

ASSIGNMENT 4

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PROJECT TITLE : SmartFarmer-IoT Enabled Smart Farming Application

CODE:

```
#include <WiFi.h>
#include<PubSubClient.h>
#include<ArduinoJson.h> WiFiClient
wifiClient;
#define ORG "qr9sdm"
#define DEVICE_TYPE "device1"#define
DEVICE_ID "1234"
#define TOKEN"IUoB9EP0h?_Fwp4C4"#define
speed 0.034
char server[] = ORG ".messaging.internetofthings.ibmcloud.com";char
publishTopic[] = "iot-2/evt/Data/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;int dist;
void setup()
{
  Serial.begin(115200); pinMode(trigpin,
  OUTPUT);pinMode(echopin, INPUT);
  wifiConnect(); mqttConnect();
}
void loop()
{
  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(1000);
}
initManagedDevice();
Serial.println();
}
}
void initManagedDevice()
{
if (client.subscribe(topic))
{
Serial.println(client.subscribe(topic));
Serial.println("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){ DynamicJsonDocument doc(1024);
String payload;
doc["Distance Alert:"]=dist;
serializeJson(doc, payload);
delay(300); 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");
}
}
}

```

OUTPUT:

