

Name: Merlin M (737819ITR046)

Code:

```
#include <WiFi.h>

#include <WiFiClient.h>

#include <PubSubClient.h>

const char* ssid = "Wokwi-GUEST";

const char* password = "";

#define ORG "z69c1z"

#define DEVICE_TYPE "merlin"

#define DEVICE_ID "ass4"

#define TOKEN "esp32merlin"

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 shows the Wokwi IDE interface. On the left, the code for an ESP32 is displayed, which includes headers for WiFi, WiFiClient, and PubSubClient. It defines constants for SSID, password, and device ID. The code sets up a WiFi client and a PubSubClient, and includes a loop that publishes distance data to a topic.

On the right, the simulation window shows a visual representation of the ESP32 and the Ultrasonic Distance Sensor. The sensor's distance is displayed as 270cm. Below the simulation, the serial output shows the following sequence of events:

```

Reconnecting client to z69clz.messaging.internetofthings.ibmcloud.com
Bluemix connected
Distance (cm): 269.96
Publish ok
Distance (cm): 269.94
Publish ok
Distance (cm): 269.99

```

IBM output:

The screenshot displays the IBM IoT Platform interface. At the top, there are tabs for 'Browse', 'Action', 'Device Types', and 'Interfaces'. A search bar and an 'Add Device' button are also present. The main content area shows a table of devices. The first three rows are for device 'ass4', which is 'Disconnected'. The third row is selected, and a modal window titled 'ass4' is open, showing details for this device. The modal has tabs for 'Identity', 'Device Information', 'Recent Events', 'State', and 'Logs'. The 'Recent Events' tab is active, displaying a table of events. The events table has columns for 'Event', 'Value', 'Format', and 'Last Received'. Below the events table, there is a footer for the device list showing 'Items per page: 50' and '1 of 1 page'. At the bottom right, a status box indicates '0 Simulations running'.

Device ID	Status	Device Type	Class ID	Date Added	Descriptive Location	Added By	Device Class
ass4	Disconnected	esp32	Device	Nov 19, 2022 10:51 PM		aravinth.19n@kongu.edu	
ass4	Disconnected	maheeh	Device	Nov 19, 2022 11:45 PM		aravinth.19n@kongu.edu	
ass4	Disconnected	merlin	Device	Nov 19, 2022 11:58 PM		aravinth.19n@kongu.edu	

Event	Value	Format	Last Received
status1	["d":{"Name":"ass4","Distance":270.01}]	json	a few seconds ago
status1	["d":{"Name":"ass4","Distance":269.99}]	json	a few seconds ago
status1	["d":{"Name":"ass4","Distance":269.94}]	json	a few seconds ago
status1	["d":{"Name":"ass4","Distance":269.96}]	json	a few seconds ago

Items per page: 50 | 1-4 of 4 items

1 of 1 page

0 Simulations running

Wokwi link: <https://wokwi.com/projects/348781089367523923>