Assignment 7:

#include <WiFi.h>

#include <PubSubClient.h>

#include <Wire.h>

#include <Adafruit\_GFX.h>

#include <Adafruit\_SSD1306.h>

#define SCREEN\_WIDTH 128 // OLED display width, in pixels

#define SCREEN\_HEIGHT 64 // OLED display height, in pixels

Adafruit\_SSD1306 display(SCREEN\_WIDTH, SCREEN\_HEIGHT, &Wire, -1);

#include "DHT.h"

#define DHTPIN 4

#define DHTTYPE DHT11

DHT dht (DHTPIN, DHTTYPE);

float temperature;

int humidity;

String command;

String data="";

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

// CHANGE TO YOUR WIFI CREDENTIALS

const char\* ssid = "dlink";//your wifi ssid

const char\* password = "geetha5588";//your password

// CHANGE TO YOUR DEVICE CREDENTIALS AS PER IN IBM BLUMIX

#define ORG "gbyafd"

#define DEVICE\_TYPE "esp32"

#define DEVICE\_ID "1208"

#define TOKEN "akashsg2001" // Authentication Token OF THE DEVICE

// PIN DECLARATIONS

#define led1 2

//#define led2 0

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

const char publishTopic[] = "iot-2/evt/Data/fmt/json";

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

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

char authMethod[] = "use-token-auth";

char token[] = TOKEN;

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

WiFiClient wifiClient;

PubSubClient client(server, 1883, callback, wifiClient);

int publishInterval = 5000; // 30 seconds

long lastPublishMillis;

void publishData();

void setup() {

Serial.begin(115200);

Serial.println();

pinMode(led1,OUTPUT);

if(!display.begin(SSD1306\_SWITCHCAPVCC, 0x3C)) {

Serial.println("SSD1306 allocation failed");

for(;;);

}

// pinMode(led2,OUTPUT);

dht.begin();

wifiConnect();

mqttConnect();

}

void loop() {

if (millis() - lastPublishMillis > publishInterval)

{

publishData();

lastPublishMillis = millis();

}

if (!client.loop()) {

mqttConnect();

}

}

void wifiConnect() {

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

WiFi.begin(ssid, password);

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

delay(500);

Serial.print(".");

}

Serial.print("WiFi connected, IP address: ");

Serial.println(WiFi.localIP());

}

void mqttConnect() {

if(!display.begin(SSD1306\_SWITCHCAPVCC, 0x3C)) {

Serial.println("SSD1306 allocation failed");

for(;;);

}

if (!client.connected())

{

Serial.print("Reconnecting MQTT client to "); Serial.println(server);

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

Serial.print(".");

delay(500);

}

initManagedDevice();

Serial.println();

}

}

void initManagedDevice() {

if (client.subscribe(topic)) {

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

} else {

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

}

}

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

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

Serial.println(topic);

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

command+= (char)payload[i];

}

Serial.print("data: "+ command);

control\_func();

command= "";

}

void control\_func()

{

if(command== "lightoff")

{

digitalWrite(led1,LOW);

//digitalWrite(led2,LOW);

Serial.println(".......lights are off..........");

}

else if(command== "lighton")

{

digitalWrite(led1,HIGH);

// digitalWrite(led2,HIGH);

Serial.println(".......lights are on..........");

}

else if(command== "hello")

{

display.clearDisplay();

display.setTextSize(1);

display.setTextColor(WHITE);

display.setCursor(3, 25);

// Display static text

display.println("hello");

//display.println("lights are off");

display.display();

}

else if(command== "hi")

{

display.clearDisplay();

display.setTextSize(1);

display.setTextColor(WHITE);

display.setCursor(3, 25);

display.println("hi");

display.display();

}

else if(command=="goodmorning")

{

display.clearDisplay();

display.setTextSize(1);

display.setTextColor(WHITE);

display.setCursor(3, 25);

display.println("goodmorning");

display.display();

}

else

{

Serial.println("......no commands have been subscribed..........");

}

}

void publishData()

{

humidity = dht.readHumidity();

temperature = dht.readTemperature();

String payload = "{\"d\":{\"temperature\":";

payload += temperature;

payload += ",""\"humidity\":";

payload += humidity;

payload += "}}";

Serial.print("\n");

Serial.print("Sending payload: "); Serial.println(payload);

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

Serial.println("Publish OK");

} else {

Serial.println("Publish FAILED");

}

}



