IOT Based Home Automation from Google Assistant

Aditya Patil, Rahul Nikam, Pranay Patil, Rushikesh Gramopadhye, Prof. Miss. Sonake V. V.
Department of Electrical Engg.,
Jaywant College of Engineering & Polytechnic,
Killemachhindragad, Maharashtra, India

Abstract-In the market there are many devices to control Home Appliances like Bulb, Fan, Motor etc. but making our own is awesome. The idea behind "IOT Based Home Automation from Google Assistant" is to control the Home appliances from any place and any distance with voice command and also using Android phone. In this project we are using Google assistant, IFTTT and Blynk app for operating our project. We shall use IFTTT to make a chain between Google Assistant and Blynk app IFTTT is a cloud based free IoT web server which is used to create virtual switches if you say any phase in the Google Assistant then it will generate a trigger in IFTTT. It will send the signal to Blynk Cloud server through web sockets. Blynk is a platform with IOS and Android apps to control Arduino. Blynk library is an extension that runs on your hardware. It handles connectivity device authentication in the cloud and command processing between Blynk app, cloud and hardware. It will control the node MCU (ESP8266) to turn on or turn off the respective relays. The device connected to the respective relay can be turned on or turned off as per the user's voice command to the Google assistant.

I. INTRODUCTION

The concept of controlling home appliances using Wi-Fi is interesting. This project is designed to control home appliances using an Android application Google Assistant. This data is conveyed to the control unit which switches on loads ON/OFF as desired. An Arduino is used in this project as a controlling device. Remote operation is achieved by any smart-phone or Tablet with Android OS.

The transmitting end uses an Android application for the commands that are transmitted to digital bits. At the receiver end, these commands are used for controlling the home appliances on and off.

At the receiving end, the appliances are driven by RELAY through relay driver that are interfaced to the microcontroller. Serial communication data sent from the Android application is received by a Wi-Fi receiver interfaced to the microcontroller. The program on the microcontroller refers to the serial data to generate respective output based on the input data to operate the RELAY through relay driver.
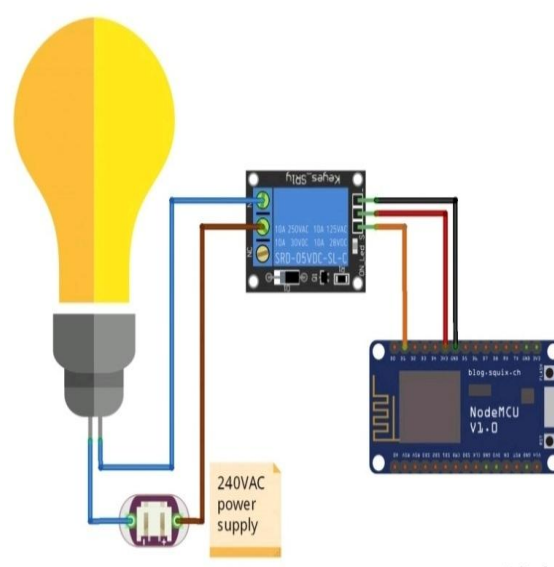
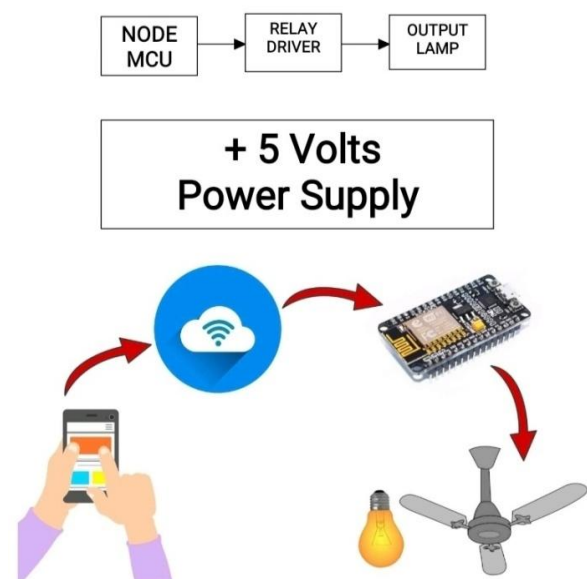## II. WORKING

Fig 1. Circuit Diagram.

Fig 2. Block Diagram.

IOT switch has following block
- Node MCU
- Power Supply
- Relay Driver
- Relay.

1. Node MCU Module:
Node MCU is a low-cost open source IoT platform. It initially included firmware which runs on the ESP8266 Wi-Fi SoC from Expressive Systems, and hardware which was based on the ESP-12 module. Later, support for the ESP32 32-bit MCU was added. Wikipedia
- Memory: 128kBytes
- Developer: ESP8266 Open source Community
- Operating system: XTOS
- CPU: ESP8266 (LX106)
- Storage: 4Mbytes
- Power: USB

2. Power Supply:
For our project we require + 5 Volt and +12 Volts supply.
+5 Volts is given to Micro-controller board.12 Volts are used for relay card.

3. Relay Driver:
In our project we have to turn ON or OFF the electric device. The electric supply is operating on higher voltages therefore we have to use relay. And for driving relay we have to use transistor as switch to energize or de energize the relay.

4. Relay:
The relay takes advantage of the fact that when electricity flows through a coil, it becomes an electromagnet. The electromagnetic coil attracts a steel plate, which is attached to a switch. So the switch's motion (ON and OFF) is controlled by the current flowing to the coil, or not, respectively. A very useful feature of a relay is that it can be used to electrically isolate different parts of a circuit. It will allow a low voltage circuit (e.g. 5VDC) to switch the power in a high voltage circuit (e.g. 100 VAC or more). The relay operates mechanically, so it cannot operate at high speed.

III. PARTS TO BE USED

1. Node MCU:
Node MCU kit consist ofESP8266 Wi-Fi chip. For communication of Node MCU the Blynk app on an Android device sends the desired signal via the internet.

2. LM 78 MXX series 3 terminal positive voltage regulators:
It is used for the regulation of voltage and to limit the internal power dissipation and also output transistor protection. The features of this voltage regulator are the thermal overload protection and short circuit current limits.

3. Relay:
Inourprojectthe relay allow to control various home appliances like bulb, fan etc. and other large current equipment's.

4. Capacitor:
Capacitor store electric charge. They are also used in filter circuits because capacitor easily pass AC (variable) signal but they block DC (constant) signal. Asafilterwecanusethecapacitorinourproject.

5. Diode:
Diode allows an electric current to pass in one direction while blocking it in the opposite direction. DuetothisreasonswecanusetheDiodeinourproject.

6. Light Emitting Diodes (LEDs):
A light-emitting diode (LED) is a semiconductor light source that emits light when electric current flows through it.ItisenergyefficientsowecanuseLEDs inourproject.
7. Transistors:

Transistors amplify current, for example they can be used to amplify the small output current from a logic chip so that it can operate a lamp, relay or other high current device. In many circuits a resistor is used to convert the changing current to a changing voltage, so the transistor is being used to amplify voltage.

IV. CONCLUSION

By performing this project we can say that this project is used to operate the Electrical devices from very far distance. We can control the devices from any location of world.The best application is turn ON any electric application e.g. Electric Pump ON-OFF control. We can control Electrical pump from anywhere of word. Therefore the farmer can operate the pump from his home.

REFERENCES

[1] N. Malik, Y. Bodwade, "literature review on home automation system".

[2] R. Dhakar, "comparison of various technologies for home automation system".

[3] P. Jatin, "Wi-Fi's evolving role in IoT".

[4] M. Boudellal, "Smart home - Habitat connect, 361 installations domotiques et multimedia".

[5] K. Navin, S. Arjun, "Home Automation System using IoT",International Journal of Intellectual Advancements and Research in Engineering Computations, 2018.