Developing Wokwi Simulation

Date	09 November 2022
Team Id	PNT2022TMID35923
Title	Hazardous Area Monitoring for Industrial Plant using IoT

Wokwi code:

```
#include <WiFi.h>

#include <PubSubClient.h>

#include "DHT.h"

#define DHTPIN 15

#define DHTTYPE DHT22

#define LED 2


DHT dht (DHTPIN, DHTTYPE);

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




#define ORG "h4s7t8"

#define DEVICE_TYPE "IOT"

#define DEVICE_ID "12345"

#define TOKEN "12345678"

String data3;

float h, t;
```

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

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

char subscribetopic[] = "iot-2/cmd/command/fmt/String";

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

char token[] = TOKEN;

char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_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(1000);

 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 ");

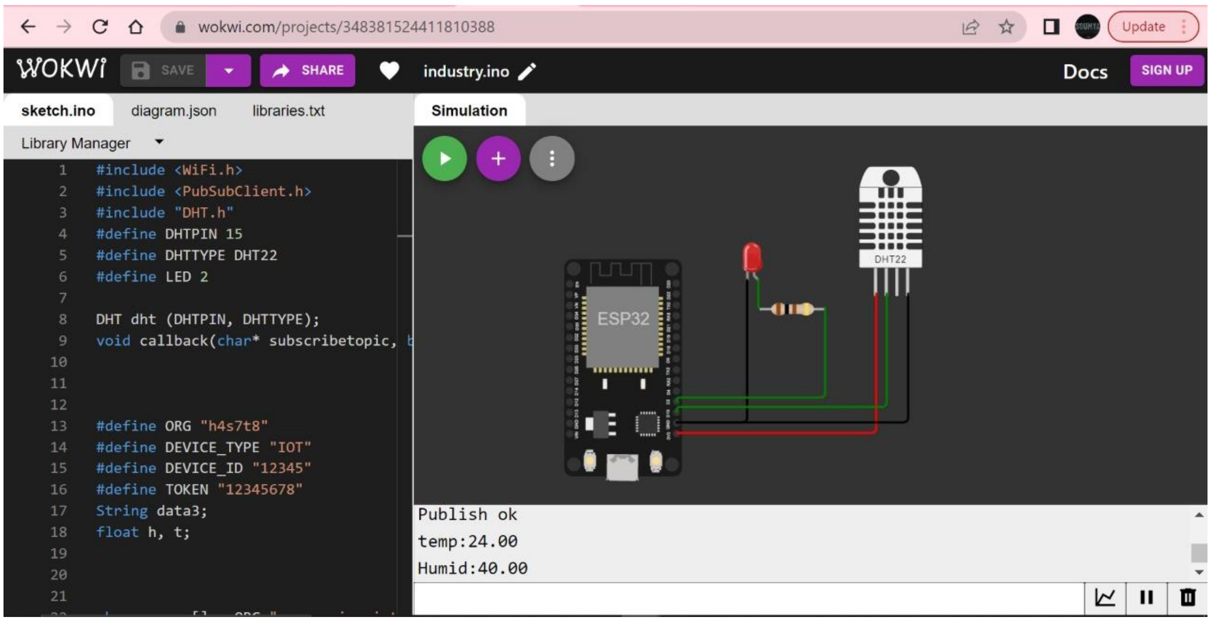

    WiFi.begin("Wokwi-GUEST", "", 6);//passing the wifi credentials to establish the connection
  while (WiFi.status() != WL_CONNECTED) {
    delay(500);
    Serial.print(".");
  }
  Serial.println("");
  Serial.println("WiFi connected");
  Serial.println("IP address: ");
  Serial.println(WiFi.localIP());
}

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=="lighton")
  {
Serial.println(data3);
digitalWrite(LED,HIGH);
  }
  else
  {
Serial.println(data3);
digitalWrite(LED,LOW);
  }
data3="";
}
```

Wokwi Outputs:



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#define DHTPIN 15
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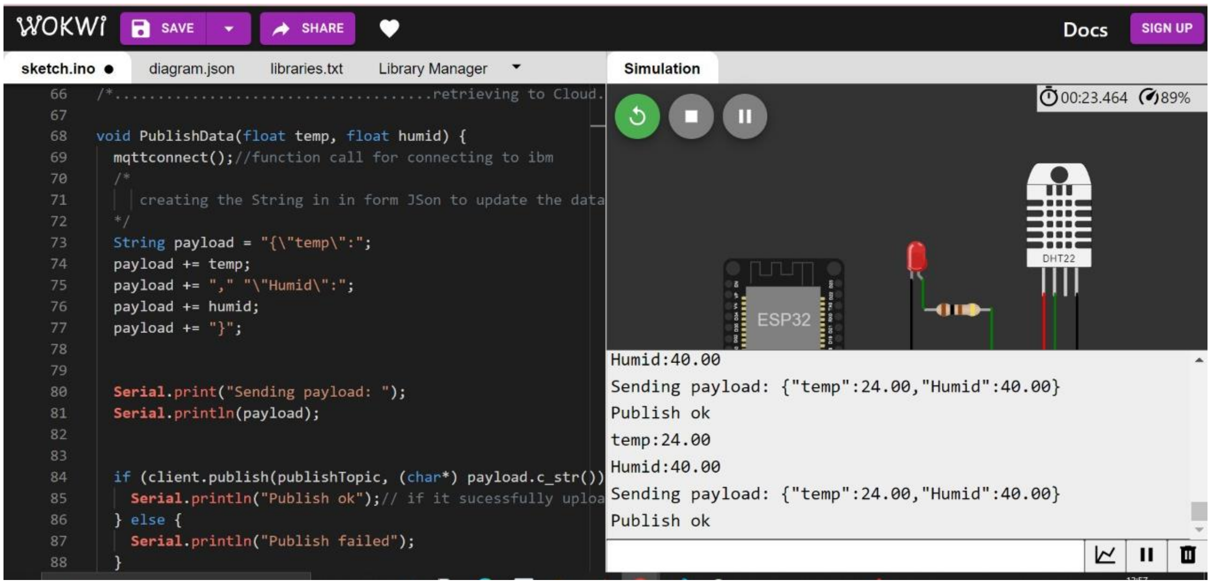
DHT dht (DHTPIN, DHTTYPE);
void callback(char* subscribetopic, b



#define ORG "h4s7t8"
#define DEVICE_TYPE "IOT"
#define DEVICE_ID "12345"
#define TOKEN "12345678"
String data3;
float h, t;
```

```
Publish ok
temp:24.00
Humid:40.00
```



```
/*..................................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
  */
  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 uploa
  } else {
    Serial.println("Publish failed");
  }
```

```
Humid:40.00
Sending payload: {"temp":24.00,"Humid":40.00}
Publish ok
temp:24.00
Humid:40.00
Sending payload: {"temp":24.00,"Humid":40.00}
Publish ok
```