#include <WiFi.h>//library for wifi

#include <PubSubClient.h>//library for MQtt

#define LED 5

#define LED2 4

#define LED3 2

int LDR = 32;

int LDRReading = 0;

int threshold\_val = 800;

int lEDBrightness = 0;

int flag=0;

void callback(char\* subscribetopic, byte\* payload, unsigned int payloadLength);

//-------credentials of IBM Accounts------

#define ORG "stuloy"//IBM ORGANITION ID

#define DEVICE\_TYPE "abcd"//Device type mentioned in ibm watson IOT Platform

#define DEVICE\_ID "1234" //Device ID mentioned in ibm watson IOT Platform

#define TOKEN "12345678"     //Token

String data3;

float h, t;

//-------- Customise the above values --------

char server[] = ORG ".messaging.internetofthings.ibmcloud.com";// Server Name

char publishTopic[] = "iot-2/evt/Data/fmt/json";// topic name and type of event perform and format in which data to be send

char subscribetopic[] = "iot-2/cmd/test/fmt/String";// cmd  REPRESENT command type AND COMMAND IS TEST OF FORMAT STRING

char authMethod[] = "use-token-auth";// authentication method

char token[] = TOKEN;

char clientId[] = "d:" ORG ":" DEVICE\_TYPE ":" DEVICE\_ID;//client id

//-----------------------------------------

WiFiClient wifiClient; // creating the instance for wificlient

PubSubClient client(server, 1883, callback ,wifiClient); //calling the predefined client id by passing parameter like server id,portand wificredential

void setup()// configureing the ESP32

{

  Serial.begin(115200);

  pinMode(LED,OUTPUT);

  pinMode(LED2,OUTPUT);

  pinMode(LED3,OUTPUT);

  delay(10);

  Serial.println();

  wificonnect();

  mqttconnect();

}

void loop()// Recursive Function

{

  //PublishData(t, h);

  //delay(1000);

  /\* LDRReading = analogRead(LDR);

  Serial.print("LDR READING:");

  Serial.println(LDRReading);

  if (LDRReading >threshold\_val){

  lEDBrightness = map(LDRReading, 0, 1023, 0, 255);

  Serial.print("LED BRIGHTNESS:");

  Serial.println(lEDBrightness);

  analogWrite(LED, lEDBrightness);

  analogWrite(LED2, lEDBrightness);

  analogWrite(LED3, lEDBrightness);

  }

  else{

  analogWrite(LED, 0);

  analogWrite(LED2, 0);

  analogWrite(LED3, 0);

  }

  delay(300);\*/

  if (!client.loop()) {

    mqttconnect();

  }

}

/\*.....................................retrieving to Cloud...............................\*/

/\*void PublishData(float temp, float humid) {

  mqttconnect();//function call for connecting to ibm\*/

  /\*

     creating the String in in form JSon to update the data to ibm cloud

  \*/

  /\*String payload = "{\"temperature\":";

  payload += temp;

  payload += "," "\"humidity\":";

  payload += humid;

  payload += "}";

  Serial.print("Sending payload: ");

  Serial.println(payload);

  if (client.publish(publishTopic, (char\*) payload.c\_str())) {

    Serial.println("Publish ok");// if it sucessfully upload data on the cloud then it will print publish ok in Serial monitor or else it will print publish failed

  } else {

    Serial.println("Publish failed");

  }

}  \*/

void mqttconnect() {

  if (!client.connected()) {

    Serial.print("Reconnecting client to ");

    Serial.println(server);

    while (!!!client.connect(clientId, authMethod, token)) {

      Serial.print(".");

      delay(500);

    }

     initManagedDevice();

     Serial.println();

  }

}

void wificonnect() //function defination for wificonnect

{

  Serial.println();

  Serial.print("Connecting to ");

  WiFi.begin("Wokwi-GUEST", "", 6);//passing the wifi credentials to establish the connection

  while (WiFi.status() != WL\_CONNECTED) {

    delay(500);

    Serial.print(".");

  }

  Serial.println("");

  Serial.println("WiFi connected");

  Serial.println("IP address: ");

  Serial.println(WiFi.localIP());

}

void initManagedDevice() {

  if (client.subscribe(subscribetopic)) {

    Serial.println((subscribetopic));

    Serial.println("subscribe to cmd OK");

  } else {

    Serial.println("subscribe to cmd FAILED");

  }

}

void callback(char\* subscribetopic, byte\* payload, unsigned int payloadLength)

{

  Serial.print("callback invoked for topic: ");

  Serial.println(subscribetopic);

  for (int i = 0; i < payloadLength; i++) {

    //Serial.print((char)payload[i]);

    data3 += (char)payload[i];

  }

  Serial.println("data: "+ data3);

  if(data3=="lighton1")

  {

Serial.println(data3);

digitalWrite(LED,HIGH);

  }

  else if(data3=="lightoff1")

  {

Serial.println(data3);

digitalWrite(LED,LOW);

  }

  else if(data3=="lighton2")

  {

Serial.println(data3);

digitalWrite(LED2,HIGH);

  }

  else if(data3=="lightoff2")

  {

Serial.println(data3);

digitalWrite(LED2,LOW);

  }

  else if(data3=="lighton3")

  {

Serial.println(data3);

digitalWrite(LED3,HIGH);

  }

  else if(data3=="lightoff3")

  {

Serial.println(data3);

digitalWrite(LED3,LOW);

  }

data3="";

}

