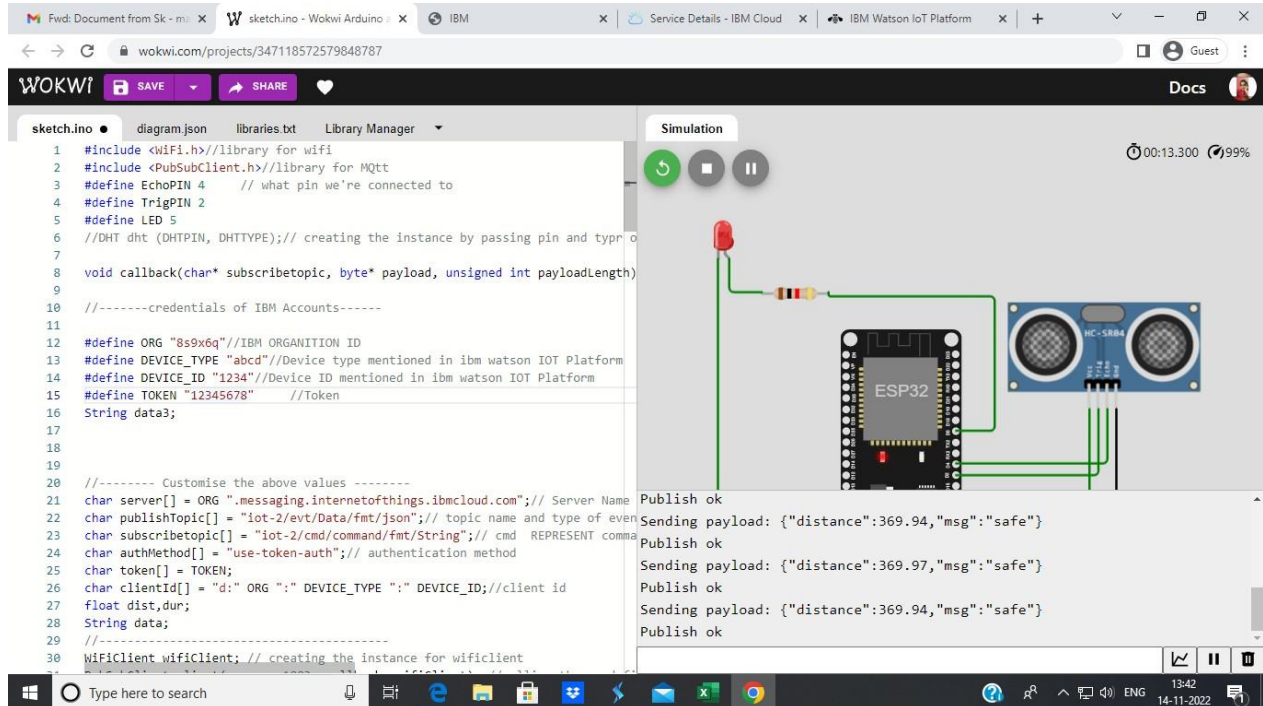


ASSIGNMENT 4

IOT BASED SMART CROP PROTECTION SYSTEM FOR AGRICULTURE

Wowki Link: <https://wokwi.com/projects/34711852579848787>

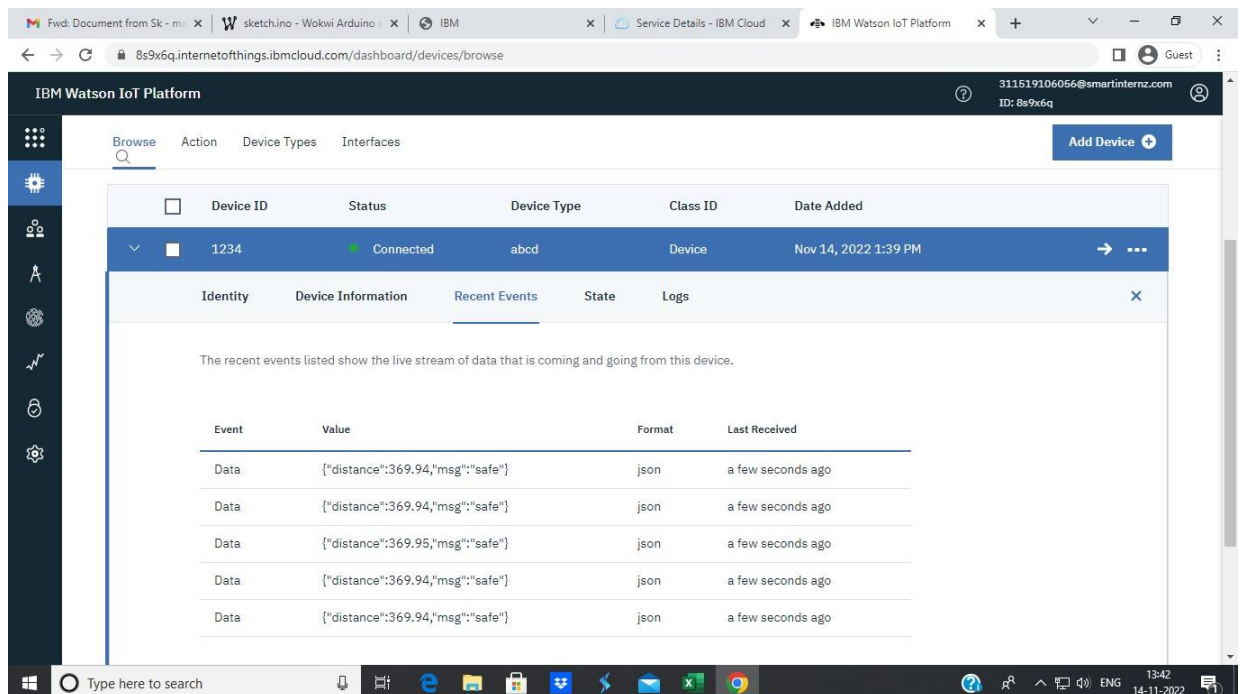
Distance when greater than 100cm-no alert sent to IBM CLOUD



```
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* subscribtopic, byte* payload, unsigned int payloadLength)
9
10 //-----credentials of IBM Accounts-----
11
12 #define ORG "8s9x6q" //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 subscribtopic[] = "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,dun;
28 String data;
29 //-----
30 WiFiClient wifiClient; // creating the instance for wifi client
```

Simulation

Publish ok
Sending payload: {"distance":369.94,"msg":"safe"}
Publish ok
Sending payload: {"distance":369.97,"msg":"safe"}
Publish ok
Sending payload: {"distance":369.94,"msg":"safe"}
Publish ok



IBM Watson IoT Platform

Browse Action Device Types Interfaces

8s9x6q.internetofthings.ibmcloud.com/dashboard/devices/browse

Device ID	Status	Device Type	Class ID	Date Added
1234	Connected	abcd	Device	Nov 14, 2022 1:39 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":369.94,"msg":"safe"}	json	a few seconds ago
Data	{"distance":369.94,"msg":"safe"}	json	a few seconds ago
Data	{"distance":369.95,"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

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

Wokwi Arduino IDE interface showing the sketch and simulation.

```
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 "8s9x6q" //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 //-----
30 WiFiClient wifiClient; // creating the instance for wificlient
```

Simulation window showing the Ultrasonic Distance Sensor (HC-SR04) connected to an ESP32. The distance is 34cm. The console shows the following output:

```
Publish ok
Sending payload: {"distance":33.98,"msg":"alert"}
Publish ok
Sending payload: {"distance":33.98,"msg":"alert"}
Publish ok
Sending payload: {"distance":33.98,"msg":"alert"}
Publish ok
```

IBM Watson IoT Platform dashboard showing the device details and recent events.

Device ID: 1234, Status: Connected, Device Type: abcd, Class ID: Device, Date Added: Nov 14, 2022 1:39 PM.

Recent Events:

Event	Value	Format	Last Received
Data	{"distance":33.98,"msg":"alert"}	json	a few seconds ago
Data	{"distance":33.98,"msg":"alert"}	json	a few seconds ago
Data	{"distance":33.98,"msg":"alert"}	json	a few seconds ago
Data	{"distance":33.98,"msg":"alert"}	json	a few seconds ago
Data	{"distance":33.98,"msg":"alert"}	json	a few seconds ago