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## Home Automation Using Wi-Fi Interconnection

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**ABSTRACT:** With the surge in usage of power and human population, there is a vital need to conserve electricity in every way possible. The lack of ability to access and control the appliances from remote locations is one of the major reasons for power loss. To overcome this automatic techniques are employed in every aspect of day to day activities. The overall design of Home Automation System (HAS) implements low cost wireless communication between a Raspberry Pi module and an android based application to the IP appliances present at home. This paper provides a combination of these two components--security and ease of lifestyle for people. This paper is designed to assist and provide support for all demographic. This paper discusses about IoT and it can be used for realizing smart home automation using Node MCU-32S. This system consists of a smart phone along with App which is having the home appliances details with ON and OFF conditions. Smart phone is connecting with Node MCU-32S using the Authentication key of Node MCU-32S through Wi-Fi. Unlike most of the home automation systems available in the present scenario, the proposed system is accessible that one server can handle many hardware interface modules as long as it exists on Wi-Fi network communication coverage.

**KEYWORDS:** Blynk app, Node MCU-32S, Node MCU Power supply , Relay driver.

### I.INTRODUCTION

Now-a-days home automation system is being widely used to control devices around the home. A variety of home devices can be controlled with the help of a home automation system. All kinds of home appliances like doors, lights, fan, electric heater, surveillance systems, and consumer electronics belong to the home automation system devices. Home automation system is adopted by using the technology available for the purpose of controlling the devices as well as the systems used in the home automatically.

This paper presents an intelligent home automation to control the home appliances and electrical and electronic equipment by using smart phone. It will turn ON or OFF the home appliances and electrical equipment by using relay circuits with the concept of IOT. This is implemented by using Node MCU-32S.

### II.SYSTEM MODEL AND ASSUMPTIONS

In this Paper we proposed Home automation using Wi-Fi interconnection. To supply the Node MCU with electricity, 3.7 V lithium polymer batteries with a capacity of 2500 mA h are used, which are linked to the Node MCU through the VIN and ground pins. The positive pole of the battery (+) connects to the pin of the VIN and the negative pole of the battery (-) to the ground pin. The Node MCU has a power output of 3.3 V to supply other devices with power; in this case, we supplied the sensors with 3.3 V of power.

#### Coding of Node MCU through Arduino IDE

After building the Node MCU-32S, the code, which enables the control of the data measured by the in the database, was written and uploaded to of Node MCU board using Arduino IDE. Since 2015, Arduino IDE has allowed programming of Node MCU boards. The Arduino language is merely a set of C/C++ functions that can be called from



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our code. The developed program and the changes made in the program can be easily uploaded into the Node MCU board through a USB cable.

## **IDE:**

An integrated development environment (IDE) is a software application that provides comprehensive facilities to computer programmers for software development. An IDE normally consists of at least a source code editor, build automation tools, and a debugger.

## **III.EFFICIENT COMMUNICATION**

In this paper we proposed use of IOT technology for Home appliance automation. A Wi-Fi modem is used for receiving commands over the internet. The Wi-Fi module receives user commands over the internet. This information is then passed on to the microprocessor. The microprocessor now processes this data and switches the loads through relays. Also it switches the fan, light as per users commands. Also it displays the status of the system on mobile screen. Thus office automation system allows user to control his office remotely using IOT technology by using BLYNK app.

### **Installation and Configuration of Blynk App**

1. Firstly install “Blynk” application from play-store and open it.
2. Create an account by using Email account or Facebook account.
3. Click on New Project, enter the Project Name (enter the Project Name according to your wish) as “Home Automation“, Choose Device as “Node MCU“, Connection Type as “Wi-Fi” and then click “Create” icon.
4. After the creation of Project, App will send the Auth Token code to registered Email ID.
5. Click on the “+” icon which located on top right side of the app to create buttons.
6. Enter the button name and select the GPIO pins (ex: D0, D1, D2, D3)

## **IV.SECURITY**

The proposed smart home automation system has the ability to control and monitor the following appliances in house environment.. Also the implemented home automation system can be used to switch on/off the following electrical appliance Lights on/off/dim, HVAC on/off, Door lock, Window shutdown and on/off different appliances. The main challenges faced during the implementation of Home automation systems are poor manageability, high cost of ownership, inflexibility, and difficulty in achieving good level of security.

## **V. RESULT AND DISCUSSION**

In the fig 1, it shows the Hardware implementation of Home automation using Wi-Fi interconnection, where the LED is on, it indicates that the power supply section is on. The appliance Fan is on and the second appliance which is connected to the hardware by using blynk app i.e. Lamp is in Off condition.

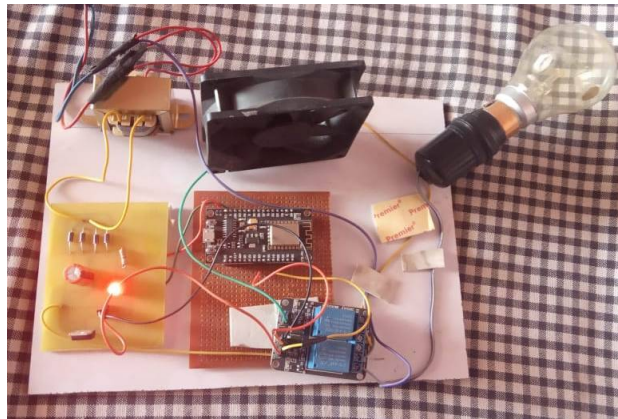
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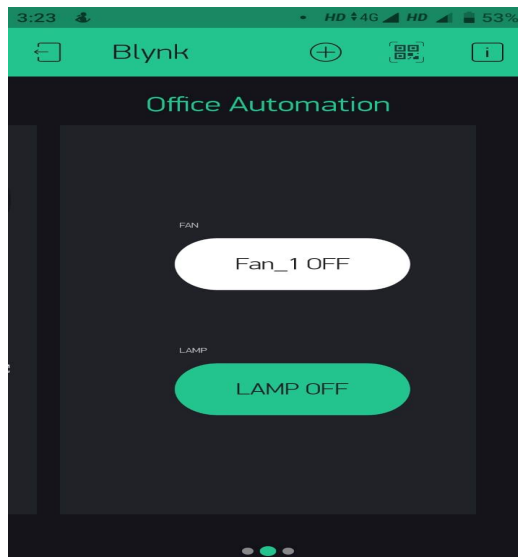
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Fig. 1 Hardware implementation of Home automation by using Wi-Fi interconnection



In the fig 2, it shows the monitoring of the home automation system using BLYNK app. In which it is directly shows the controlling of the appliances connected to the hardware. The appliance Fan is OFF as shown in app also the second appliance Lamp is OFF .

Fig. 2 Output on BLYNK app



## VI. CONCLUSION

In this paper, a prototype smart home automation using IOT is presented. This work will be carried forward by integrating relays to Node MCU-32S for controlling home appliances from a remote location in a real scenario. In the future extensions to the project, the smart Door Bell can be made by implementing voice and video calls with the person standing right outside the door and the owner remotely. There by increasing the safety quotient of the system.



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