

Name: Mothis B (737819ITR048)

Code:

```
#include <WiFi.h>

#include <WiFiClient.h>

#include <PubSubClient.h>

const char* ssid = "Wokwi-GUEST";

const char* password = "";

#define ORG "z69c1z"

#define DEVICE_TYPE "mothis"

#define DEVICE_ID "ass4"

#define TOKEN "esp32mothis"

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

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

char token[] = TOKEN;

char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID;

char pubTopic1[] = "iot-2/evt/status1/fmt/json";

WiFiClient wifiClient;

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

const int trigPin = 13;

const int echoPin = 12;

long lastMsg = 0;

void setup() {

  Serial.begin(115200); // Starts the serial communication

  pinMode(trigPin, OUTPUT); // Sets the trigPin as an Output

  pinMode(echoPin, INPUT); // Sets the echoPin as an Input

  Serial.println();

  Serial.print("Connecting to ");

  Serial.print(ssid);

  WiFi.begin(ssid, password);

  while (WiFi.status() != WL_CONNECTED) {

    delay(500);
```

```

    Serial.print(".");
}

Serial.println("");

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

Serial.println(WiFi.localIP());

if (!client.connected()) {

    Serial.print("Reconnecting client to ");

    Serial.println(server);

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

        Serial.print(".");

        delay(500);

    }

    Serial.println("Bluemix connected");

}

}

void loop() {

    // Clears the trigPin
    digitalWrite(trigPin, LOW);

    delayMicroseconds(2);

    // Sets the trigPin on HIGH state for 10 micro seconds
    digitalWrite(trigPin, HIGH);

    delayMicroseconds(10);

    digitalWrite(trigPin, LOW);

    // Reads the echoPin, returns the sound wave travel time in microseconds
    long duration = pulseIn(echoPin, HIGH);

    // Calculate the distance
    float distanceCm = duration * 0.034/2;

    // Prints the distance in the Serial Monitor
    Serial.print("Distance (cm): ");

    Serial.println(distanceCm);

    delay(3000);
}

```

```

client.loop();

String payload = "{\"d\":{"Name\":\"" DEVICE_ID "\"";

    payload += ",\"Distance\"";

    payload += distanceCm;

    payload += "}}";

if (client.publish(pubTopic1, (char*) payload.c_str())) {

    Serial.println("Publish ok");

} else {

    Serial.println("Publish failed");

}

}

```

Wokwi Output:

The screenshot displays the Wokwi IDE interface. On the left, the code editor shows the Arduino sketch for an ESP32. The code includes libraries for WiFi and PubSubClient, defines constants for SSID, password, device type, ID, token, server, and topics, and implements a setup and loop function. The loop function publishes distance data to a topic and handles reconnection logic.

On the right, the simulation window shows a 3D model of the ESP32 board connected to an HC-SR04 ultrasonic sensor. Below the model, the serial output log shows the following sequence of events:

```

Reconnecting client to z69clz.messaging.internetofthings.ibmcloud.com
Bluenix connected
Distance (cm): 170.99
Publish ok
Distance (cm): 20.03
Publish ok
Distance (cm): 20.01

```

IBM output:

Overview
Action
Device Types
Interfaces
Add Device

	Device ID	Status	Device Type	Class ID	Date Added	Descriptive Location	Added By	Device Class
>	<input type="checkbox"/> ass4	Disconnected	esp32	Device	Nov 19, 2022 10:51 PM		aravintha.19n@kongu.edu	
>	<input type="checkbox"/> ass4	Disconnected	maresh	Device	Nov 19, 2022 11:45 PM		aravintha.19n@kongu.edu	
>	<input type="checkbox"/> ass4	Disconnected	merlin	Device	Nov 19, 2022 11:58 PM		aravintha.19n@kongu.edu	
▼	<input checked="" type="checkbox"/> ass4	Connected	moths	Device	Nov 20, 2022 12:05 AM		aravintha.19n@kongu.edu	→ ...

Identity
Device Information
Recent Events
State
Logs
✕

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

Event	Value	Format	Last Received
status1	{"d":{"Name":"ass4","Distance":20.01}}	json	a few seconds ago
status1	{"d":{"Name":"ass4","Distance":20.03}}	json	a few seconds ago
status1	{"d":{"Name":"ass4","Distance":170.99}}	json	a few seconds ago

>	<input type="checkbox"/> w_dev1	Disconnected	w_dev	Device	Oct 9, 2022 1:20 PM		aravintha.19n@kongu.edu
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0 Simulations running

Wokwi link: <https://wokwi.com/projects/348779805803545171>