## Smart Farmer - IoT Enabled Smart Farming Application

Batch No	PNT2022TMID21910
Student Roll number	142219205011

## **Question-1:**

Write code and connections in wokwi for the ultrasonic sensor. Whenever the distance is less than 100 cms send an "alert" to the IBM cloud and display in the device recent events. Upload document with wokwi share link and images of IBM cloud

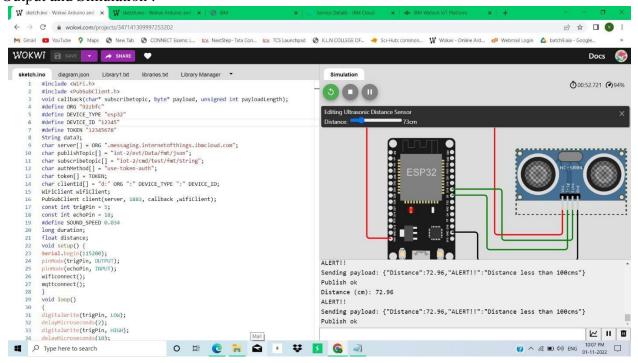
## **CODE 1:**

```
#include <WiFi.h>
#include <PubSubClient.h> void callback(char* subscribetopic, byte* payload,
unsigned int payloadLength);
#define ORG "92zbfc"
#define DEVICE TYPE "esp32"
#define DEVICE_ID "12345"
#define TOKEN "12345678" String data3; char server[] = ORG
".messaging.internetofthings.ibmcloud.com"; char publishTopic[]
= "iot-2/evt/Data/fmt/json"; char subscribetopic[] =
"iot2/cmd/test/fmt/String"; char authMethod[] = "use-token-
auth"; char token[] = TOKEN; char clientId[] = "d:" ORG ":"
DEVICE TYPE ":" DEVICE ID;
WiFiClient wifiClient;
PubSubClient client(server, 1883, callback ,wifiClient);
const int trigPin = 5; const int echoPin = 18; #define
SOUND_SPEED 0.034 long duration; float distance; void
setup() { Serial.begin(115200); pinMode(trigPin, OUTPUT);
pinMode(echoPin, INPUT); wificonnect(); mqttconnect();
} void loop() {
digitalWrite(trigPin, LOW);
delayMicroseconds(2);
digitalWrite(trigPin, HIGH);
delayMicroseconds(10);
digitalWrite(trigPin, LOW); duration
= pulseIn(echoPin, HIGH); distance =
duration * SOUND SPEED/2;
Serial.print("Distance (cm): ");
Serial.println(distance); if(distance<100)</pre>
Serial.println("ALERT!!"); delay(1000);
PublishData(distance);
delay(1000); if
(!client.loop()) {
mqttconnect();
} }
delay(1000);
} void PublishData(float dist) { mqttconnect(); String
payload = "{\"Distance\":"; payload += dist; payload +=
 ",\"ALERT!!\":""\"Distance less than 100cms\""; payload +=
"}";
Serial.print("Sending payload: ");
Serial.println(payload);
if (client.publish(publishTopic, (char*) payload.c_str())) {
Serial.println("Publish ok");
} else {
Serial.println("Publish failed");
} } void mqttconnect()
{ if
(!client.connected()) {
```

```
Serial.print("Reconnecting client to ");
Serial.println(server); while
(!!!client.connect(clientId, authMethod, token)) {
Serial.print("."); delay(500);
} initManagedDevice();
Serial.println();
} }
void wificonnect()
Serial.println();
                                  ");
Serial.print("Connecting
                           to
WiFi.begin("Wokwi-GUEST", "", 6); while
(WiFi.status() != WL_CONNECTED) { delay(500);
Serial.print(".");
}
Serial.println("");
Serial.println("WiFi connected");
Serial.println("IP address: ");
Serial.println(WiFi.localIP());
} void
initManagedDevice() {
if (client.subscribe(subscribetopic)) { Serial.println((subscribetopic));
Serial.println("subscribe to cmd OK");
Serial.println("subscribe to cmd FAILED");
payloadLength) {
Serial.print("callback invoked for topic: ");
Serial.println(subscribetopic); for (int i =
0; i < payloadLength; i++)
{ data3 +=
(char)payload[i];
Serial.println("data: "+ data3); data3="";
```

Wokwi Link: https://wokwi.com/projects/347141309997253202





Whenever the distance is less than 100 cms send an "alert" to the IBM cloud and display in the device recent events.

