International Journal of Scientific Research in Engineering and Management (IJSREM)
Volume: 05 Issue: 06 | June - 2021 ISSN: 2582-3930

Home Automation System Using Google Assistant

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ABSTRACT-

Between 2010 and 2017, global electricity demand grew by 85% more than the total electricity consumption of India, the United States, Japan and Australia. We have a low growth rate in electricity consumption, but we can reduce the amount of electricity that is spent each year for the final household appliances that are not used. This project presents a design and prototype of a home automation system that will use the ESP8266 Wi-Fi module, which is a service provider contacting other devices. The proposed system has two main components. This is the first, main part of the Arduino that controls and access controls, the Wi-Fi module. A device represents a module, a Wi-Fi Module, a Wi-Fi web server can be attached to a module that will facilitate, managing devices over the Internet. A single server can manage many hardware interface modules as long as Wi-Fi exists. It offers support for a wide range of home automation devices, such as control components, power supplies, and security elements. We would like this to be the automation of a centralized and artificial intelligence system. In addition, we will

connect to a private house with our database, and it can be accessed from anywhere via a specific IP address or website. In addition, a developed mobile application that allows the user to manage devices using Google Assistant.

Keywords: Automation, Arduino, ESP, Relay, Google Assistant etc.

1. INTRODUCTION

Home automation is the name of a girl, or home .It includes control and automation, lighting, heating, ventilation and air conditioning systems, as well as protection, as well as household appliances. Free Wi-Fi is often used for remote monitoring and management. The home device, when you are tracked and controlled over the Internet, is the Internet of Things. Modern systems typically consist of switches and sensors connected to a hub center, known as a gateway system, which is controlled through a user-friendly interface, interoperable or software-based with mobile phones, tablets, computers or a web interface, often but not always using cloud services and the Internet. Between 2010 and 2020, global electricity demand increased to 85%.

Figure 1: Home Automation

This growth is greater than the total electricity consumption of India, the US, Japan and Australia. We, electricity consumption in the gross volume that is spent every year due to the closure of household appliances, they are not used. Between 2010 and 2017, global electricity demand grew by 85% more than the total electricity consumption of India, the United States, Japan and Australia. We have a low growth rate in electricity consumption, but we can reduce the amount of electricity that is spent each year for the final household appliances that are not used. Unlike most home automation systems available on the market, for these purposes, the proposed system is scalable so that the server can manage many hardware interface modules as long as there is Wi-Fi.

A person, helpers to help, a path, a school to keep their homes in the past. Right now, tech is only comfortable enough in what's good for people, in the company of the blessed and with smart home devices, because this upgrade will cost a little more. This, however, is not all rich enough to afford using a human assistant or any smart home kit. So the need to find an inexpensive and smart assistant for people with normal families continues to grow. The system supports a wide range of home automation devices, such as control components, power supplies, and security elements.

2. LITERATURE SURVEY

2.1. Review of Related Literature

When people think of home automation, most of them are willing to live in a smart home with a remote control for each device automatically to cook rice, automatically start alloy wheels, air conditioning, auto heat and bath water, and automatically shade windows at night. To a certain extent, home automation equals a smart home. They and their state live wisely and make our lives even more comfortable and efficient.

Initial home automation from the beginning of labor-saving machines. Autonomous electric or gas-powered household appliances that effectively used electric power transmission in the 1900s led to washing machines (1904),water (1889), refrigerators, sewing machines, dishwashers, and clothes dryers. Based on our request, currently available on the system is cheaper in price and easier to deal with. Many systems that are difficult to install are difficult to operate and maintain. The current system is usually proprietary closed and very user-friendly, based on an Arduino or GSM board or an inexpensive home security and home automation system.

2.2. Review of Foreign Study

- In their paper, Tan, Lee and Soh (2002) propose to prepare an Internet-based system that serves to monitor important process variables in a distributed control system (DCS). This article discusses the design of hardware and software that allows you to get the user a process variable, DCS, distance and effectively plumbing lease codes. .

- Potamitis, Georgila, Fakotakis, and Kokkinoss, G. (2003) proposed using speech to interact remotely with a household device to perform a specific act on behalf of the user. The strategy is most likely for people with disabilities to perform real-life activities and activities at home in order to control devices using voice. The sound separation approach is selected in order to make appropriate decisions regarding access to the text.
- In the year 2006, S. M. Anamul Haque,S. M. Kamruzzaman and Md. Ashraful Islam, both offer a "Smart Home" system, control of household appliances based on time and conversation interconnection, control of household appliances through a personal computer. This system is developed using the Visual Basic 6.0 programming language and the Microsoft vote motor tool for speech recognition. The control devices can be either a timer or a voice command.
- Jawarkar, Ahmed, Ladhake, and Thakare (2008) offering a mobile phone remote monitoring system with voice commands. Conversations, commands created and sent as TEXT messages to the controller, then the controller based on the TEXT, makes a decision on a particular task . Prof. Era Johri Dept. Of Information and Technology K.J.Somaiya College of Engineering VIDYAVIHAR, MUMBAI in (2001) have successfully completed the project on “Remote Controlled Home Automation”.

3. SYSTEM DESIGN AND IMPLEMENTATION

The design of the system is divided into two main categories

i. The hardware- Hardware-This is the ability to join the router. It will also be able to turn on / off specified devices such as lamps, fans, and more. This is called a "Control Box". Moreover, one

ii. The Software- software, Blynk, software, IFTTT and Google Assistant, program, design, and all this must be an Android device integration app.

The control unit consists of a NodeMCU microcontroller and a 4/8-channel relay board. The relay board uses the ULN 2803 chip to control the relay. The Blynk app on your Android device communicates with the controller and sends it the desired signal over the Internet. Below are the main structures and architectures shown in the figure 2.

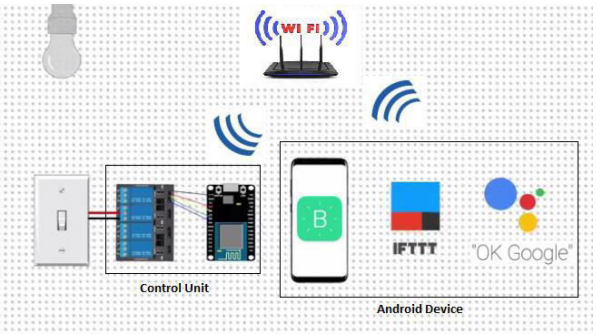

Fig -2: Basic System Architecture

The hardware known as the control unit consists of a micro NodeMCU and a program board. NodeMCU is the digital output of the pin connected by the relay to the pin of the relay board. Finally, the entire relay is connected to the device. Figure 2-The second relay is connected to a light bulb.

4. FLOWCHART

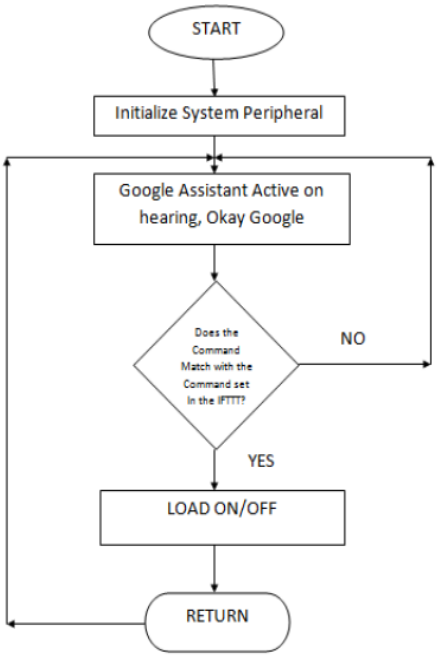

Fig. 3. System Flow Diagram

5. HARDWARE

5.1. NodeMCU (ESP8266)

The ESP8266 is a low-cost Wi-Fi chip with a full TCP/IP stack and a microcontroller unit. It is a small module that allows microcontrollers to connect to Wi-Fi and simple TCP / IP connections with Hayes ESP8266-style commands 1 MB internal flash, which allows single-chip devices to connect to free Wi-Fi, even on the Internet.

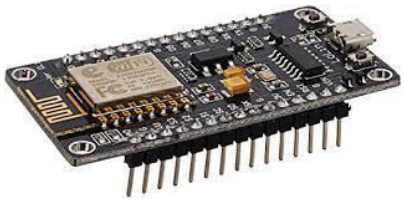

Figure 4: - ESP8266 WIFI MODULE

5.2. RELAY BOARD

A relay is an electrically driven switch. Many relays use an electromagnet to mechanically control favorites, but the principles used are for example solid-state relays. Relays are used where a single circuit needs to be controlled by a low-power signal or where multiple circuits need to be controlled by a single signal. The repeater was widely used by the telephone, at stations and at the beginning of the computer to perform logical operations.

Figure 5: - Relay Board

5.3. ULN 2803 IC

The ULN 2803 IC chip is used as the relay driver [6]. This is a high-voltage, high-current transistor array for use, especially in microcontrollers where high-power herd control is required. The TIC IC consists of eight Darlington NPN transistors combined with common clamp diodes made to switch the load associated with the output terminal. This microchip is widely used for shooting on high loads like lamps, relays, motors, etc.

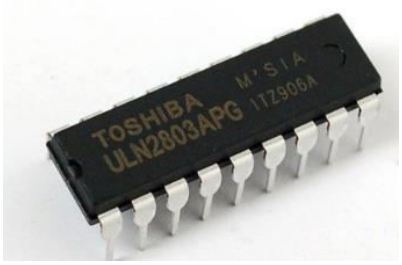

Fig. 6. ULN 2803 IC

6. SOFTWRARE

The proposed system consists of what is essentially a Blynk app and IFTTT software.

6.1. BLYNK APPLICATION

Blynk [2] is a program for iOS and Android platforms to control Arduino, Raspberry Pi, NodeMCU and other boards online. Blynk is designed for the Internet of Things. It can control the equipment remotely. This can be information that it can store data in itself, visualize it, and do many other interesting things.

You will need to install the Blynk app, and we will configure it according to your requirements. We'll start by creating a project, and then select the controller that we use. After that, we will create ice, hail nepalese for each relay associated with digital micro results. What is being done is Blynk sends an authentication token and an email ID for this. This is an indication that you should mark, save, and use it during NodeMCU programming and IFTTT application configuration.

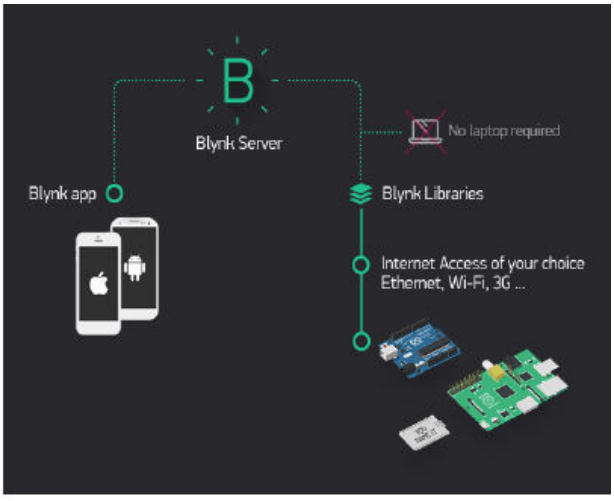

Fig -7: Functioning of the Blynk Application

6.2. IFTTT APPLICATION

IFTTT [1] it gets its name from programming the conditional operator "if this, then that". IFTTT is at the same time a website and mobile application launched in 2010, and the motto is “Let the Internet work for you. The idea is that you use IFTTT to automate your most favorite programs and websites to software-enabled accessories and smart devices. It suggests that it is a platform that combines applications, devices, and services from various vendors to start with one or more automations of software, hardware, and services. Here's the IFTTT app, which is used to bridge the gap between the Google Assistant commands and the Blynk app.

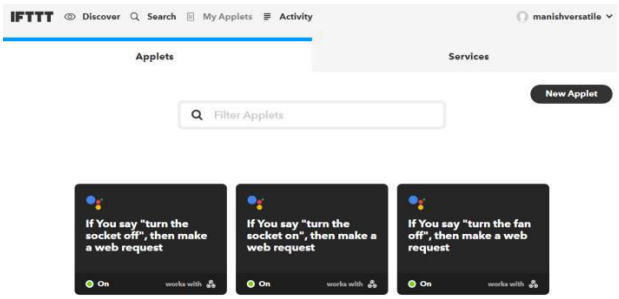

Fig -8: Screenshot of the IFTTT Application after Creating Several Applets

6.3. WEB SERVER

A web server (sometimes called an HTTP server or server software) is a program that covers content using the HTTP protocol. This content is usually presented in the form of HTML documents, images, and other Internet resources, but it can be files of any type. The content served by the web server can be already existing (static content), or quickly generated (dynamic content).

6.4. GOOGLE ASSISTANT

Google Assistant is an application that allows its user to manage all programs the device will directly control them. It allows you to handle most applications and their devices using voice commands. This provides more

convenience for people, just one of them commands and Google assistant thorough voice command.

7. RESULT

The result was positive, the system reported. The following diagram displays a fully prototypical implementation offered by the system.

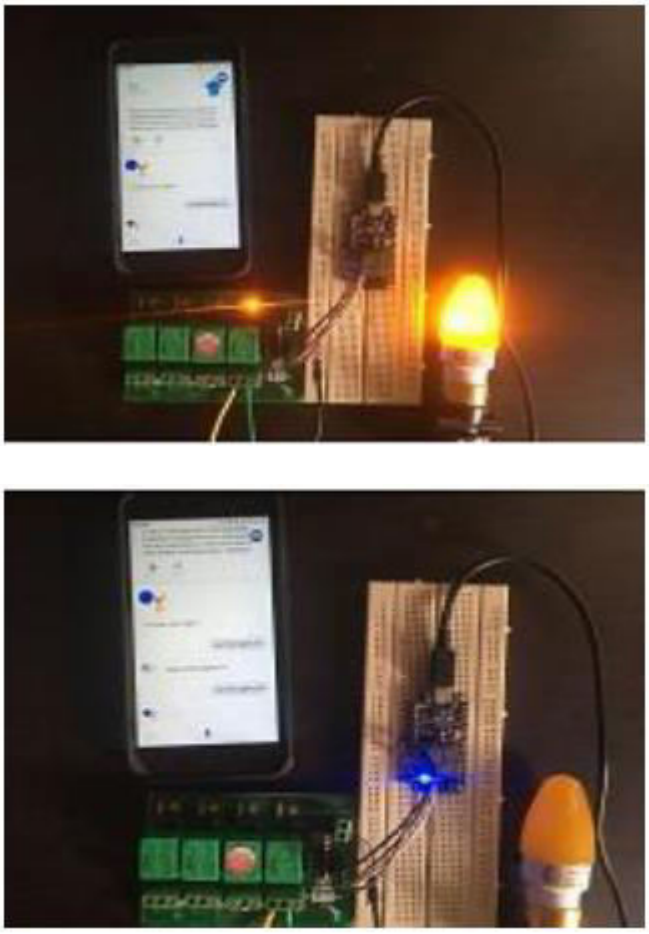

Fig -9: Light Turned ON and then OFF

NOTE: *5V/1A Output, Mobile Chargers were used to power the NodeMCU and the Relay Board*

8. FUTURE ENHANCEMENT

There will also be an Android app, made for ease of use. This app is for Android, it will be a direct button to turn on / off the system or to get OTP. For security reasons, the camera module can also be implemented in the system. If one person tries to take himself out of the house and three more times the wrong password, then immediately to work, the camera module module will turn on. And a camera module to capture images of a person who is trying to attack the system. It is capable of using antivirus software, so it may be difficult to hack the system.

9. CONCLUSIONS

These works proposed and implemented new architectural cheap and flexible house building automation systems using micro Arduino. Generally, Arduino is easy to understand and its coding is easy. By including such systems, we can guarantee that energy savings can be achieved. With this system, we can increase the efficiency of the device .we have full control over home appliances from a long distance. This will help increase the person's comfort, and it will reduce the person's effort.

10. REFERENCES

1) Raj Sharma, Chirag, Pranjalkatara, Vishnu Shankar "Proceedings of IEEE TechSym 2014 Satellite Conference VIT University, Paper on Advanced Low-Cost Security system using sensors, Arduino and GSM communication module".

2) DeepaliJavale, Mohd. Mohsen, Shreerang Nandewar, MayurShingate, "Home Automation and Security using Android ADK", March, 2013.

3) E. Yavuz, B. Hasan, I. Serkan and K. Duygu. "Safe and Secure PIC Based Remote Control Application for Intelligent Home", a. Volume 7, No. 5, May-2007

4) N. Sriskanthan and Tan Karand. "Bluetooth Based Home Automation System". Journal of Microprocessors and Microsystems, Vol. a. 26, pp.281-289, 2002.

5) Kusuma S M, Assistant Professor, Department of telecommunication, MSRIT, Bangalore, India. "Home Automation Using Internet of Things" July 1999

6) NiharikaShrotriya, Anjali Kulkarni, PritiGadhave, International Journal of Science, Engineering and Technology Research (IJSETR), "SMART HOME USING WI-FI" December 1996