# **Assignment -4**

## Data Publish to IOT Device

Assignment Date	27 October 2022
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Maximum Marks	2 Marks

# **Question-1:**

Write code and connections in wokwi for ultrasonic sensor. Whenever distance is less 100 cms send "alert" to ibm cloud and display in device recent events.

### **Solution:**

```
#include <WiFi.h>//library for wifi
#include <PubSubClient.h>//library for MQtt
void callback(char* subscribetopic, byte* payload, unsigned int payloadLength);
#define ORG "qxm592"//IBM ORGANITION ID
#define DEVICE_TYPE "weather_device"//Device type mentioned in ibm watson IOT Platform
#define DEVICE_ID "weather_today"//Device ID mentioned in ibm watson IOT Platform
#define TOKEN "jwSiUN+qppnF1*xTRa" //Token String
data3; float dist;
//----- Customise the above values -----
char server[] = ORG ".messaging.internetofthings.ibmcloud.com";// Server Name char publishTopic[] =
'iot-2/evt/Data/fmt/json";// topic name and type of event perform and format in which data to be send
char subscribetopic[] = "iot-2/cmd/test/fmt/String";// cmd REPRESENT command type AND
COMMAND IS TEST OF FORMAT STRING char authMethod[] = "use-token-auth";// authentication
method char token[] = TOKEN;
char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID;//client id
WiFiClient wifiClient; // creating the instance for wificlient
```

```
PubSubClient client(server, 1883, callback, wifiClient); //calling the predefined client id by passing
int LED = 4; int trig
= 5; int echo = 18;
void setup()
Serial.begin(115200);
pinMode(trig,OUTPUT);
pinMode(echo,INPUT);
pinMode(LED, OUTPUT);
delay(10); wificonnect();
mqttconnect();
} void loop()// Recursive Function
 digitalWrite(trig,LOW);
  digitalWrite(trig, HIGH);
  delayMicroseconds(10);
  digitalWrite(trig,LOW); float dur =
  pulseIn(echo,HIGH); float dist = (dur *
  0.0343)/2;
  Serial.print ("Distancein cm");
  Serial.println(dist);
  PublishData(dist);
  delay(1000); if
  (!client.loop()) {
  mqttconnect();
void PublishData(float dist) { mqttconnect();//function call for connecting
  String object; if (dist
  <100)
```

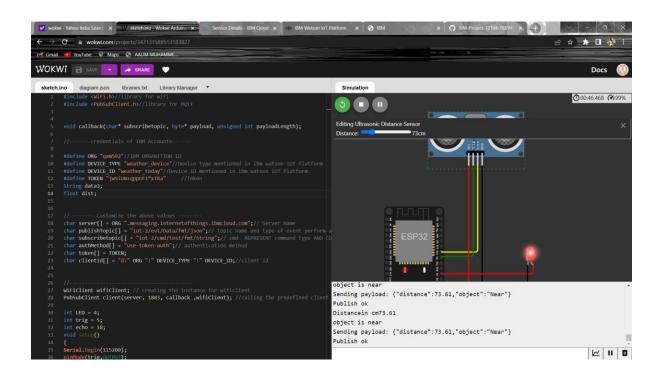
```
{ digitalWrite(LED,HIGH);
     Serial.println("object is near"); object = "Near";
  { digitalWrite(LED,LOW);
     Serial.println("no object found"); object = "No";
  String payload = "{\"distance\":"; payload +=
  dist;payload += "," "\"object\":\""; payload +=
  object; payload += "\"}";
  Serial.print("Sending payload: "); Serial.println(payload);
  if (client.publish(publishTopic, (char*) payload.c_str())) {
     Serial.println("Publish ok");// if it successfully upload data on the cloud then it will print publish ok in
  } 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() //function defination for wificonnect
```

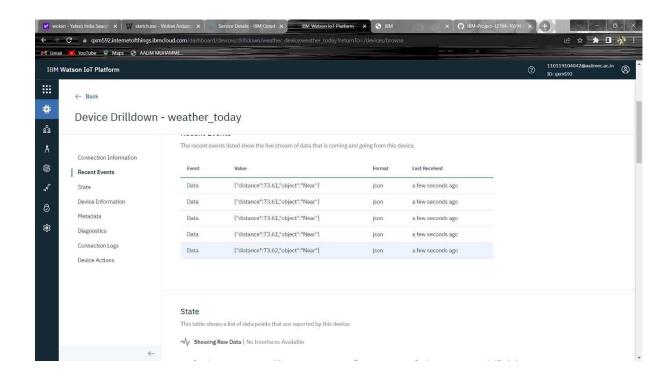
```
Serial.println();
  Serial.print("Connecting to ");
  WiFi.begin("Wokwi-GUEST", "", 6);//passing the wifi credentials to establish the connection while
(WiFi.status() != WL_CONNECTED) { delay(500);
     Serial.print("."); }
  Serial.println("");
  Serial.println("WiFi connected");
  Serial.println("IP address: ");
  Serial.println(WiFi.localIP());
void initManagedDevice() { if
  (client.subscribe(subscribetopic)) {
     Serial.println((subscribetopic));
     Serial.println("subscribe to cmd OK");
  } else {
     Serial.println("subscribe to cmd FAILED"); } }
void callback(char* subscribetopic, byte* payload, unsigned int payloadLength) {
  Serial.print("callback invoked for topic: "); Serial.println(subscribetopic);
  for (int i = 0; i < payloadLength; i++) {
     //Serial.print((char)payload[i]); data3 +=
     (char)payload[i];
 / digitalWrite(LED,HIGH);
 / digitalWrite(LED,LOW);
```

```
// }
data3="";
}
```

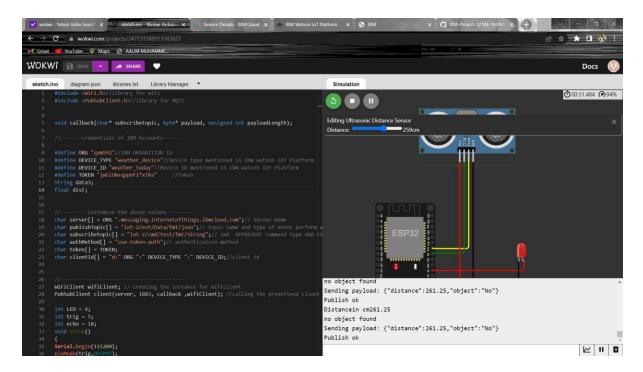
#### **OUTPUT:**

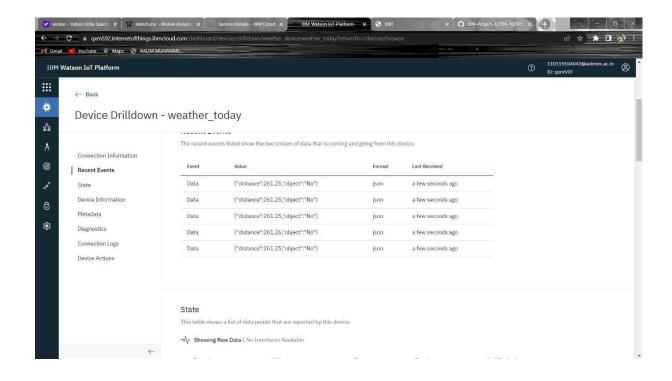
#### **OBJECT NEAR BY DEVICE:**





#### **OBJECT FAR AWAY FROM DEVICE:**





#### **REFERENCE:**

https://wokwi.com/projects/347211841025344084