

# Real Time Home Automation Using Google Assistant

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**Abstract-** World's demand for electricity had grown 85% between 2010 and 2018 this increase is more than today's total use of electricity in India, USA, Japan, Australia combined. Electricity growth rate cannot not be reduced but can be lessen the amount of electricity wasted each year by turning off our home appliances when not in use. This project presents a design and prototype of Home Automation system that will use ESP8266 Wi-Fi module as a network provider in connecting with other appliances. The proposed system has two main components. The first main part is Node MCU, which controls and manages input of Wi-Fi module. The other main component is Wi-Fi module through Wi-Fi module a web server can be added to the module which will help in controlling of devices over Internet. One server can manage many hardware interface modules as long as it exists on Wi-Fi network coverage. It supports a wide range of home automation devices like power management components, and security components. We want to make this automation system centralized and artificially intelligent. Also, an application would be developed which will allow the user to control their devices using the Google Assistant

**Index Terms:- Internet of Things (IoT), Bynk Server, IFTTT application and Google Assistant**

## 1. INTRODUCTION

The Intelligent management of the power system facilitates the joint use the current and minimizes power loss during transmission and power consumption is highlighted by the global community, academic institutions, and state administration. The idea of a smart grid enabling technologies used in recent years for the gain of full utility, customer protection, attracting a great deal of attention in the energy industry and academia. In continued growth of popularity and functionality by mobile devices, demand advanced mobile applications widespread in human life. Human assistants like housekeepers were a way for millionaires to keep up their homes in the past. Even now when technology is handy enough only the well to do people of the society are blessed with these new smart home devices, as these devices costs are a bit high. However, not everyone is wealthy enough to be able to afford a human assistant, or some smart home kit. Hence, the need for finding an inexpensive and smart assistant for normal families keeps growing. Home automation is also named as domestics or Smart home. It involves the control and automation of lighting, heating, ventilation, air conditioning and security, as well as home appliances. Wi-Fi is often used for remote monitoring and control. Home devices, when remotely monitored and controlled via Internet is a part of Internet of things. Modern systems generally consists of switches and sensors connected to a central hub called a gateway from which the system is controlled with a user interface that is interacted either with a mobile phone software, tablet, computers or a web interface, often but not always via internet cloud services. World's demand for electricity had grown 85% between 2010 and 2018

## 2. SYSTEM DESIGN AND IMPLEMENTATION

The framework configuration is separated into two fundamental classifications,

- The equipment it has the capacity to interface with the switch. It would likewise have the capacity to turn on/off determined gadgets, for example, lights and fans. It is known as the 'Control Unit'. What's more,
- The Product the Blynk application, the IFTTT application and the Google Right hand comprise the product of the structure and these applications would be incorporated in the Android gadget.

The Control Unit includes the microcontroller-NodeMCU and the 4/8 Channel Hand-off board. Transfer board utilizes ULN 2803 IC to control the transfers. The Blynk application on an Android gadget speaks with the microcontroller and Fig 2 underneath demonstrates the fundamental framework plan engineering.

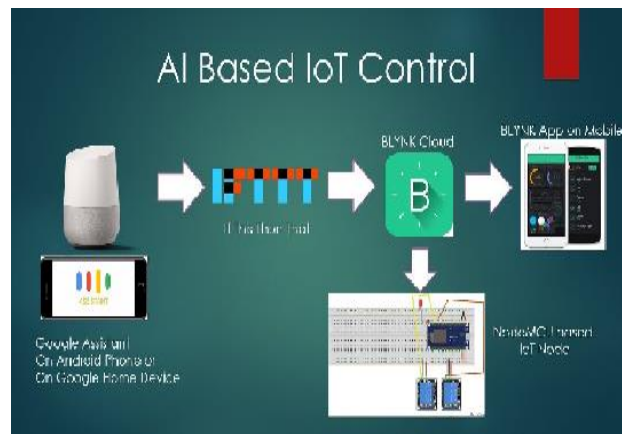


Fig 2 Home Automation Using Blynk Server And Google Assistant

### 2.1 NODE MCU (ESP8266)

The NodeMCU (Node Microcontroller Unit) is an open source programming and equipment improvement condition that is worked around an extremely economical System-on-a-Chip (SoC) called the ESP8266. The ESP8266 is structured and fabricated by Express, contains every single vital component of the cutting edge PC: CPU, RAM, organizing (Wi-Fi), and even an advanced working framework and SDK. At the point when acquired at mass.

That settles on it a phenomenal decision for this framework plan.

The NodeMCU expects to streamline ESP8266 improvement. It has two key segments.

i. An open source ESP8266 firmware that is based over the chip maker's exclusive SDK. The firmware gives a basic programming condition dependent on eLua (implanted Lua), which is an exceptionally basic and quick scripting language with a set up designer network. For new comers, the Lua scripting language is anything but difficult to learn. What's more, to add on NodeMCU can be modified with the Android IDE as well.

ii. An improvement pack board that fuses the ESP8266 chip on a standard circuit board. The board has a worked in USB port that is as of now wired up with the chip, an equipment reset catch, Wi-Fi receiving wire, LED lights, and standard-sized GPIO (General Purpose Input Output) sticks that can connect to a bread board. Figure 2.1 underneath demonstrates the NodeMCU improvement board.

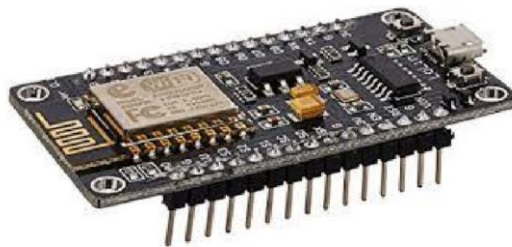


Fig 2.1 Node MCU (ESP8266)

### 2.2 RELAY BOARD

A Relay is an electromagnetic switch. It is enacted when a little present of some microampere is connected to it.

Regularly a hand-off is utilized in a circuit as a sort of switch, a programmed switch. There are distinctive kinds of transfers and they work at various voltages. At the point when a circuit is assembled the voltage that will trigger it must be considered. In this framework the hand-off circuit is utilized to turn the apparatuses ON/OFF. The high/low flag is provided from the NodeMCU microcontroller. At the point when a low voltage is given to the hand-off of an apparatus it is killed and when a high voltage is given it is turned on. The hand-off circuit to drive four apparatuses in the Home mechanization framework is appeared in figure 2.2. The quantity of machines can be changed by the client's necessities.

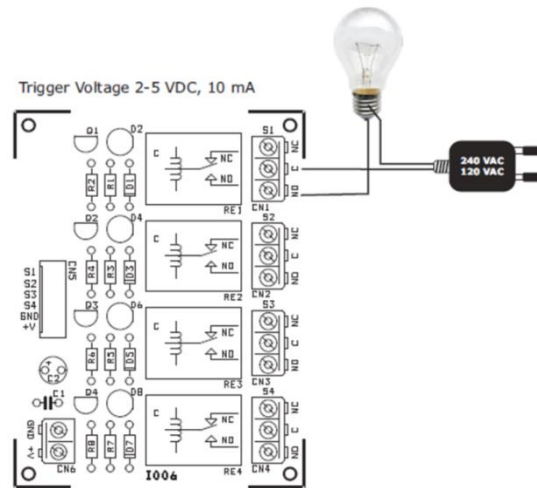


Fig 2.3 Relay Board Wiring Diagram

## 2.3 SOFTWARE

The software of the system proposed consists of mainly the Blynk Application and the IFTTT application.

### 2.3.1 BLYNK APPLICATION

Blynk is a Platform with iOS and Android applications to control Arduino, Raspberry Pi, NodeMCU and a few different boards over the Web. Blynk was intended for the Web of Things. It can control equipment remotely, it can show sensor information, it can store information, envision it and do numerous other cool things.

Blynk Application setup is required; we set it up according to the prerequisite. We start by making a venture and after that choosing the microcontroller we are utilizing. After which we make the switch catches for each transfer related with the advanced pins of the microcontroller. When this is done, Blynk sends a verification token to the enlisted email id for this specific task. This token ought to be noted and put something aside for its utilization while programming the NodeMCU and setting up the IFTTT application.

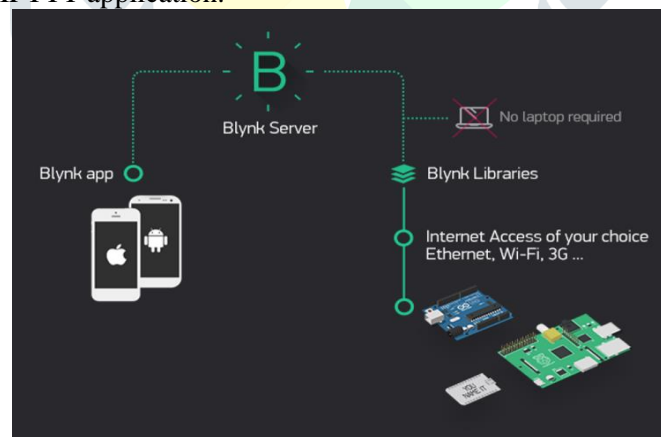


Fig -2.3.1 : Functioning of the Blynk Application

### 2.3.2 IFTTT APPLICATION

IFTTT gets its name from the programming contingent proclamation "on the off chance that this, at that point that." IFTTT is both a site and a versatile application that propelled in 2010 and has the trademark "Set the Web to work for you". The thought is that you use IFTTT to mechanize everything from your most loved applications and sites to application empowered frill and shrewd gadgets. What the organization gives is a product stage that interfaces applications, gadgets and administrations from various engineers so as to trigger at least one mechanizations including those applications, gadgets and administrations. Here, IFTTT application is utilized to conquer any hindrance between the Google Associate directions and the Blynk application.

Setting up the IFTTT application initially requires signing in after which we have to make an applet and after that "This", for example the trigger, here we select Google Partner and afterward we will type in the directions to which the

Google Colleague ought to react and to this order it should control the machine/transfer related with it. The reaction order from the Goggle Associate can likewise be composed in as wanted.

In the wake of designing the trigger, for example "This" of the application we have to arrange the "That". What ought to be done once the Google Associate hears the direction which we simply arranged? This is chosen by setting "That" of the application. We click "That" and after that select webhooks [7] and click interface. Webhooks will enable us to send directions to the Blynk Server. Presently, in the URL we type the IP address of the Blynk server pursued by the Authentication token sent by the Blynk and afterward the stick number of the microcontroller to which the gadget to be controlled is associated. The URL ought to be in the accompanying arrangement:

<http://188.166.206.43/AuthToken/stick/CorrespondingDigit alPinNo>.

At that point in the technique we select 'PUT' and the substance type is 'Application/JSON' and in the body we compose ["1"] to turn ON and ["0"] to kill. This makes the activity for the trigger for example the Google Partner direction. The move made by it is essentially making an impression on the Blynk application to either kill ON or the concerned associated gadget.

At last, the microcontroller is customized with the activities it needs to do once it gets the flag from the Blynk application. Prior to that, the Blynk and the microcontroller ought to convey and the correspondence is done by means of the web and since the microcontroller, NodeMCU accompanies inbuilt Wi-Fi module, it is customized to associate with the ideal system once connected. 'C' language is utilized to program the microcontroller and is modified in the Arduino IDE.

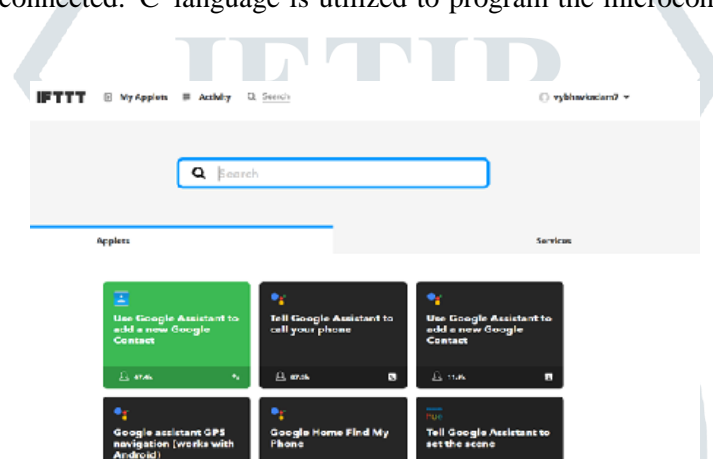


Fig 2.3.2 Screenshot of the IFTTT Application after Creating Several Applets

### 3. EXISTING SYSTEM AND PROBLEM STATEMENT

The Google Assistant is a software which allows its users to control all the apps in their device to be controlled directly through it. It allows the users to control and command most of the apps in their devices using voice commands. This provides more convenience to the people as they only have to command the google assistant through voice command. Here are some of Constraint

- Slow monitoring delays produce and efficiency.
- Periodic checking with the connection.

#### 3.1 PROBLEM STATEMENT

The aim of this project is to investigate existing or possible voice control of technical functions in smart homes for the purpose of determining what possible effects those installations will generate on both home and living. Possible smart home services implemented by voice control. Which possible effects could implement voice command in smart homes have on the user.

### 4. CONCLUSION AND FUTURE WORK

The aim of this paper was to propose a cost effective voice controlled (Google Assistant) home automation controlling general appliances found in one's home. The approach discussed in the paper was successful as Real Time Home Automation Using Google Assistant design was successfully implemented. This system is highly reliable and efficient for the aged people and differently abled person on a wheel chair who cannot reach the switch for the switching ON/OFF the device and are dependent on others.

#### 4.1 FUTURE WORK

The future extension for RTHAUGA can be gigantic. There are numerous factors to enhance to make RTHAUGA all the more dominant, keen, adaptable, and to turn out to be better generally for home automation. For instance, controlling the speed of the fan, increasingly number of gadgets can be incorporated, similar to an espresso machine, climate control system and so forth. To influence the framework to react all the more quicker claim private Blynk server can be made. All things considered, no framework is ever impeccable. It generally has an extension for development. One simply needs to start thinking critically and attempt and improve the framework more.

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