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IOT BASED HOME AUTOMATION SYSTEM USING NODEMCU WITH GOOGLE ASSISTANT

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Abstract - The Home Automation System (HAS) is expansion of current exercises performed inside the home and this Home Automation System can be grown effectively now a days, it just because of strong computational gadgets and remote sensor network(WSN), to IoT-Based Smart Bank to Achieve Home Automation with Gesture Detection and Control. The primary goal of this task is to foster a home computerization framework utilizing an Nodemcu or ESP8266 board being somewhat constrained by any Android OS cell phone. Current houses are steadily moving from ordinary changes to unified control frameworks, including remote controlled switches.

Have you ever thought about a day to day existence where you could simply order your home apparatuses to function as you want just by utilizing your voice. Coming days we will utilize robotized houses which are enacted. This undertaking will illustrate, controlling home electronic machines like T. V., fans, lights and so forth, utilizing the web and your voice and that too low financial plan.

Key Words: NodeMcu, Relay, DC Fan, Led, Connecting Wires, USB Cable.

1. INTRODUCTION

Creating innovation and way of life permits us to give more advantageous working and living spaces. Similarly, most of individuals, particularly the old and wiped out, invest a lot of their energy at home. With the trouble of managing the gadgets and their failure to adjust to the created and present day hardware, this makes a sort of confusion and hindrance for them in completing their day by day exercises. In this way, working on the sense of security, comfort and straightforwardness in the house is an main purpose of incredible social significance. Home robotization is whatever empowers you to utilize your home's lighting, warming and apparatuses all the more helpfully and effectively. It tends to be pretty much as straightforward as remote or programmed control of a couple of lights, or it very well may be a finished framework that controls generally significant pieces of your home. Exceptionally set to your very own inclination.

It centers around remote home mechanization advancements - these are not difficult to retrofit into existing homes presently need for new wiring and no tearing up the rugs or boring openings in the dividers. Every innovation has its own interesting highlights and advantages that makes some more fit to specific applications, while others should be visible for all broad home mechanization establishments. Home Automation is to permit us to control, either from a distance, straightforwardly or with sensors and clocks gadgets so they switch on or off when we really want them and really at that time. For instance, we could turn on a couple of lights from a distance.

The framework console is the "minds" of our shrewd home. It reacts to enter from the sensors and initiates the actuators. The gadgets are "added" to the framework regulator so they are consequently controlled by how we want them. Computerized Home Voice Command System is a method for mentioning and control gadgets through voice messages, which implies in another way that we can address our home and bring out our everyday assignments through voice orders. This implies that we won't have to utilize our hands while doing normal family tasks, for example, working the alert framework, ensuring entryways and windows are shut, or lights on and off, and it is additionally not important to be inside the house to do these exercises, however it is adequate to direct to the house what it should do and screen to complete these exercises in an efficient way and as per our voice orders. With the assistance of Smart home framework, the client can regulate home devices from a distance and acknowledge constant checking of home security status through cell phone. The clients can trade data with home apparatuses, they likewise can screen and control gear to play out their order from a distance.

Today most home uses the electronic apparatuses, for example, fans, light, climate control system and so on As the cell phones are exceptionally normal to all individuals these days involving versatile as the key for controlling the home machines will improve the reasonableness and effortlessness. This advanced mobile phone has the ability of associating with most gadgets hardware.

The home robotization fills different roles to help in the respectable life. It could be summed up as follows:

- Solace work: by further developing lighting such that pairs the air and adjusts the force of lighting to the necessities existing apart from everything else, and accordingly by programming domestic devices and media gadgets.
- Energy saving capacity: by placing warming gadgets in backup mode when occupants are away or consequently adjusting the utilization of electrical assets as per the necessities of the populace to decrease the hopeless cause assets, control utilization and ideal levies.

The work introduced in the proposed framework contains the accompanying focuses:

The idea of the functional plan of our framework: the various instruments of equipment and programming utilized.

- The association of the equipment materials.
- The association of the product.
- The association of the equipment and the product.

2. Literature Review

Manish Prakash Gupta (2018)[6] have proposed “Home automation using voice via Google assistant. The spoken

commands from google assistant sends message to micro-controller this micro-controller pass the message to relay which will switch On and Off the appliances.

Aayush Agarwal, Anshul Sharma, Asim Saket Samad and S Babeetha (2018)[7] "UJALA- Home Automation System Using Google Assistant" 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. Further we will connect the specific home to our database and it can be accessed from anywhere through a specific IP address or website. Also, an app would be developed which will allow the user to control their devices using the Google Assistant.

Md Sarwar Kamal in (2017)[8]"Efficient low cost supervisory system for Internet of Things enabled smart home." This paper proposes an efficient low cost supervisory system for smart home automation that can be managed using IoT. T

he proposed system is based on Apriority algorithm and will help to monitor and control all the home appliances and electronic devices through a supervisory system in a most efficient and reliable manner. Both the consumers and the suppliers will get the opportunity to manage the power distribution by monitoring the electricity consumption.

Nikhil Singh, Shambhu Shankar Bharti, Rupal Singh, Dushyant Kumar Singh (2014)[9]"Remotely controlled home automation system", Advances in Engineering and Technology Research (ICAETR) This paper describes an investigation into the potential for remote controlled operation of home automation systems. It considers problems with their implementation, discusses possible solutions through various network technologies and indicates how to optimize the use of such systems. The home is an eternal, heterogeneous, distributed computing environment (Greaves, 2002) which certainly requires a careful study before developing any suitable Home Automation System (HAS) that will accomplish its requirements. Nevertheless, the latest attempts at introducing Home Automation Systems in actual homes for all kinds of users are starting to be successful thanks to the continuous standardization process that is lowering the prices and making devices more useful and easier to use for the end user. Even so several important issues are always to be handled strictly before developing and installing a Home Automation System; factors like security, reliability, usefulness, robustness and price are critical to determine if the final product will accomplish the expected requirements.

2. Proposed system

In the proposed system we describe how the electric devices or an appliance of our home automatically works through our voice by connecting those devices with the internet of things or with the IOT platform. We used NodeMcu to connect our home devices with the Internet of things. We also used an Blynk app and Google Assistant to make this project more advance and innovative.

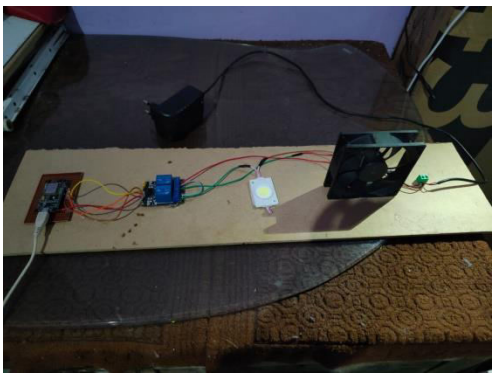

Figure 1: Proposed System

Working of the system is such that we connect NodeMcu with Blynk and Google Assistant, to operate the nodemcu we have to create the program for which we have to use Arduino IDE software.

- In the First part we create a program in Arduino IDE. In which we have to put token no. which we got through the Blynk app. After which we have to connect the Blynk app and NodeMCU, before this we have to connect our app through the hotspot of our mobile. So that with the means of ssid, password of our mobile hotspot and token no. of Blynk app we connect NodeMcu and Blynk app after the compilation of program by putting all that stuffs in the program.
- In the Second part we create a id on IFTTT .After the login on the IFTTT we make an snippets on the IFTTT with the help of Google Assistant and Webhooks. As a result of which we can operate our devices or appliances through our voice.
- In the Third and last part we control our devices with both the platforms Blynk app and IFTTT(voice recognition).

WORKING

The Home Automation System is working with NodeMCU ESP8266 regulator and the order is given by the Blynk application in a cell phone utilizing the WiFi organization. The NodeMCU ESP8266 has an inbuilt WiFi module and the gadgets associated with Home Automation System. Both WiFi is associated with a validation token. The core of the present venture is the WiFi empowered board that needs no prologue to the ESP8266 based NodeMCU_development board. It is an open source stage for creating WiFi based installed frameworks and it depends on the famous ESP8266 WiFi module, running the NodeMCU firmware. NodeMCU was conceived out of the craving to conquer the impediments related with the primary renditions of the ESP8266 module which was not viable with breadboards. It was hard to drive and surprisingly more hard to program. The NodeMCU board is not difficult to utilize. Minimal expense and that immediately charmed it to the core of creators and today is

quite possibly the most famous board. For this venture two channel transfer modules are added to the ESP8266 board. The venture stream includes the control of NodeMCU's GPIO from a website page on any gadget associated on a similar organization as the board. The situation with the GPIO's control the curl of the transfers and makes the hand-off switch back and forth between regularly open(NO) and typically close(NC) condition contingent upon the condition of the GPIO, subsequently successfully turning the associated apparatus " ON" or " OFF".Presently the activity is passed by giving stockpile either Micro USB or Vin, GND. It can work by Blynk application in cell phone i.e., Android or iPhone by manual and by means of Google Assistant with voice. The Hardware is all around worked by our activity.

- **Programming Code of the System**

```
#define BLYNK_PRINT Serial
#include <ESP8266WiFi. h>
char auth [ ] = "tJkoRhpp51-4MEVRUAng6vEC7J4ia0W9";
// auth token from Blynk app.
char ssid[ ] = "Your network name";
char pass[ ] = "Your network password"; void setup( )
  {
  Serial. begin(9600);
  digitalWrite(D0, HIGH);
  digitalWrite(D1, HIGH);
  Blynk.begin(auth, ssid, pass);
  }
  void loop( )
  {
  Blynk.run ( );
  }
```

OUTPUT OF THE SYSTEM

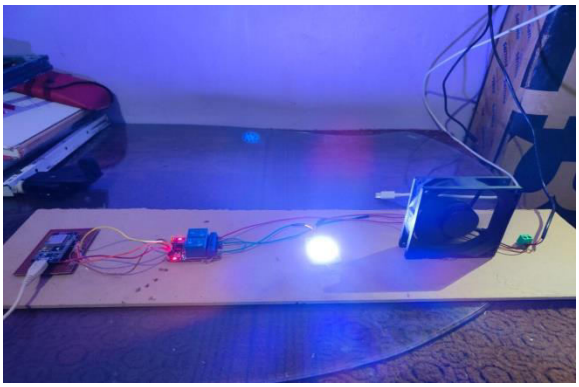

Figure 2:Working System

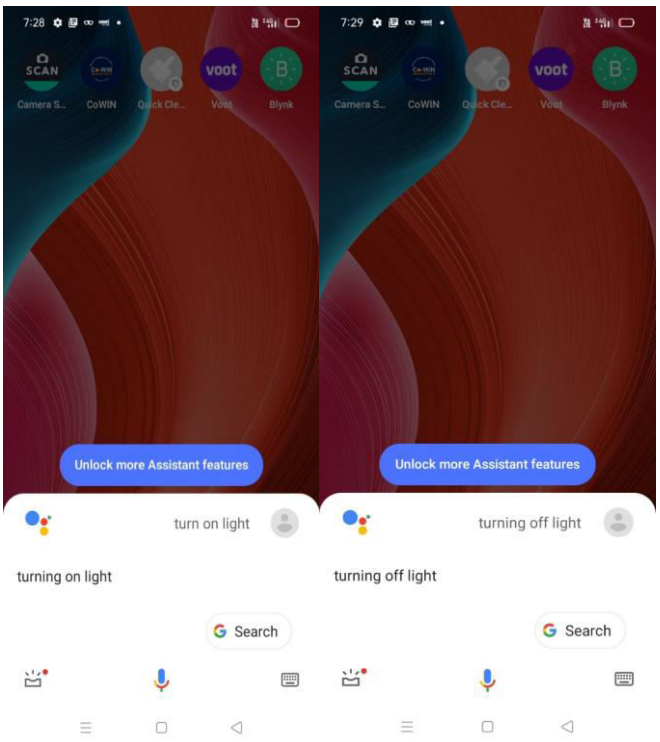

Figure 3: Voice Commands Given to Google Assistant

CONCLUSIONS

Since the improvement of correspondence advances, PCs, programming and wise frameworks, future associated homes are at this point not a difficult to get yet a reality. This has given another lift to the solace of individuals in their homes. In this way, a few new administrations are offered, among them we quote:

- Guarantee the wellbeing and insurance of individuals.
- The Further develop comfortness.
- The Energy saving.

This issue has been the subject of much more research. Consequently, the chance that was proposed to us to deal with this issue through our finish of study project named "Voice Control and the Monitoring of a smart home by the means of Google Assistant" permitted us to measure our capacity to esteem the information previously received. The main issue is an extremely later and continually developing subject which will likewise permit us to consistently learn. Furthermore in this is the postulation, we have outlined the activity of a home mechanization framework dependent on the microcontroller NodeMcu, to plan the checking and control of home gadgets, utilizing Google aide and a Blynk App. we had the option to accomplish the destinations appointed to this undertaking which can be summarized in these two primary concerns:

- Order the microcontroller through the voice.
- Use Google partner to control light (drove bulb) and fan.

For sure, the commitment of this undertaking is predominantly summarized in the disclosure of another field called home mechanization, which is an exceptionally interesting and extremely immense and inventive field, similarly it presented to us a ton of information and this permits us to say that the time of the acknowledgment of this task was an instructive period, notwithstanding home computerization, we have entered a few fields, for example,

the web of things, adding adjusts to the Google partner, and so forth During the acknowledgment of this venture we experienced a few hardships which lie for the most part in the curiosity and expansiveness of the subject.

We have created a framework dependent on a NodeMcu card as a control unit; the job of the NodeMcu card is to handle the information conveyed by the app and to control the different relay. Toward the starting we attempted to associate the framework to the presentation support (PC) by a USB link to guarantee the right working of the sensors. The program composed on IDE Arduino permits showing the outcomes on the chronic screen.

To interface the framework to the Internet organization, we utilized the remote association (by Wi-Fi) through the ESP8266 module. For program equipped for showing the outcomes progressively on the Smart-telephone application (Google aide). Such an success isn't without its challenges. It ought to be noticed that we dealt with a few issues particularly in the piece of mimic the module ESP8266.

Taking everything into account, we can say that in spite of these challenges, the outcomes acquired through this review, permit us to make the way for the different examinations. We emphatically trust that this undertaking can fill in as a reason for other more top to bottom examination.

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