Voice Control Home automation

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Abstract

With advancement of Automation technology, life is getting simpler and easier in all aspects. In today's world Automatic systems are being preferred over manual system. With the rapid increase in the number of users of internet over the past decade has made Internet a part and parcel of life, and IoT isthe latest and emerging internet technology. Internet of things is a growing network of everyday object-from industrial machine to consumer goods that can share information and complete tasks while you are busy with other activities. Wireless Home Automation system(WHAS) using IoT is a system that uses computers or mobile devices to control basic home functions and features automatically through internet from anywhere around the world, an automated home is sometimes called a smart home. It is meant to save the electric power and human energy. The home automation system differs from other system by allowing the user to operate the system from anywhere around the world through internet connection.

OBJECTIVE

The purpose of home automation is to make homes simpler, better, or more accessible.

Home automation is a topic which gaining popularity day by day, because of large advantages. One can achieve home automation by simply connecting home appliance electrical devices to the internet or cloud storage. the reason for this surge demand of network enabled home automation is reaching the zenith in recent days for its simplicity and comparable affordability. Platforms based on cloud computing help to connect to the things surroundings everyone so that one can find it easy to access anything and everything at any time and place in a user friendly manner using custom defined portals. Hence, cloud act as a front end to access IOT. Here we are assuming a system which can control devices through wireless based network or cloud based approach. In project we use IOT based home automation system which goal is to develop a home automation system that gives the user complete control over all remotely controllable aspects of his or her home. The automation system will have ability to be controlled from a central host PC, the internet, and also remotely accessed via a packet PC with a windows mobile based application.

Keywords: Automation, IOT, Relay, Arduino

INTRODUCTION

This project presents the overall design of Home Automation System (HAS) with low cost and wireless system. It specifically focuses on the development of an IOT based home automation system that is able to control various components via internet or be automatically programmed to operate from ambient conditions. In this project, we design the development of a firmware for smart control which can successfully be automated minimizing human interaction to preserve the integrity within whole electrical devices in the home.
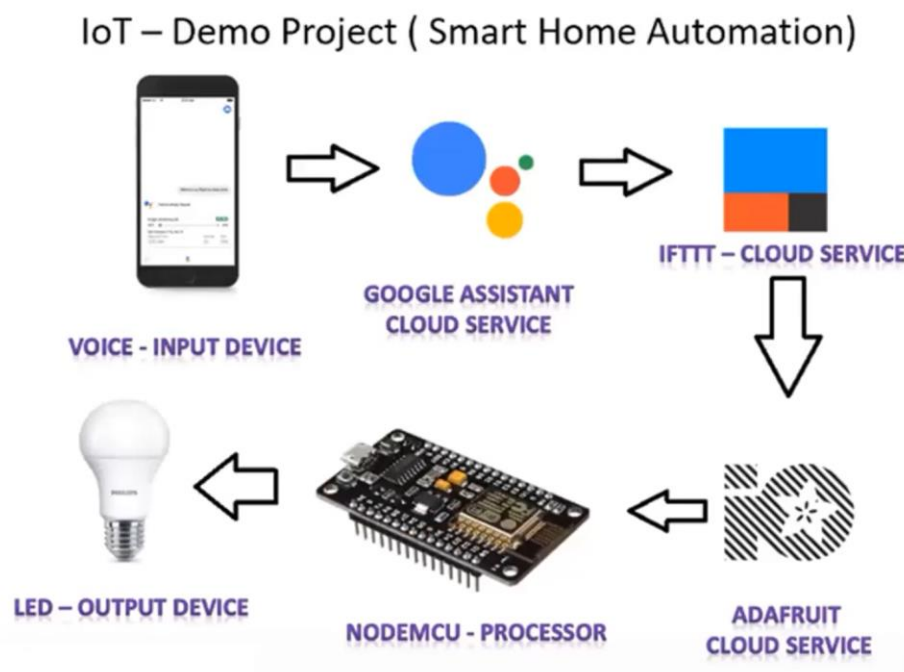

We used Node MCU, a popular open source IOT platform, to execute the process of automation. Different components of the system will use different transmission mode that will be implemented to communicate the control of the devices by the user through Node MCU to the actual appliance. The main control system implements wireless technology to provide remote access from smart phone. We are using a cloud server-based communication that would (Adafruit

io) add to the practicality of the project by enabling unrestricted access of the appliances to the user irrespective of the distance factor. We provided a data transmission network (via IFTTT) to create a stronger automation. The system intended to control electrical appliances and devices in house with relatively low cost design, user-friendly interface and ease of installation. The status of the appliance would be available, along with the control on an android platform. This system is designed to assist and provide support in order to fulfil the needs of automisation in home. Also, the smart home concept in the system improves the standard living at home.

METHODOLOGY

This project is based on Home light Automisation via Google Assistant.

Component needed in this project are :- NodeMCU, Relay, Battery, LED bulb.
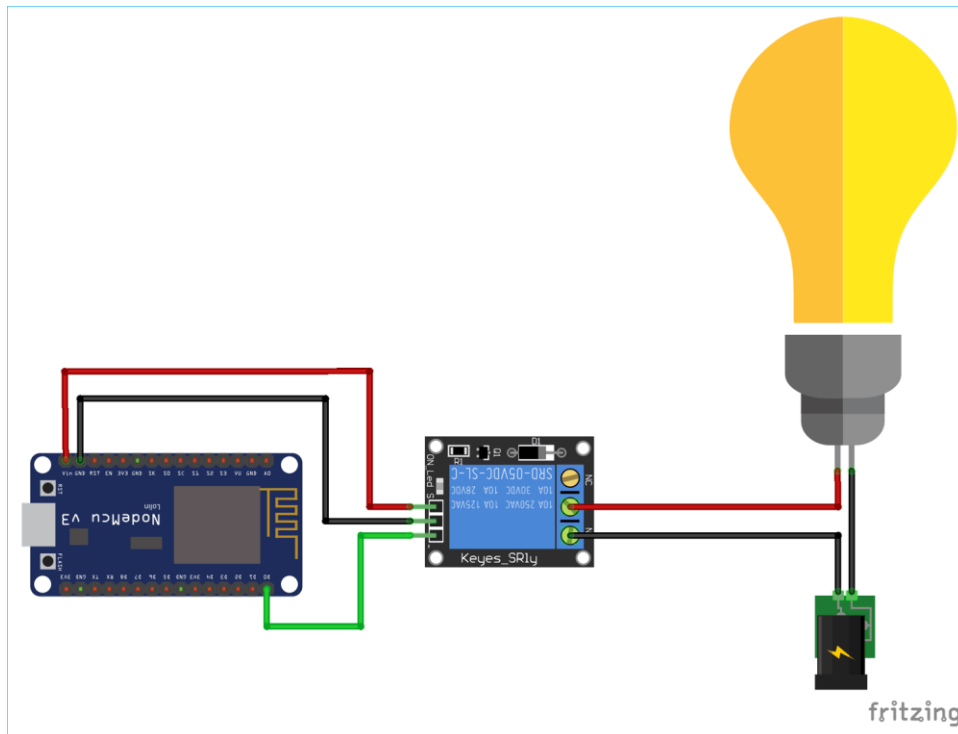
After setting up circuit according to the diagram we will connect NodeMCU to the datacable to save code in NodeMCU.

The code is as follow :-

#include <ESP8266WiFi.h>

#include "Adafruit_MQTT.h"

#include "Adafruit_MQTT_Client.h"

#define led1   D1

```cpp
#define WLAN_SSID       "JayGanesha"        // Your SSID

#define WLAN_PASS      "chandodhar"      // Your password


/*********************** Adafruit.io Setup ****************************/

#define AIO_SERVER      "io.adafruit.com" //Adafruit Server

#define AIO_SERVERPORT  1883

#define AIO_USERNAME   ""         // Username

#define AIO_KEY        ""   // Auth Key


//WIFI CLIENT

WiFiClient client;


Adafruit_MQTT_Client mqtt(&client, AIO_SERVER, AIO_SERVERPORT, AIO_USERNAME,
AIO_KEY);

Adafruit_MQTT_Subscribe Light1 = Adafruit_MQTT_Subscribe(&mqtt,
AIO_USERNAME"/feeds/led01"); // Feeds name should be same everywhere

void MQTT_connect();


void setup() {
  Serial.begin(115200);
  pinMode(led1, OUTPUT);


  // Connect to WiFi access point.
  Serial.println(); Serial.println();
  Serial.print("Connecting to ");
  Serial.println(WLAN_SSID);


  WiFi.begin(WLAN_SSID, WLAN_PASS);
```

```cpp
  while (WiFi.status() != WL_CONNECTED) {

    delay(500);

    Serial.print(".");

  }

  Serial.println();


  Serial.println("WiFi connected");

  Serial.println("IP address: ");

  Serial.println(WiFi.localIP());

  mqtt.subscribe(&Light1);

}


void loop() {


  MQTT_connect();

  Adafruit_MQTT_Subscribe *subscription;

  while ((subscription = mqtt.readSubscription(20000))) {

    if (subscription == &Light1) {

      Serial.print(F("Got: "));

      Serial.println((char *)Light1.lastread);

      int Light1_State = atoi((char *)Light1.lastread);

      digitalWrite(led1, Light1_State);

    }

    }

}


void MQTT_connect() {
```

```
int8_t ret;


if (mqtt.connected()) {

  return;

}

Serial.print("Connecting to MQTT... ");

uint8_t retries = 3;

while ((ret = mqtt.connect()) != 0) {

  Serial.println(mqtt.connectErrorString(ret));

  Serial.println("Retrying MQTT connection in 5 seconds...");

  mqtt.disconnect();

  delay(5000);

  retries--;

  if (retries == 0) {

    while (1);

  }

}

Serial.println("MQTT Connected!");

}
```
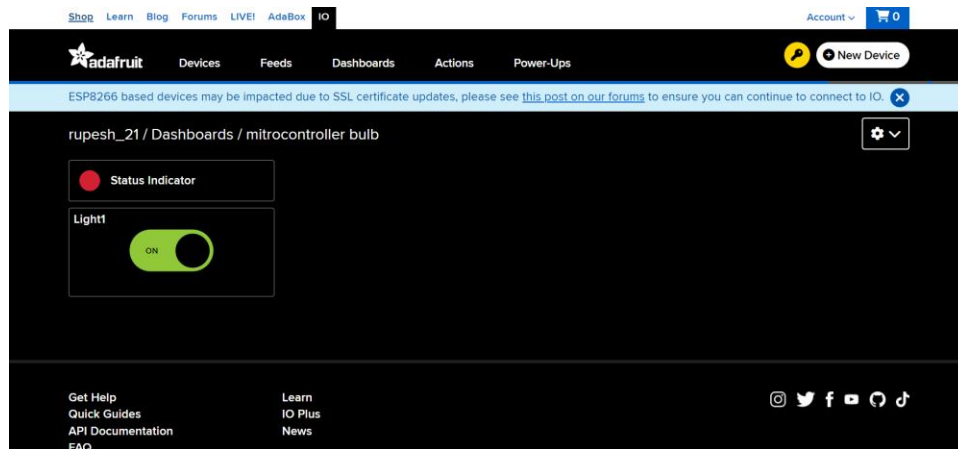
After this setup we use Adafruit.io cloud to take data from NodeMCU.

We make a dashboard on Adafruit for the data

When we complete this the we go to IFTTT server that connect us to Google Assistant so that we can get command from mobile phone or other device.

Here we give feed to this "Light on" and "Lights off" respectively for to on the light and shut down the light.

For to give command through Google Assiatant we need to download an app 'Google Home' to send command through IFTTT.

__CONCLUSION__

Now when we send command "Lights on" throught Google assistance then the room light will turn on and when we send command "Lights off" then the light will turn off.

Summary :

The IoT device market has undergone radical changes in only a few short years. Starting with disparate devices and no ecosystems to speak of, the market has now grown to encompass enterprise players working together to create ecosystems, tailored for mobile technology, which allows IoT devices to become interconnected.

Automaton of the home may have once seemed like a peculiar and unlikely concept, but as our devices become smarter and more investment is poured into the development of ioT consumer products, we are likely to see increased competition spur on further innovation in the field.