

ASSIGNMENT 4

IOT BASED SMART CROP PROTECTION SYSTEM FOR AGRICULTURE

WowkiLink: <https://wokwi.com/projects/348470251436900946>

Distance when greater than 100cm-no alert sent to IBM CLOUD

The screenshot shows the Wokwi IDE interface. On the left, the sketch.ino file is open, displaying the following code:

```
4 #define TrigPIN 2
5 #define LED 5
6 //DHT dht (DHTPIN, DHTTYPE); // creating the instance by passing pin and type
7
8 void callback(char* subscribetopic, byte* payload, unsigned int payloadLength)
9
10 //-----credentials of IBM Accounts-----
11
12 #define ORG "lwo1n" //IBM ORGANIZATION ID
13 #define DEVICE_TYPE "abcde" //Device type mentioned in ibm watson IOT Platform
14 #define DEVICE_ID "12345" //Device ID mentioned in ibm watson IOT Platform
15 #define TOKEN "12345678" //Token
16 String data3;
17
18
19
20 //----- Customise the above values -----
21 char server[] = ORG ".messaging.internetofthings.ibmcloud.com"; // Server Name
22 char publishTopic[] = "iot-2/evt/Data/fmt/json"; // topic name and type of event
23 char subscribetopic[] = "iot-2/cmd/command/fmt/String"; // cmd REPRESENT command
24 char authMethod[] = "use-token-auth"; // authentication method
25 char token[] = TOKEN;
26 char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID; //client id
27 float dist,dur;
28 String data;
29 //-----
30 WiFiClient wificlient; // creating the instance for wificlient
31 PubSubClient client(server, 1883, callback, wificlient); //calling the predefined
32
33
```

On the right, the simulation window shows a circuit diagram of an ESP32 microcontroller connected to an HC-SR04 ultrasonic sensor. The sensor is connected to the ESP32's pins. The simulation is running, and the console shows the following output:

```
Publish ok
Sending payload: {"distance":369.95,"msg":"safe"}
Publish ok
Sending payload: {"distance":369.94,"msg":"safe"}
Publish ok
Sending payload: {"distance":369.94,"msg":"safe"}
Publish ok
```

The screenshot shows the IBM Watson IoT Platform dashboard. The 'Recent Events' tab is selected, displaying a table of events for device 12345. The table has the following columns: Event, Value, Format, and Last Received.

Event	Value	Format	Last Received
Data	{"distance":369.97,"msg":"safe"}	json	a few seconds ago
Data	{"distance":369.94,"msg":"safe"}	json	a few seconds ago
Data	{"distance":369.94,"msg":"safe"}	json	a few seconds ago

The dashboard also shows the device's identity, device information, and state. The device is connected and its name is 'abcde'. The dashboard is displaying 1 of 1 page.

Distance when less than 100cm-no alert sent to IBM CLOUD

WOKWI

SAVE SHARE

Docs

sketch.ino diagram.json libraries.txt Library Manager

```
1 #include <WiFi.h> //library for wifi
2 #include <PubSubClient.h> //library for MQTT
3 #define EchoPIN 4 // what pin we're connected to
4 #define TrigPIN 2
5 #define LED 5
6 //DHT dht (DHTPIN, DHTTYPE); // creating the instance by passing pin and type
7
8 void callback(char* subscribetopic, byte* payload, unsigned int payloadLength)
9
10 //-----credentials of IBM Accounts-----
11
12 #define ORG "q1tydj" //IBM ORGANITION ID
13 #define DEVICE_TYPE "abcd" //Device type mentioned in ibm watson IOT Platform
14 #define DEVICE_ID "1234" //Device ID mentioned in ibm watson IOT Platform
15 #define TOKEN "12345678" //Token
16 String data3;
17
18
19
20 //----- Customise the above values -----
21 char server[] = ORG ".messaging.internetofthings.ibmcloud.com"; // Server Name
22 char publishTopic[] = "iot-2/evt/Data/fmt/json"; // topic name and type of event
23 char subscribetopic[] = "iot-2/cmd/command/fmt/String"; // cmd REPRESENT command
24 char authMethod[] = "use-token-auth"; // authentication method
25 char token[] = TOKEN;
26 char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID; //client id
27 float dist,dur;
28 String data;
29 //-----
```

Simulation

00:09:216 96%

Editing Ultrasonic Distance Sensor

Distance: 76cm

Publish ok

Sending payload: {"distance":75.99,"msg":"alert"}

Publish ok

Sending payload: {"distance":75.99,"msg":"alert"}

Publish ok

Sending payload: {"distance":75.99,"msg":"alert"}

Publish ok

IBM Watson IoT Platform

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Browse Action Device Types Interfaces

Add Device +

1234 Connected abcd Device 14 Nov 2022 1:09 PM

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
Data	{"distance":75.99,"msg":"alert"}	json	a few seconds ago
Data	{"distance":75.92,"msg":"alert"}	json	a few seconds ago
Data	{"distance":75.99,"msg":"alert"}	json	a few seconds ago

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