

PROGRAM

```
#include <WiFi.h>
#include <PubSubClient.h>
WiFiClient wifiClient;
String data3;
#define ORG "60hw5g"
#define DEVICE_TYPE "IOT"
#define DEVICE_ID "ultrasonic"
#define TOKEN "731719205001"
#define speed 0.034 #define led
14
char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
char publishTopic[] = "iot-2/evt/shreedharen/fmt/json"; char topic[]
= "iot-2/cmd/led/fmt/String"; char authMethod[] = "use-token-
auth"; char token[] = TOKEN;
char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID;
PubSubClient client(server, 1883, wifiClient);

const int trigpin=5;

const int echopin=18; Stringcommand;

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("Publish OK");
        }

    }

    if(dist>100){
        String payload = "{\"Distance\":\"";
        payload += dist;    payload += "}";

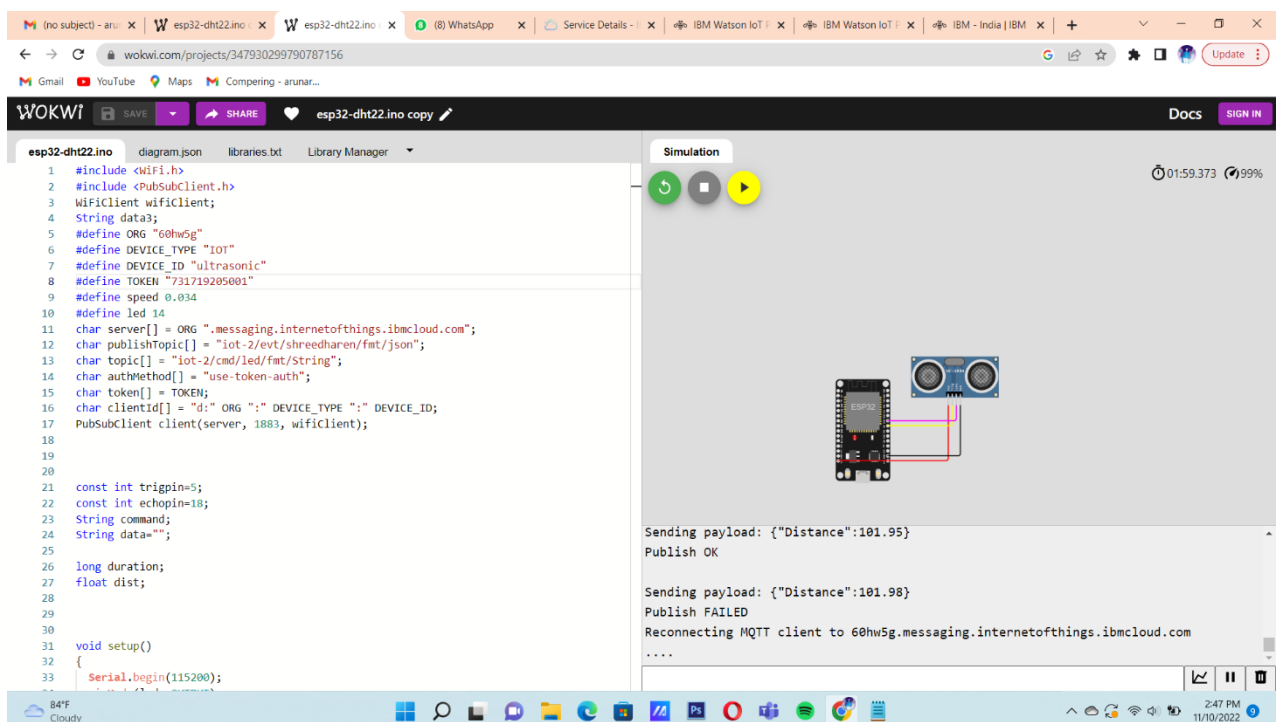
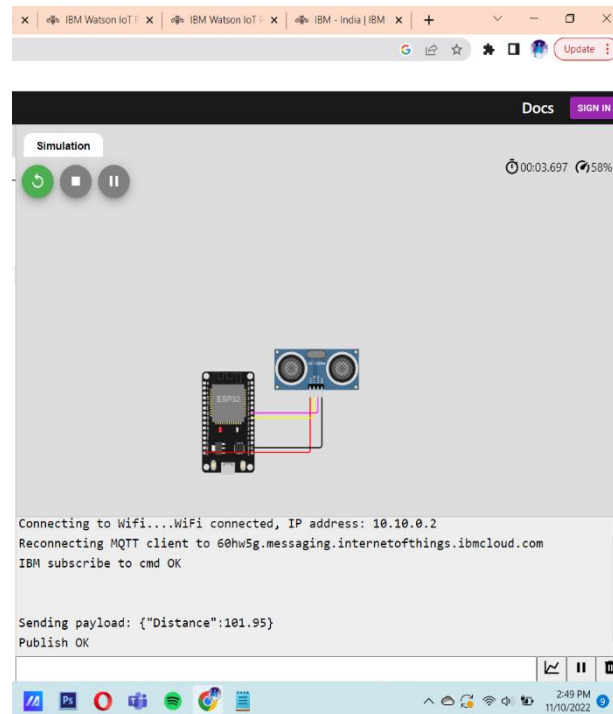
        Serial.print("\n");
        Serial.print("Sending payload: ");
        Serial.println(payload);    if(client.publish(publishTopic,
(char*) payload.c_str())) {
            Serial.println("Publish OK");
        }else {
            Serial.println("Publish FAILED");
        }

    }

}

```

Connection:



Output (IBM cloud)

The screenshot displays the IBM Watson IoT Platform dashboard. The top navigation bar includes tabs for 'Browse', 'Action', 'Device Types', and 'Interfaces'. The main content area is titled 'Recent Events' and shows a table of live data streams. The table has four columns: 'Event', 'Value', 'Format', and 'Last Received'. The data is as follows:

Event	Value	Format	Last Received
event_1	{\"randomNumber\":96,\"temp\":59,\"hum\":88}	json	a few seconds ago
event_1	{\"randomNumber\":17,\"temp\":24,\"hum\":92}	json	a few seconds ago
event_1	{\"randomNumber\":0,\"temp\":68,\"hum\":86}	json	a few seconds ago
event_1	{\"randomNumber\":38,\"temp\":19,\"hum\":96}	json	a few seconds ago
event_1	{\"randomNumber\":81,\"temp\":55,\"hum\":91}	json	a few seconds ago

At the bottom of the dashboard, it indicates 'Items per page 50' and '1-6 of 6 Items'. A status bar at the bottom shows '3 Simulations running'.

Link: <https://wokwi.com/projects/347930299790787156>

