

Voice Controlled Home Automation System

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Abstract - With advancement of Automation technology, life is getting simpler and easier in all aspects. In today's world Automatic systems are being preferred over manual system. With the rapid increase in the number of users of internet over the past decade has made Internet a part and parcel of life, and IoT is the latest and emerging internet technology. Internet of things is a growing network of everyday object-from industrial machine to consumer goods that can share information and complete tasks while you are busy with other activities. Wireless Home Automation system (HAS) using IoT is a system that uses computers or mobile devices to control basic home functions and features automatically through internet from anywhere around the world, an automated home is sometimes called a smart home. It is meant to save the electric power and human energy. The home automation system differs from other system by allowing the user to operate the system from anywhere around the world through internet connection. In this paper we present a Home Automation system(HAS) using Blynk Community that employs the integration of cloud networking, wireless communication, to provide the user with remote control of various lights, fans, and appliances within their home and storing the data in the cloud. The system will automatically change on the basis of sensors' data. This system is designed to be low cost and expandable allowing a variety of devices to be controlled.

Keywords: Home Automation, Smartphones, ESP8266, IFTTT, Google Assistant, wireless technology.

I. INTRODUCTION

IOT or internet of things is an upcoming technology that allows us to control hardware devices through the internet. Here we propose to use IOT in order to control home appliances, thus automating modern homes through the internet. This system uses 4-loads to demonstrate as house Appliances Controlling. Our user friendly interface allows a user to easily control these home appliances through the internet Worldwide. For this system we use a NodeMCU (Node Microcontroller Unit).This microcontroller is interfaced with a Relay modem to get user commands over the internet. Relays are used to switch loads. The entire system is powered by a 5V Adaptor/Charger (Micro-type). After receiving user commands over the internet, NodeMCU processes these

instructions to operate these loads accordingly and display the system status on a Smart Phone Display. Thus this system allows for efficient home automation over the internet. In this we have used the Blynk Community Application for controlling the Home Appliance all over the world. The Method used for controlling are Swiping the figures on Smartphone or Voice Control with Google assistant and After that we have used the latest technique that is IFTTT Platform & Web-Hooks For triggering our circuits. It will trigger the circuit as it gets input command from the Google assistant.

II. COMPONENTS AND REQUIREMENTS

2.1 NodeMCU ESP-826612E

NodeMCU is a low-cost open source IoT platform. It initially included firmware which runs on the ESP8266 Wi-Fi SoC from Espressif Systems, and hardware which was based on the ESP-12 module. Later, support for the ESP3232-bit MCU was added. The term NodeMCU stands for Node Microcontroller unit It has open source hardware and It is on board software environment. NodeMCU is also called as Devkit 1.0. System on chip(SOC) called ESP-8266.The ESP8266 is a low-cost Wi-Fi microchip with full TCP/IP stack and microcontroller capability. The ESP8266 is the name of a micro controller designed by Espressif Systems. The ESP8266 itself is a self-contained WiFi networking solution offering as a bridge from existing micro controller to WiFi and is also capable of running self-contained applications. This module comes with a built in USB connector and a rich assortment of pin- outs. With a micro USB cable, you can connect NodeMCU dev kit to your laptop and flash it without any trouble, just like Arduino. It is also immediately breadboard friendly.



2.2 Relay Module

This is a 5V 4-channel relay interface board, and each channel needs a 15-20mA driver current. It can be used to

control various appliances and equipment with large current. It is equipped with high-current relays that work under AC250V 10A or DC30V 10A. It has microcontroller a standard interface that can be controlled directly by microcontroller.



2.3 ESP-8266

The chip first came to the attention of Western makers in August 2014 with the ESP-01 module, made by a third-party manufacturer Ai-Thinker. This small module allows microcontrollers to connect to a Wi-Fi network and make simple TCP/IP connections using Hayes-style commands. However, at first there was almost no English-language documentation on the chip and the commands it accepted. The very low price and the fact that there were very few external components on the module, which suggested that it could eventually be very inexpensive in volume, attracted many hackers to explore the module, chip, and the software on it, as well as to translate Chinese documentation. The ESP8285 is an ESP8266 with 1 MiB of built-in flash, allowing devices capable of connecting to Wi-Fi.



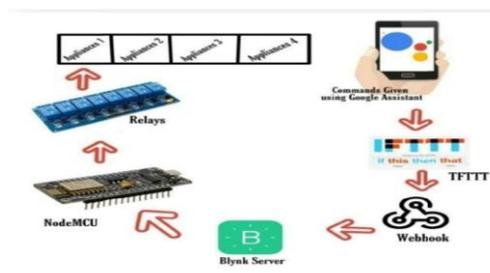
2.4 Power Supply

Today almost every electronic device needs a DC supply for its smooth operation and they need to be operated within certain power supply limits. This required DC voltage or DC supply is derived from single phase ac mains. A regulated power supply can convert unregulated an AC (alternating current or voltage) to a constant DC (direct current or voltage). A regulated power supply is used to ensure that the output remains constant even if the input changes. A regulated DC power supply is also called as a linear power supply; it is an embedded circuit and consists of various blocks. The regulated power supply will accept an AC input and give a constant DC output. So we have powered the Kit/ set-up with the Adaptor

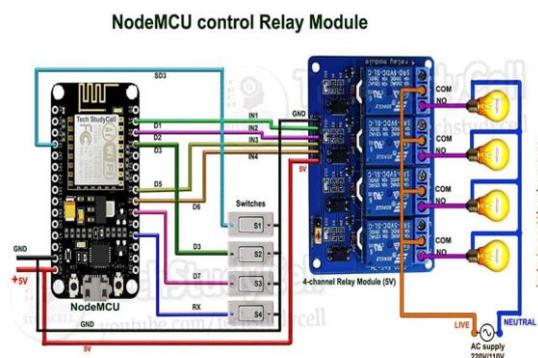
which gives exact 5V output voltage we have used the micro-type USB cables for connection of Controller with Adaptor.

III. BLOCK DIAGRAM & CIRCUIT DIAGRAM

3.1 Block Diagram



3.2 Circuit Diagram



In Google assistant-controlled home automation, first the user should have an Android smartphone with Google assistant installed in it. When the user gives commands to the Google assistant, the commands will be checked with the commands in the IFTTT website which are already set. Then the next step is setting up the virtual switches in Adafruit website. If the commands given by the user matches with the commands in the IFTTT website, then depending on that commands, the virtual switches in Adafruit will be turned ON or OFF. This will be sensed by the Node microcontroller and it will turn ON or OFF the relay depending on the commands. All this will be done over the Internet. In this, the relay will act as a switch and the Home appliances connected to the relay will be turned on or off. The number of Home appliances connected depends upon the number of relays.

IV. WORKING OF SYSTEM

NodeMCU Esp-8266

It is Node Micro-Controller Unit. It takes input from user from internet, then process the data and perform operation. As per programme fed in the Microcontroller and obtain output as per user requirements.

Relay Driver

Basically the output of microcontroller is in Milli-volts so this output sufficient to run the bulky load output.

So as to run the appliances on 230v we require an Relay module so the output is fed to the relay module according to given input to the relay module it will generate output and drive various appliances and load e.g. Lamp, Fan ,Tube light ,

Output

These are the output Generated from the given input by the user. The user can set the various output sections and can gain output through any of the section like Home appliance A for lights, Home appliance B for fans, Home appliance C for T.V .and many more...

Home appliance A

Home appliance B

Home appliance C

Home appliance D

V. CONCLUSION

While wearing down this endeavor we have grabbed a lot of finding out about various modules being used in this errand. We are glad we can build this Project as a part in this endeavor and set up new musings. We believe the assignment completes as needed and the data grabbed in the midst of this period will be used in our future corporate life. Additionally, we might want to include that home computerization is the fate of places of new world. Home automation is a resource which can make home environment Automated. People can control their electrical devices via. Smartphone these home automation devices and set-up controlling action through mobile. In future these products may have high potential for marketing.

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