Assignment-4

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2019105546

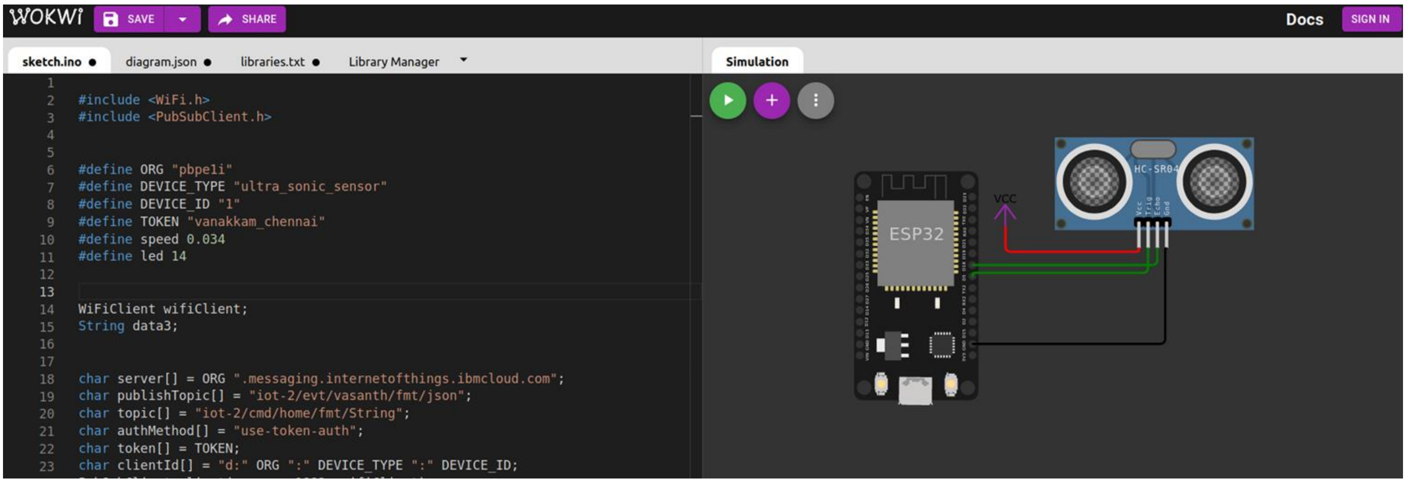
Code:

```
#include <WiFi.h>
#include <PubSubClient.h>

#define ORG "pbpe1i"
#define DEVICE_TYPE "ultra_sonic_sensor"
#define DEVICE_ID "1"
#define TOKEN "vanakkam_chennai"
#define speed 0.034
#define led 14

WiFiClient wifiClient;
String data3;

char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
char publishTopic[] = "iot-2/evt/vasanth/fmt/json";
char topic[] = "iot-2/cmd/home/fmt/String";
char authMethod[] = "use-token-auth";
char token[] = TOKEN;
char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID;
PubSubClient client(server, 1883, wifiClient);
void publishData();
const int trigpin=5;
const int echopin=18;
String command;
String data="";
long duration;
float dist;

void setup()
{
Serial.begin(115200);
pinMode(led, OUTPUT);
pinMode(trigpin, OUTPUT);
pinMode(echopin, INPUT);
wifiConnect();
mqttConnect();
}
void loop() {
bool isNearby = dist < 100;
digitalWrite(led, isNearby);

publishData();
delay(500);
if (!client.loop()) {
mqttConnect();
```

```
}
}

void wifiConnect() {
Serial.print("Connecting to "); Serial.print("Wifi");
WiFi.begin("Wokwi-GUEST", "", 6);
while (WiFi.status() != WL_CONNECTED) {
delay(500);
Serial.print(".");
}
Serial.print("WiFi connected, IP address: ");
Serial.println(WiFi.localIP());
}

void mqttConnect() {
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(client.subscribe(topic));
Serial.println("IBM subscribe to cmd OK");
} else {
Serial.println("subscribe to cmd FAILED");
}
}

void publishData()
{
digitalWrite(trigpin,LOW);
digitalWrite(trigpin,HIGH);
delayMicroseconds(10);
digitalWrite(trigpin,LOW);
duration=pulseIn(echopin,HIGH);
dist=duration*speed/2;

if(dist<100){
String payload = "{\"Alert Distance\":";
payload += dist;
payload += "}";
Serial.print("\n");
Serial.print("Sending payload: ");
Serial.println(payload);
if(client.publish(publishTopic, (char*) payload.c_str())) {
```

```
Serial.println("Warning crosses 110cm -- it automaticaly of the
loop");
digitalWrite(led,HIGH);
}
}
if(dist>101 && dist<111){
String payload = "{\"Normal Distance\":";
payload += dist;
payload += "}";
Serial.print("\n");
Serial.print("Sending payload: ");
Serial.println(payload);
}
}
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++){
dist += (char)payload[i];
}
Serial.println("data:"+ data3);
if(data3=="lighton"){
Serial.println(data3);
digitalWrite(led,HIGH);
}
data3="";
}
```

Screenshot from wokwi:



```
#include <WiFi.h>
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#define ORG "pbpeli"
#define DEVICE_TYPE "ultra_sonic_sensor"
#define DEVICE_ID "1"
#define TOKEN "vanakkam_chennai"
#define speed 0.034
#define led 14


WiFiClient wifiClient;
String data3;


char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
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char authMethod[] = "use-token-auth";
char token[] = TOKEN;
char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID;
```
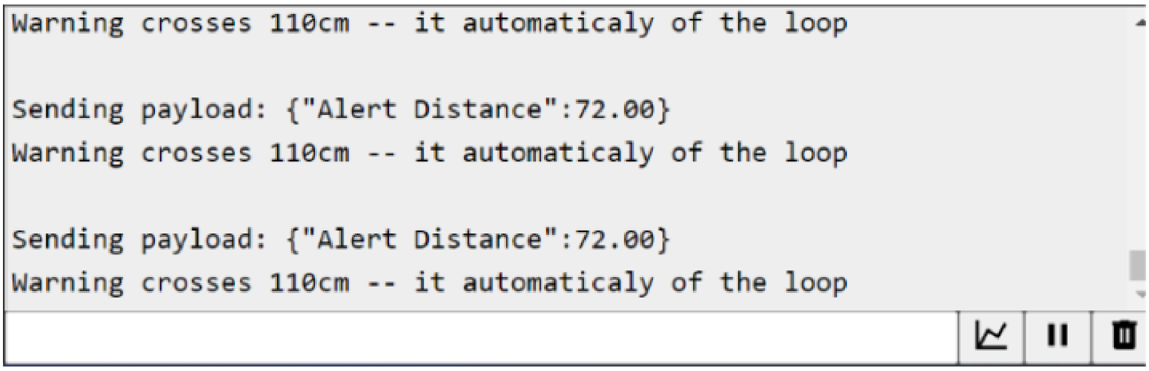
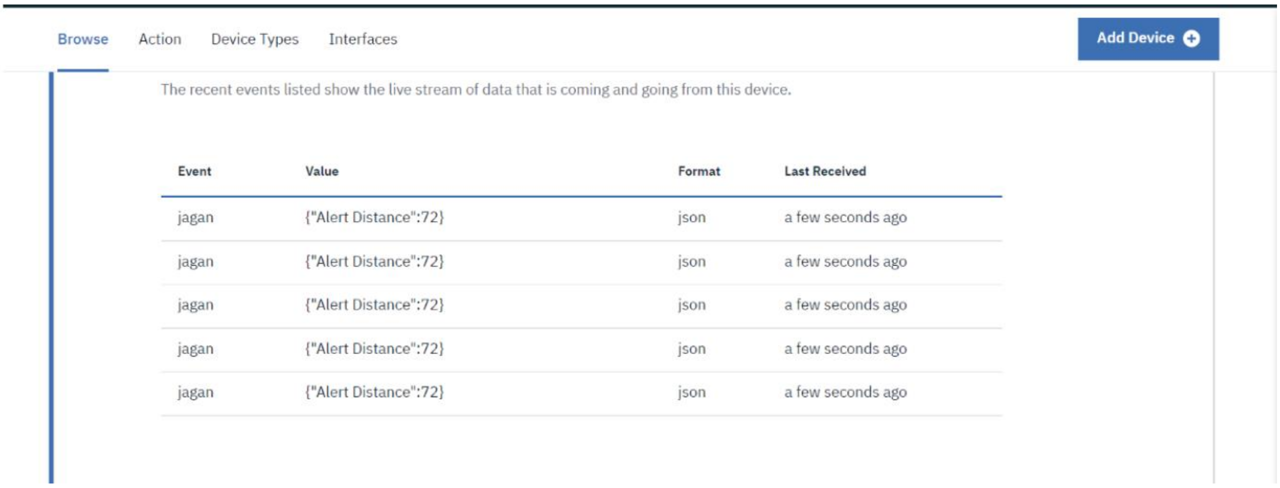



```
Warning crosses 110cm -- it automaticaly of the loop

Sending payload: {"Alert Distance":72.00}
Warning crosses 110cm -- it automaticaly of the loop

Sending payload: {"Alert Distance":72.00}
Warning crosses 110cm -- it automaticaly of the loop
```

Screenshot from IBM Cloud platform:



The recent events listed show the live stream of data that is coming and going from this device.

Event	Value	Format	Last Received
jagan	{"Alert Distance":72}	json	a few seconds ago
jagan	{"Alert Distance":72}	json	a few seconds ago
jagan	{"Alert Distance":72}	json	a few seconds ago
jagan	{"Alert Distance":72}	json	a few seconds ago
jagan	{"Alert Distance":72}	json	a few seconds ago