Wanjale et al, "Bluetooth Based Home Automation", International journal of scientific engineering and technology research, Vol.03, Issue.12, June 2014,

[4] M. Chan, D. Estève, C. Escriba, and E. Campo. 2008. A Review of Smart Homes–Present State and Future Challenges. Computer Methods and Programs in Biomedicine. 91: 55–81.

[5] Neng-Shiang Liang et al, "An integrated, flexible, and Internet-based control architecture for home automation system in the internet era", Proceedings ICRA `02. IEEE International Conference on Robotics and Automation, Vol. 2, pp.1101-1106, 2012

[6] K. Mandula et al, "Mobile based home automation using Internet of Things" 2015 International Conference on Control, Instrumentation, Communication and Computational Technologies (ICCRCCT), Kumaracoil, 2015, pp. 340-343.

[7] R. K. Kodali et al, "loT based smart security and home automation system," 2016 International Conference on Computing, Communication and Automation (ICCCA), Noida, 2016, pp. 1286-1289.

[8] R. Piyare and M. Tazil, "Bluetooth based home automation system using cell phone," 2011 IEEE 15th International Symposium on Consumer Electronics (ISCE), Singapore, 2011, pp. 192-195.