Assignment 3

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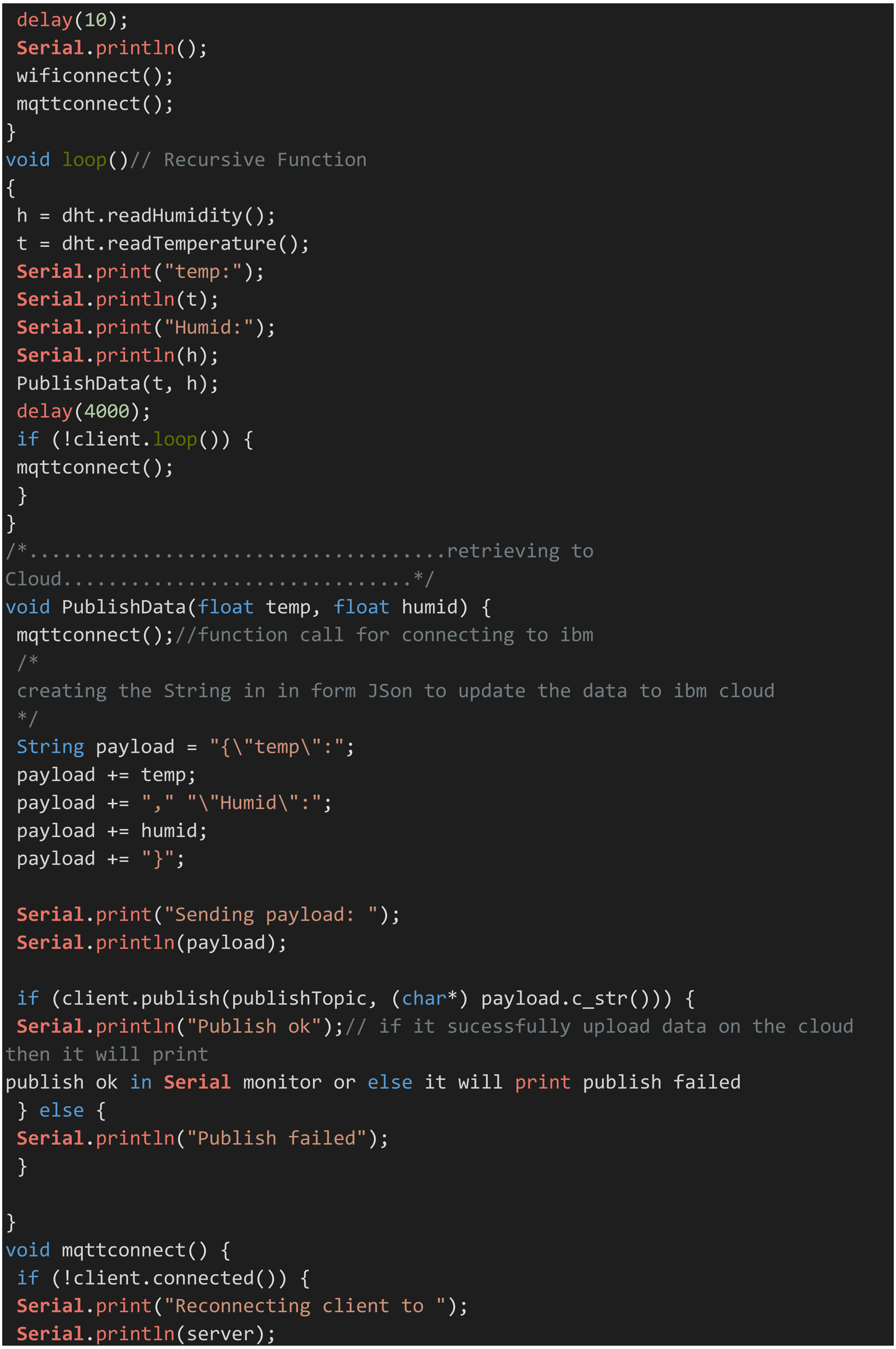
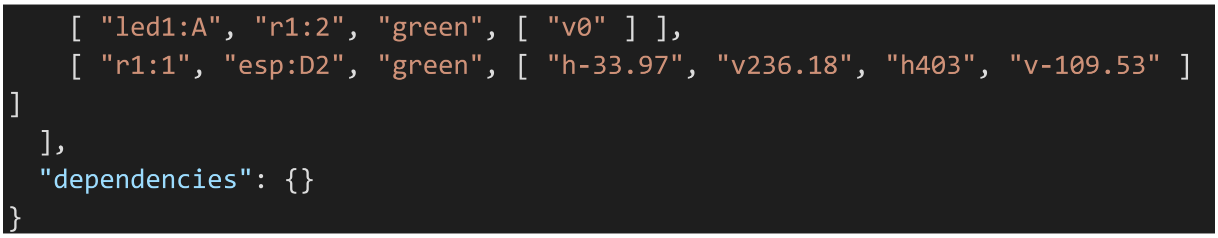
In Wiiokwi add LED and switch on and off from node-red

```
#include <WiFi.h>//library for wifi
#include <PubSubClient.h>//library for MQtt
#include "DHT.h"// Library for dht11
#define DHTPIN 15 // what pin we're connected to
#define DHTTYPE DHT22 // define type of sensor DHT 11
#define LED 2
DHT dht (DHTPIN, DHTTYPE);// creating the instance by passing pin and typr of
dht connected
void callback(char* subscribetopic, byte* payload, unsigned int
payloadLength);
//-------credentials of IBM Accounts------
#define ORG "s3f36h"//IBM ORGANITION ID
#define DEVICE_TYPE "abcd"//Device type mentioned in ibm watson IOT Platform
#define DEVICE_ID "12345"//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/command/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);
 dht.begin();
 pinMode(LED,OUTPUT);
```

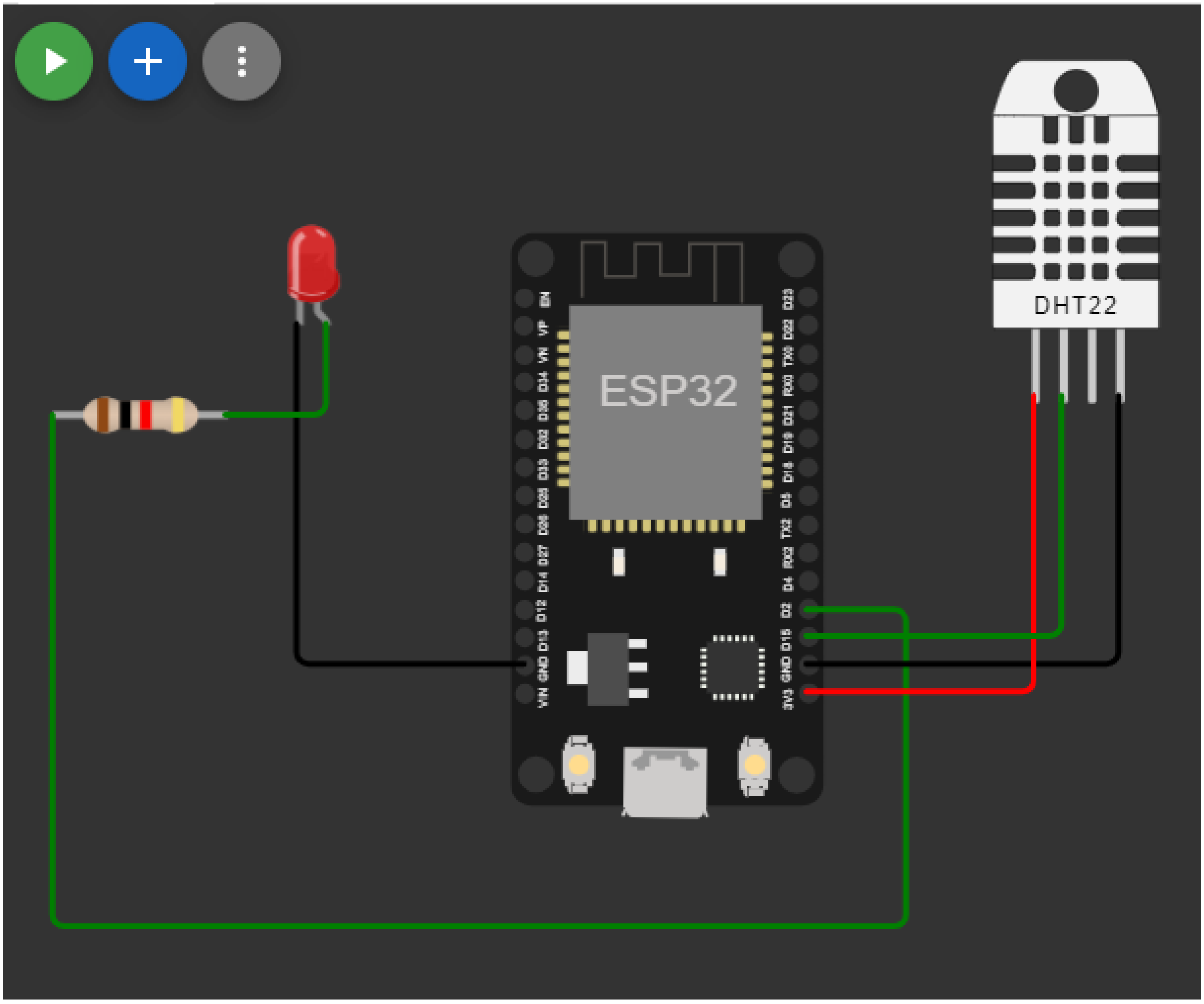


```
 delay(10);
 Serial.println();
 wificonnect();
 mqttconnect();
}
void loop()// Recursive Function
{
 h = dht.readHumidity();
 t = dht.readTemperature();
 Serial.print("temp:");
 Serial.println(t);
 Serial.print("Humid:");
 Serial.println(h);
 PublishData(t, h);
 delay(4000);
 if (!client.loop()) {
 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 = "{\"temp\":";
 payload += temp;
 payload += "," "\"Humid\":";
 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("MADHYAM", "", 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=="lighton")
 {
Serial.println(data3);
digitalWrite(LED,HIGH);
 }
 else
 {
Serial.println(data3);
digitalWrite(LED,LOW);
 }
data3="";
}
```

```
{
  "version": 1,
  "author": "Abhijeet Bose Das",
  "editor": "wokwi",
  "parts": [
    { "type": "wokwi-esp32-devkit-v1", "id": "esp", "top": 4.8, "left": -127.69, "attrs": {} },
    {
      "type": "wokwi-dht22",
      "id": "dht1",
      "top": -76.72,
      "left": 137.76,
      "attrs": { "temperature": "60.2", "humidity": "64" }
    },
    {
      "type": "wokwi-led",
      "id": "led1",
      "top": -44.03,
      "left": -247.26,
      "attrs": { "color": "red" }
    },
    {
      "type": "wokwi-resistor",
      "id": "r1",
      "top": 2.9,
      "left": -327.74,
      "attrs": { "value": "1000" }
    }
  ],
  "connections": [
    [ "esp:TX0", "$serialMonitor:RX", "", [] ],
    [ "esp:RX0", "$serialMonitor:TX", "", [] ],
    [ "dht1:VCC", "esp:3V3", "red", [ "v0" ] ],
    [ "dht1:GND", "esp:GND.1", "black", [ "v0" ] ],
    [ "led1:C", "esp:GND.1", "black", [ "v0" ] ],
    [ "dht1:SDA", "esp:D15", "green", [ "v101.76", "h-2.06" ] ],
```



```
    [ "led1:A", "r1:2", "green", [ "v0" ] ],
    [ "r1:1", "esp:D2", "green", [ "h-33.97", "v236.18", "h403", "v-109.53" ]
]
  ],
  "dependencies": {}
}
```



```
Connecting to ..
WiFi connected
IP address:
10.10.0.2
Reconnecting client to s3f36h.messaging.internetofthings.ibmcloud.com
iot-2/cmd/command/fmt/String
subscribe to cmd OK

temp:60.20
Humid:64.00
Sending payload: {"temp":60.20,"Humid":64.00}
Publish ok
temp:60.20
Humid:64.00
Sending payload: {"temp":60.20,"Humid":64.00}
Publish ok
```