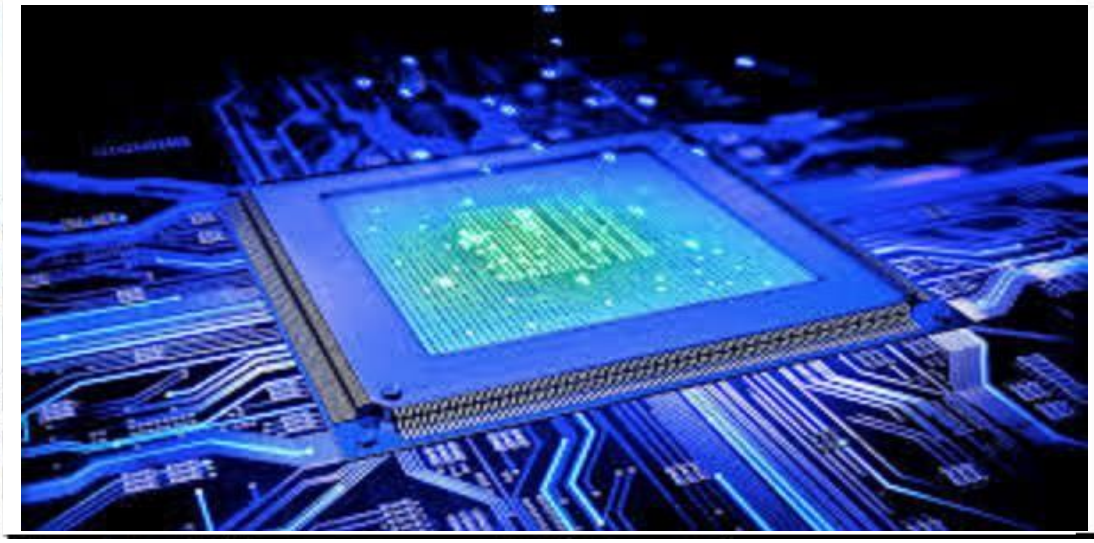
VVITRONICS

VASIREDDY VENKATADRI INSTITUTE OF TECHNOLOGY

ELECTRONICS & COMMUNICATION ENGINEERING

JULY-DECEMBER 2018



ECE DEPARTMENT VISION& MISSION:

VISION:

To produce globally competitive engineering graduates through high quality education, to instil high standards of ethics and professionalism, and to bring out quality research in the frontier areas of Electronics & Communication Engineering.

MISSION:

To impart high quality technical education to all students:

- **To become active life-long learners with the necessary skills, competencies, and ethical values.**
- **To develop human resources with skills of creativity and research.**
- **To inculcate value-based, socially committed professionalism to the cause of overall development of students and society.**

NEWS&EVENTS

- Prof. Bill Oakes of Purdue University, USA visits VVIT.
- Prof. M Y Bhanu murthy received Outstanding Faculty in Engineering Award.
- Career Guidance Session by APHRD DG Chakrapani, IAS
- VVIT signs an MoU with AMG Solutions.
- One Day Workshop on Machine Learning at VVIT.
- A guest lecture on “Advances in manufacturing processes”.
- VVIT Gets Grade A from NPTEL, IIT Madras.
- An awareness program on entering the Indian Navy.
- ACM-Spardha Event Started at VVIT.
- Seminar on Data Integration in IT Industry.
- Social Block chain Team Kicks off at VVIT.
- VVITians Stood Top at Wikimedia Event.

Faculty Achievements

1. Dr. K. Giri Babu (Professor, ECE) published a Journal paper "Logarithmic distance measure with improved local vector pattern for content-based image retrieval" in Journal of The Imaging Science Journal (Taylor & Francis) Impact Factor*: 0.451, Vol. 66, pp. 239 – 253, ISSN:1368-2199, 2018.
2. Dr. K. Giri Babu (Professor, ECE) published a Journal paper "Multi-level Thresholding Method based on Electromagnetism for accurate Brain MRI Segmentation to detect White Matter, Gray Matter and CSF," in Journal of BioMedical Research International Journal, Impact Factor: 2.476, pp. 1 – 18,2018 ISSN: 2314-6133, 2018.
3. Dr. K. Giri Babu (Professor, ECE) published a Journal paper "Enhanced Local Vector Pattern With Logarithmic Function for Content-Based Medical Image Retrieval" in Journal of Advanced Research in Dynamical and Control Systems (Scopus Indexed), Vol. 18, pp. 1646 - 1656, 2018. ISSN: 1943-023X.
4. Dr. K. Giri Babu (Professor, ECE) published a Journal paper "A Survey on Linking of Cell Tracks Using Segmentation" in International Journal of Applied Engineering Research (Scopus Indexed), Vol. 18, pp. 5183-5189, 2018. ISSN: 0973-4562.
5. Dr. K. Giri Babu (Professor, ECE) published a Journal paper "Texture Dependent Content-Based Image Retrieval System: A Review" in International Journal Of Research In Electronics And Computer Engineering, Vol. 6, pp. 74 - 79, 2018. ISSN: 2348-2281.
6. Dr. K. Giri Babu (Professor, ECE) published a Journal paper "FPGA Implementation for the Segmentation of Cells using New Structure Algorithm" in International Journal Of Research, Analysis & Development, Vol. 03, ISSN: 2455-5835, 2018.
7. Mr. G V Satya Kumar (Associate Professor, ECE) "Local Bi-directional Differential Excitation Co-occurrence Pattern for Face Image Retrieval" 2nd International conference on Intelligent Computing and Control System (ICICCS-2018-IEEE), VAIGAI College of Engineering , TN, ISBN:978-1-5386-2841, June14,15-2018, Pp:950-954.
8. Mr. G V Satya Kumar (Associate Professor, ECE) "Co-occurrence context of the data driven local differential excitation ternary pattern for Biomedical Image Retrieval" 2nd International Conference on trends in Electronics and Informatics [ICOEI-2018, IEEE], SCAD Institute of Engg. & Tech., TN, ISBN: 978-1-5386-35704, May11, 12-2018, Pp: 277-284.

- Paramaveera Chakra Yogendra Yadavs Visit to VVIT.
- VVITianBags Bronze in Indian Karate Championship.
- A Sensitization Program by APSSDC On Utilizing SIEMENS COE.
- VVIT Hosts Master Orator Championship.
- GIZ India Country Director Visits VVIT.
- Senior Director-Engineering, Veritas Technologies visits VVIT.
- VVITian won Gold Medal at 5K Run.
- VVITians Celebrated Independence Day on 15th August, 2018.
- A Talk on "Usability Evaluattion of Mobile Applications"
- LLR Mela Organized At VVIT.
- Guest Lecture on "Finite Elements and Their Applications"

9. Mr. M. Sunil Babu (Associate Professor, ECE) published a Journal paper "A Review on Acute/Sub-Acute Ischemic stroke lesion segmentation and registration challenges" in journal of MTA Multimedia Tools and Applications SPRINGER [IMPACT FACTOR: 1.530.], 2018, DOI:10.1007/s11042-018-6344-3.
10. Mr. M. Sunil Babu (Associate Professor, ECE) "KFCM Algorithm for Effective Brain Stroke Detection through SVM Classifier" IEEE-International Conference on Systems, Computation Automation and Networking (ICSCAN), MIT, Pondhucherry, 6th-7th July 2018.
11. Mr. SK Riyazuddin (Assistant Professor, ECE) published a Journal paper "An efficient High Speed Multiplier using Nikhilam method based ECC Processor" in journal of International Journal of Management Technology and Engineering, Vol:8, Iss-7, ISSN: 2249-7455, July 2018, Pp:130-138.
12. Mr. K.Vasu Babu (Assistant Professor, ECE) published a Journal paper "Design of Multi-band Minkowski MIMO Antenna to reduce the mutual coupling" in International Journal of King Saudi University-Engineering Sciences (ELSIEVER), https://doi.org/10.1016/j.jksues.2018.06.003, June, 2018.
13. Mr. K.Vasu Babu (Assistant Professor, ECE) published a Journal paper "A Dual-band Minkowski Shaped MIMO Antenna to reduce the mutual coupling" in International Journal of Optical Wireless Technology, Published in SPRINGER, LNEE SERIES 2018.
14. Mr. K.Vasu Babu (Assistant Professor, ECE) "Design of Dual-band MIMO antenna for LTE 2500, WiMAX and C-band applications to reduce the mutual coupling" ICMEET-2K18, GVPCE, Vishakhapatnam, Published in SPRINGER, LNEE SERIES 2018.
15. Mr. K.Vasu Babu (Assistant Professor, ECE) "Design of Rectangular MIMO Antenna for Bluetooth and WLAN applications to reduce the mutual coupling" ICoEVCI-2018, Manipal University, Jaipur, Published in SPRINGER, LNEE SERIES 2018.
16. Mr. B Manikanth (Assistant Professor, ECE) published a Journal paper "Smart Car Parking using IoT" in International Journal for Scientific Research and Development, Vol-5, Issue-12, ISSN: 2321-0613, 2018.
17. Mr. B Manikanth (Assistant Professor, ECE) published a Journal paper "IoT Based Smart Home Security System and Door Alert using Smart Phone" in International Journal for IRE Journals, Vol-1, Issue-8, ISSN: 2456-8880, Feb-2018.
18. Mr. T Vijay Kumar (Assistant Professor, ECE) published a Journal paper "Mutual Coupling Reduction for Dual Band MIMO Antenna with simple structure" in International Journal International Journal of Innovative Research in Science, Engineering and Development, Vol-7, Issue-2, ISSN: 2319-8753, Feb-2018.

- An awareness program on "prevention of cervical cancer".
- A Workshop on DBA and Ecosystems
- 24 of our students placed in Tata Consultancy Services
- Expert Talk on Statistical Programming with R
- VVIT Celebrates Teachers Day on 5th September, 2018.
- Guest Lecture on Thermal Power Plant Operation
- A Seminar on Inland Water Ways and Challenges
- 6 Students Placed in MU Sigma
- VVIT Balotsav 2018 Brochure Unveiled.
- VVIT's Basket Ball Team stands runner in National Level Basketball Championship
- Two Day Blood Donation Camp Organized by NSS
- VVITians Outperforming in Sports
- Guest Lecture on Software Defined Networks
- Several events are organized as part of VIVA-VVIT and Anniversary celebrations.
- VVITians Celebrated Engineers Day on 15th September, 2018.
- "Entrepreneurship Club" is inaugurated by Sri Udayan Bhakshi.

19. Mr. T Vijay Kumar (Assistant Professor, ECE) published a Journal paper "PCA Technique for Recognition of Face" in International Journal of Advance Research and Development, Vol-3, Iss-2, 2018, ISSN: 2348-6848.
20. Mr. T Vijay Kumar (Assistant Professor, ECE) published a Journal paper "Comparision between WESNR and Improved WESNR for Mixed Noise Removal" in International Journal of International Journal of Modern Trends in Science and Technology, Vol-3, Iss-6, ISSN: 2455-3778.
21. Mr. M. Venkatesh (Assistant Professor, ECE) published a Journal paper "Wireless printing using IoT" in International Journal of IRE, Vol :1, Issue 8,Feb-2018, ISSN: 2456-8880.
22. Mr. B Satish Kumar (Assistant Professor, ECE) published a Journal paper "A novel prototype for home automation using IoT" in International Journal of IRE Journal, Vol-1, issue-8, Feb-2018, ISSN: 2456-8880.
23. Mr. V Purna Chandra Reddy (Assistant Professor, ECE) published a Journal paper "General Model For Frame Transmission In Eee Networks", in International Journal of Iconic Research And Engineering Journals, FEB 2018 | IRE Journals | Volume 1 Issue 8 | ISSN: 2456-8880 Pg:29-34.
24. Mrs T. Vineela (Assistant Professor, ECE) published a Journal paper "Computer vision based Irrigation Sensor" in International Journal of Professional Engineering Studies, Volume 10, Issue 1, 2018, ISSN (O): 2321-9653.
25. Mrs M. Deepthi (Assistant Professor, ECE) published a Journal paper "Gas Leakage Detection based on IoT using Raspberry Pi" in International Journal for Research in Applied Science & Engineering Technology (IJRASET), ISSN: 2321-9653; Volume 6 Issue II, February 2018.
26. Mrs. M Vasantha Lakshmi (Assistant Professor, ECE) published a Journal paper "Precision Agriculture by Implementing Smart Irrigation" in International Journal of Research, Vol-5, Iss-7,March-2018, ISSN: 2348-6848.
27. Mrs. M Vasantha Lakshmi (Assistant Professor, ECE) published a Journal paper "Weather monitoring system using IoT" in International Journal of International Journal of scientific Research and Development, Vol-5, Iss-12,2018, ISSN: 2321-0613.
28. Mrs. M Vasantha Lakshmi (Assistant Professor, ECE) published a Journal paper "IoT Based Smart Agriculture" in International Journal of Iconic Research and Engineering Journals (IRE), Vol-1, Iss-8, Feb-2018, ISSN: 2456-8880.

Student Achievements

1. K. Ramya Krishna of Fourth ECE Secured First Prize in Quiz at VVIT.
2. K. Neelima of Fourth ECE Secured Second Prize in Quiz at VVIT.
3. P. Sai Praksh of Second ECE Secured First Prize in Basket Ball at Tirumala Engineering College, Guntur.

Student Contributions

1. A two day blood donation camp has been organized in VVIT under the aegis of its NSS wing, supervised by Guntur Rainbow Hospitals, in association with HDFC bank, Guntur.
2. Organized a Health Camp Program in collaboration with Raja Rajeswari Memorial Hospital, Pedakakani. Dr.Hanumantha Rao, of RRM Hospital along with his team in Gollamudi village

Home Control Using Node MCU

Abstract - This project aims at achieving automation using the widely used mobile operating system Node MCU i.e. android operating system. The electrical and home appliances can be controlled using the android mobile phones even if you are out of your house and you forgot to switch off the appliances. Many electrical and home appliances like light, fan, refrigerators etc., can be controlled using the android operating system. This can also be implemented at workplaces. Home automation is the residential extension of building automation. It is automation of the home, housework or household activity. Home automation may include centralized control of lighting, HVAC (heating, ventilation and air conditioning), appliances, security locks of gates and doors and other systems, to provide improved convenience, comfort, energy efficiency and security. Home automation for the elderly and disabled can provide increased quality of life for persons who might otherwise require caregivers or institutional care.

Keywords: Node MCU, Android or IOS with Blynk App, Relays, Switches, Arduino IDE software, Protocol.

1. INTRODUCTION

The main objective of this project is to develop a home control system using Node MCU board with Internet being remotely controlled by any Android or IOS operating system. 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. Even more it becomes more difficult for the elderly or physically handicapped people to do so. Remote controlled home automation system provides a most modern solution with smart phones.

A. Automatic Control

In order to achieve this, a relay module is interfaced to the Node MCU 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 widgets, the AC loads can be switched ON/OFF remotely through this technology.

B. Manual Control

It can be achieved by connecting the switches in between the Node MCU and the relay board. So that the output load will be HIGH for any HIGH signal coming either from Node MCU or from manual switches. It will be more advantageous in case of damage to the Node MCU.

2. BLOCK DIAGRAM

To achieve the home control using smart phone, initially the mobile unit should be connected to any network and the WiFi module ESP8266 which is on Node MCU should be connected to local network. By touching the specified location of widgets in the blynk app, this blynk app sends ON/OFF commands to ESP8266 on Node MCU via Blynk server. Then the relays connected to Node MCU performs switching operation corresponding to the input. So that the loads connected to relays will be switched ON/OFF. Similarly, we can also control our home appliances using manual switches.

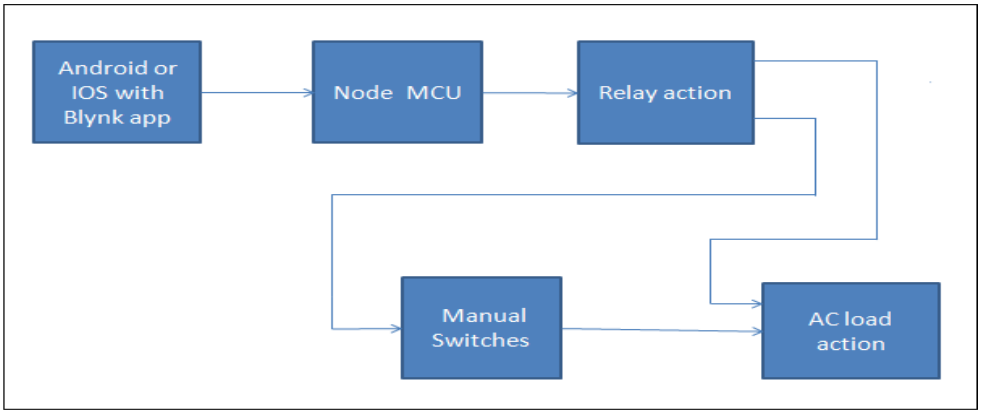


Fig. 1 Block Diagram of Home Control

This can be obtained by connecting the relays outputs to manual switches and manual switches to the AC loads. Whenever the relay corresponding to manual ON or OFF is switched ON then the AC loads corresponding to that switches will perform switching operation.

A. Hardware Components Used

1) Node MCU

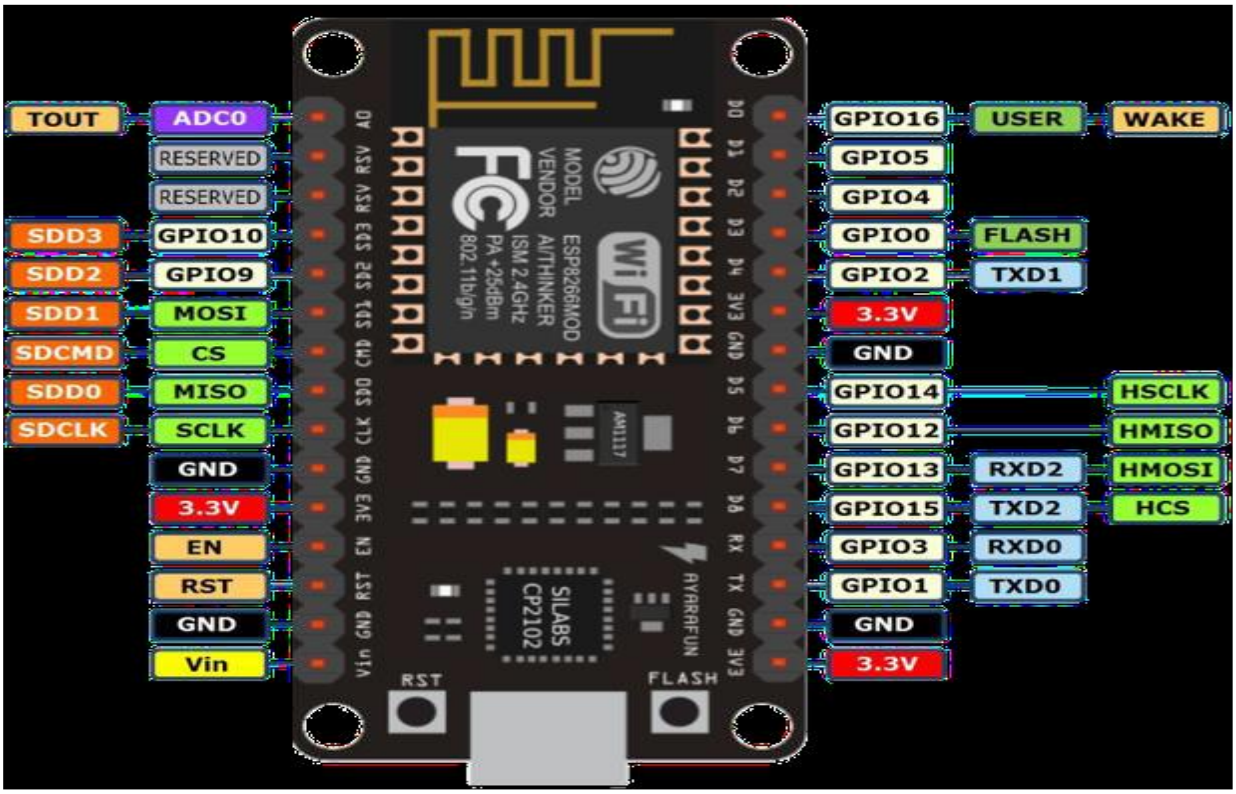


Fig. 2 Pin Diagram of Node MCU

The Node MCU (Node Micro Controller Unit) is an open source software and hardware development environment that is built around a very inexpensive System-on-a-Chip (SoC) called the ESP8266. The ESP8266, designed and manufactured by Espress if Systems, contains all crucial elements of the modern computer: CPU, RAM, networking (wifi), and even a modern operating system and SDK. When purchased at bulk, the ESP8266 chip costs only $2 USD a piece. That makes it an excellent choice for IoT projects of all kinds.

2) Relay: A relay is an electrically operated switch. Many relays use an electromagnet to mechanically operate a switch, but other operating principles are also used, such as solid-state relays. Relays are used where it is necessary to control a circuit by a separate low-power signal, or where several circuits must be controlled by one signal. Here we are using SPDT (Single Pole Double Throw) relay. The Single Pole Double Throw SPDT relay is quite useful in certain applications because of its internal configuration. It has one common terminal and 2 contacts in 2 different configurations: one can be Normally Closed and the other one is opened or it can be Normally Open and the other one closed. So basically you can see the SPDT relay as a way of switching between 2 circuits: when there is no voltage applied to the coil one circuit "receives" current, the other one doesn't and when the coil gets energized the opposite is happening. We are using it in Normally Open mode.

Fig. 3 Top View of 8-Channel Relay

3) SMPS (Switch Mode Power Supply): Switch-mode power supply is nothing but the electronic power supply integrated with the switching regulator for converting the electrical power efficiently from one form to another form with desired characteristics. It is used to convert unregulated AC or DC input voltage to regulated DC output voltage. Here we used 5v/5amps SMPS. So it converts 230V AC voltage to 5V DC voltage.

B. Software Used

1) Arduine IDE Software: Arduino is an open-source platform used for building electronics projects consists of both a physical programmable circuit board(often referred to as a microcontroller) and a piece of software, or IDE (Integrated Development Environment) that runs on your computer, used to write and upload computer code to the physical board.

3. EXPERIMENTAL SET UP WITH RESULTS

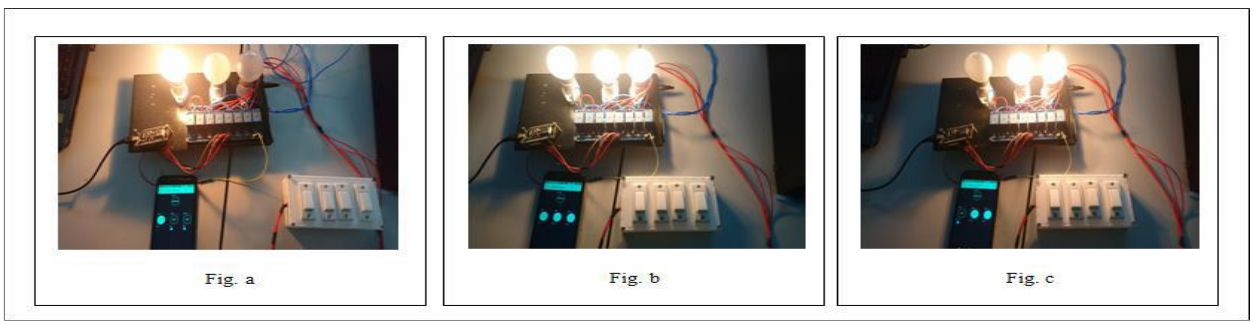


Fig. 3 Home Control Using Blynk App

As shown in Fig. 3(a), the bulb1 gets turned ON automatically by turning ON the button1 of Blynk app in smart phone irrespective of manual switches. As shown in Fig. 3(b), the three bulbs gets turned ON automatically by turning ON the three buttons of Blynk app. As shown in Fig. 3(c), the bulb1 gets switched OFF automatically by turning OFF the button1 in Blynk app.

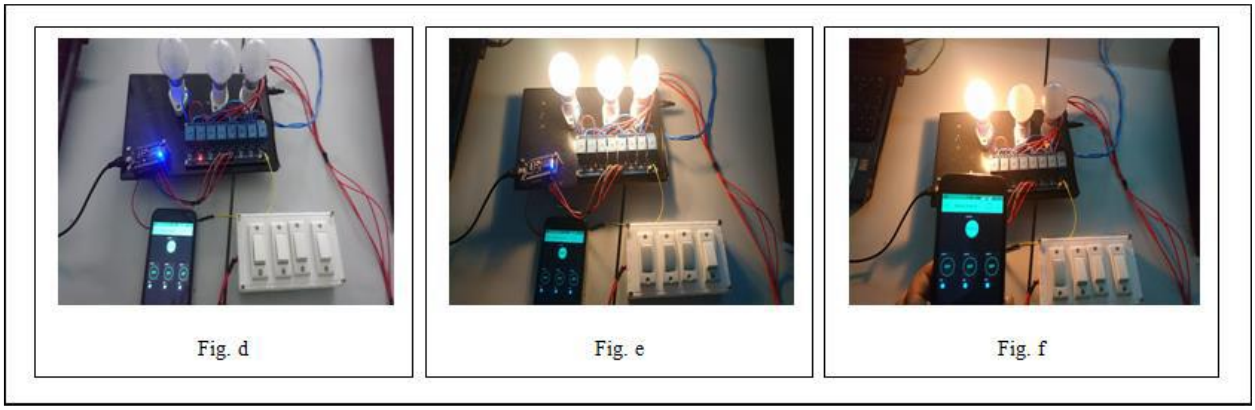
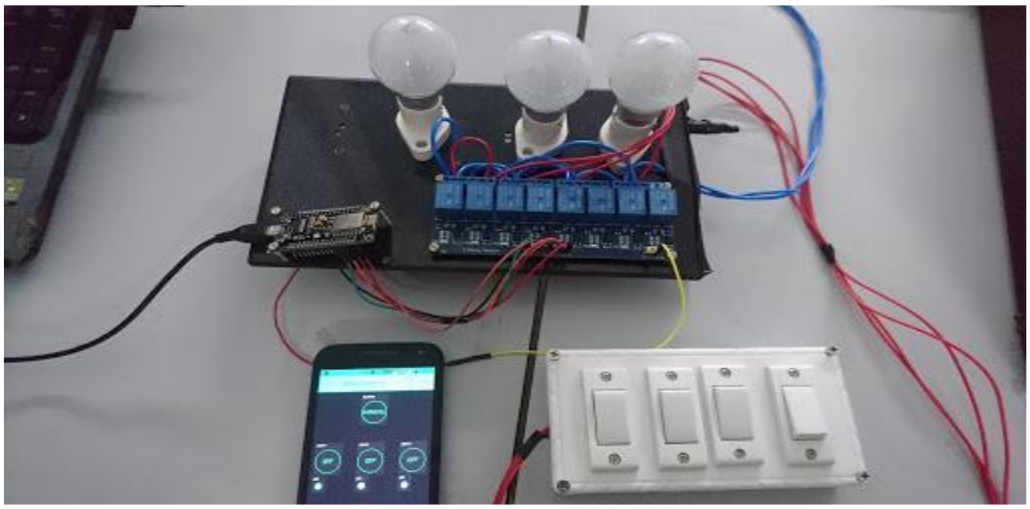


Fig. d Fig. e Fig. f

Fig.4 Home Control Using Manual Switches

From Fig. 4, we can say that the manual switches get controlled by using the manual button in the blynk app. By turning ON the manual button in the blynk app the manual switches operates normally. If the manual button is in OFF position then the manual switches are in inactive state. As shown in Fig. 4(e), the bulbs gets controlled using manual switches.



All the bulbs in Fig. 4(e) gets turned OFF by turning OFF the manual button in Blynk app even though the manual switches are in ON condition. From the above result, we say that we can control our home appliances from anywhere by using a smart phone with Blynk app.

4. CONCLUSION

We can control the AC loads using the Blynk app or manually using the normal switches. The designed system can be controlled from anywhere throughout the world. This will help the user by saving the power by switching off the home appliances in case of forgot to switch off. This will also help for physically disabled people who might otherwise require care givers.