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# HOME APPLIANCES CONTROL AUTHENTICATION USING NODEMCU

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*Abstract— With the advancement of Automation technology, life is obtaining easier and easier altogether aspects. In today's world, Automatic systems are being most popular over manual system. With the fast increase within the variety of users of web over the past decade has created web vicinity and parcel of life, and IoT is that the latest and rising web technology. Web of things could be a growing network of an everyday object-from industrial machine to trade goods that may share info and complete tasks whereas you're busy with different activities. Wireless Home Automation system (WHAS) mistreatment IoT could be a system that uses mobile devices to manage basic home functions and options mechanically through Wi-Fi network, an automatic house is typically referred to as a sensible home. It is meant to avoid wasting electrical power and human energy. During this project, we tend to gift a Home Automation System (HAS) mistreatment NodeMCU that employs the management of varied lights, fans, and appliances at intervals in their home. This method is intended to be low priced and expandable permitting a range of devices to be controlled.*

*Keywords— Internet of Things (IoT), Home Automation System (HAS), NodeMCU, Google Assistant (GA)*

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## I. INTRODUCTION

Today, technology trend has become an associate degree integrated a vicinity of people's lives. It has, and continues to influence of many aspects of a way of life and has allowed higher social interaction, easy transportation, the power to fancy diversion and media and has helped within the development of drugs. The creation of the many devices like mobile phones and computers has caused many of us to have faith in technology to speak with their friends, store info like footage, movies, documents, and music. The net has become a standard interface that several devices use to change the way of life of the many folks. The net has given folks the power to go looking for info, store their info within the cloud whereas conjointly giving them higher ways in which of managing info.

From the time of its introduction, the quantity of individuals that use mobile phones and also the net to speak with others has increased dramatically to become one amongst the most important means that of communication. Smartphones have allowed folks to attach to the net while not the requirement for a laptop, whereas still giving similar practicality however through totally different means that. With the introduction of higher hardware and the next code, Smartphone has become one among the powerful devices and have become an important a part of people's daily lives. A significant reality is, however, the Smartphone is prepared to connect and communicate with various devices. For example, Smartphones

square measure usually used as a mouse for a portable computer, or it'll attach with the speakers of cars allowing shoppers to play their music. There square measure many applications of this kind. A field that is recently gaining quality is home automation which could collectively use Smartphones as data or utility hubs.

## II. LITERATURE SURVEY

This paper presents the planning and implementation of the good Home Controller whereby the user will management their devices victimization the humanoid Application running on a sensible Phone. The system employs client-server design and also the net of Things (IoT) for communication. The controller is intended with the Arduino microcontroller (Node MCU) at the buyer finish and is connected to the web through Wi-Fi, during this system, each device is connected to the web through the IoT protocol and dominant is finished through protocol requests sent from the humanoid mobile application. The API (Application Programming Interface) connects the server and humanoid application and permits it to act and exchange information with the server. Whenever the user sends requests from the humanoid application, the API connects to the server and it sends the request to the controller, any to that the controller performs ON/OFF perform of the device supported the request received. Victimization this methodology, dominant home appliances is mentioned during this paper [1].

By the virtue of blooming automation business and wireless property, all the devices among the house will be connected. Today's World is moving to digitalization wherever everything is created simple and cozy for folks i.e. Young youth in addition as an oldster. Good automatic House Application mistreatment IoT (Internet of Thing) is a system wherever basic house facilities will be handled by a tool from anyplace like ON and Off of sunshine, Fan, AC, Water pump, agriculture of Water. One will handle these things with the assistance of device NodeMCU ESP8266, humanoid Application, web association. This paper includes the practicality of node esp8266 is connected with either of the above-given house application like fan, light, water pump, agriculture with facilitate of committal to writing and hosting on-line with the web server. All the practicality is handled by Mobile App created in the humanoid application; from that house application is controlled with the assistance of the web. This paper is instructive that watching of circuit devices through wireless communication of Node MCU and dominant mistreatment of Blynk app. In keeping this we would like to need, one may also connect multiple devices like sensors, appliance and so on [2].

## III. EXISTING SYSTEM

All Many home devices currently have Wi-Fi and may move with alternative home devices, Smartphones applications, and residential computers. A difficulty is that these devices cannot communicate with another device nor need a further device to try to do and want a private application on the Smartphones to be controlled. A far higher possibility is to unify these devices into one program/device that controls them. As associate degree example, one wills management the lights, microwave, oven, tv, air-conditioning, and door locks through one application on the Smartphones. this offers the patron a lot of management of their home, as an example, it permits them to line up conditions for the lights activate, or if they're on their method home, to change on the AC before they get home. Therefore, home automation will modify several manual actions. And if you're going for a visit and you forget to change off your light then you'll be able to manage your lights remotely.

## IV. PROPOSED SYSTEM

One home automation application that has recently begun to become thought is that the ability to regulate appliances exploitation Associate in the Nursing application or through google voice commands. This project is to develop a model of a product capable of dominant your lights remotely with a stress on low price and open supply configurability. The top goal on the far side of this project would be a product that may hopefully enable individuals to attach to several different home devices through Wi-Fi. Few of the Key points of our proposed system is as mentioned below –

1. Home automation refers to the automatic and electronic control of household features, activity, and appliances.
2. Various control systems are utilized in this building automation.
3. Our project gives you access to control devices in your home from a mobile device anywhere in the world.
4. Our project controls lights, appliances, electrical outlets, heating, and cooling systems that are hooked up to a remotely controllable network.

## V. WORKING WITH THE SYSTEM

### Circuit Architecture Model

The below circuit diagram represents the representation of the complete system and also the connections are as shown in the same diagram. As the system deals with the high voltage power, safety measures have to be taken for the components of the system. The red-colored wire is the positive (i.e. High tension wire) and black colored wire is negative (i.e. Neutral wire). Those two wires are directly connected from mains to the system. The relay has four channels; it is power-driven up by employing a 9V battery. The relay module is successively connected to E.S.P. 8266 or the Node MCU exploitation Jumper wires. The Node MCU is power-driven up employing a small USB cable. The ability offer to the NodeMCU is really given by a standard mobile charger wire. The connections from the relay module to the NodeMCU are made in this particular format:

- D3 of the NodeMCU is connected to IN11 of the relay module.
- D4 of the NodeMCU is connected to IN12 of the relay module.
- D5 of the NodeMCU is connected to IN13 of the relay module.
- D6 of the NodeMCU is connected to IN14 of the relay module.
- GND of the NodeMCU is connected to the GND of the relay module.

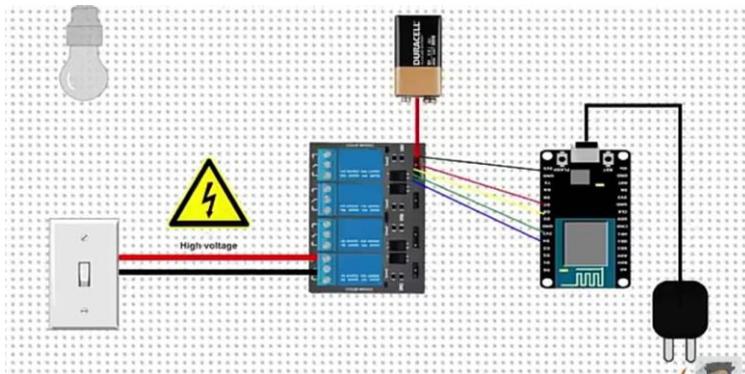


Fig 1: Representation of the circuit diagram of the system.

### Modified Model

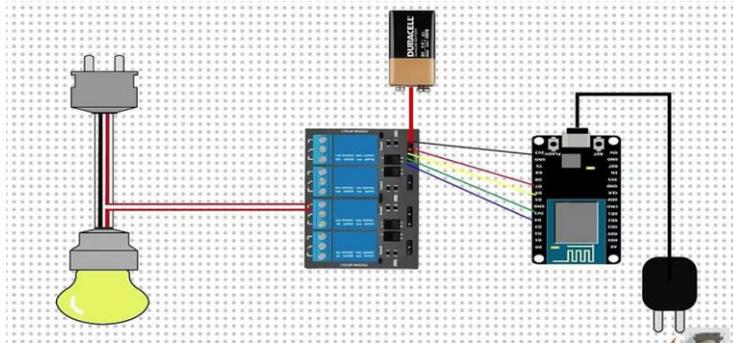


Fig 2: Representation of the circuit of Modified Model

The above figure shows the entire circuit diagram and the connections done in our project. As we deal with a high voltage we have to be careful while handling the components. The Red wire i.e. positive and the black wire Negative are connected to the mains directly. The wires are connected to the Relay module. The relay module used in our experiment is a 4channel relay module. It can be powered up using a battery or breadboard power supply or also Li-ion rechargeable module or we can also use the arduino to power up the replay module. The relay module is in turn connected to ESP 8266 or the Node MCU using Jumper wires. The Node MCU can be powered up using a micro USB cable. The power supply to the NodeMCU is actually given by a normal mobile charger wire. The Arduino is used in our system to power up instead of battery.

The connections from the relay module to the NodeMCU are made in this particular format:

- D3 of the NodeMCU is connected to IN11 of the relay module.
- D4 of the NodeMCU is connected to IN12 of the relay module.
- D5 of the NodeMCU is connected to IN13 of the relay module.
- D6 of the NodeMCU is connected to IN14 of the relay module.
- GND of the NodeMCU is connected to GND of the relay module.

**ESP8266 Module:**

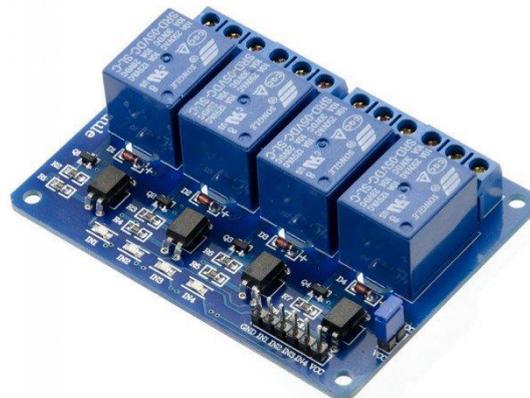
NodeMCU is Associate in nursing open source supply for IoT platform. It includes computer code that runs on the ESP8266 Wi-Fi SoC from communicatory Systems, and hardware that relies on the ESP-12 module. The term "NodeMCU" by default refers to the computer code instead of the event kits. The computer code uses the scripting language. it's supported the eLua project, and engineered on the Espressif Non-OS SDK for ESP8266. It uses several open supply comes, like lua-cjson, and spiffs.



**Fig 3: Representation of the NodeMCU (ESP8266)**

**Relay Module:**

The relay module may be a separate hardware device used for remote device change. With it you'll be able to remotely management devices over a network or the net. Devices are often remotely powered on or off with commands returning from Clock-watch Enterprise delivered over space or a neighborhood or wide area network. You'll be able to management computers, peripherals or different powered devices from across the workplace or across the planet. It often wants to sense external On/Off conditions and to manage a range of external devices. The laptop interface association is formed through the interface. This module homes 2 SPDT relays and one wide voltage vary, optically isolated input. These are brought bent on screw-type terminal blocks for straightforward field wiring. Individual LED's on the front panel monitor the input and 2 relay lines. The module is powered with associate AC adapter.



**Fig 4: Representation of Relay Module**

**VI. RELATED RESULTS**



**Fig 5: Representation of the model setup**

The above diagram represents the model integrated with the Google assistant where we use voice command to control the activities. The below diagram (fig 6) represents the output of the model.



**Fig 6: Representation of the output of the Model**

## VII. CONCLUSIONS

To control home appliances to the Wi-Fi network we tend to use a NodeMCU and to attach home appliances to NodeMCU we tend to use a relay board. On our Smartphones we've got organized Blynk application. Blynk is an online of Things platform with a drag-n-drop mobile application builder that enables to see detector knowledge and management natural philosophy remotely in minutes. Blynk IoT cloud resolution is ASCII text file. Blynk hardware libraries support Arduino, Genuino, Raspberry Pi, Particle gauge boson, lepton and plenty of a lot of. The Blynk is largely a Smartphones application so as IFTTT. The Blynk application sends ON or OFF command to the NodeMCU and that successively is connected to the relay board controls the house appliances. However during this case we wish commands to be through voice which can to be recognized and so the command ought to be dead. The voice is inputted by Google assistant voice commands.

We are able to neither send Google assistants voice commands on to the NodeMCU. Blynk application. Thus we tend to use one thing known as as IFTTT which might bridge the gap between Google voice commands and additionally the Blynk application. The enlargement of IFTTT is "IF This Then That". thus within the finish this however things can work, like once we say a voice command to Google assistant it'll send that command to IFTTT. Successively IFTTT can interpret the command and so it'll send associate acceptable request to the Blynk application. Then the Blynk application sends the command to the NodeMCU and successively it sends it to the Relay board to regulate the house appliances..

## REFERENCES

- [1]. Madhu G M, C [Vyjayanthi](#) "Implementation of Cost Effective Smart Home Controller with Android Application Using Node MCU and Internet of Things (IoT)" IEEE-Explora.
- [2]. [Homera Durani](#), [Mitul Sheth](#), [Madhuri Vaghasia](#), [Shyam Kotech](#), published in [2018 Second International Conference on Inventive Communication and Computational Technologies \(ICICCT\)](#)
- [3]. Mandula Kumar, Parupalli Ramu, CH. A. S Murty, E. Magesh, *Mobile based home Automation Using Internet of Things (IoT)*, 2015.
- [4]. Yan, H. Shi, "Smart living using Bluetooth based android smartphone", *International journal of wireless & mobile networks*, vol. 5, no. 1, pp. 65, 2013.
- [5]. [online] Available: <http://developer.android.com/tools/studio/index.html>.