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#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);

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    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

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    */
    /*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: ");

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    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);
    }
}

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digitalWrite(LED2,LOW);

}
else if(data3=="lighton3")
{
Serial.println(data3);
digitalWrite(LED3,HIGH);

}

else if(data3=="lightoff3")
{
Serial.println(data3);
digitalWrite(LED3,LOW);

}
data3="";

}

```

