## **ASSIGNMENT - 4**

DATE	17 October 2022
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MAXIMUM MARKS	2 Marks

## **OUESTION:**

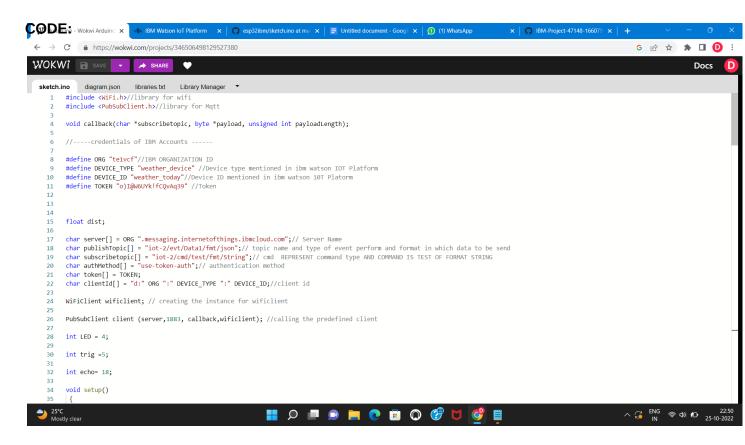
Write code and connections in wokwi for ultrasonic sensor.

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

Upload document with wokwi share link and images of ibm cloud

## **WOKWI CODE AND IMPLEMENTATION LINK:**

https://wokwi.com/projects/346506498129527380



```
← → C https://wokwi.com/projects/346506498129527380
WOKWI 🖪 SAVE

→ SHARE

                                                Library Manager ▼
 sketch.ino
                diagram.json
                                 libraries.txt
    34
          void setup()
    35
           {
    36
    37
              Serial.begin(115200);
              pinMode(trig, OUTPUT);
    38
              pinMode(echo, INPUT);
    39
              pinMode(LED, OUTPUT);
    40
              delay(10);
    41
    42
    43
              wificonnect();
    44
    45
              mqttconnect();
    46
    47
    48
    49
          void loop()// Recursive Function
    50
    51
    52
               delayMicroseconds(10);
    53
               digitalWrite(trig, LOW);
    54
               digitalWrite(trig, LOW);
               digitalWrite(trig,HIGH);
float dur= pulseIn(echo,HIGH);
    55
    57
               float dist = (dur* 0.0343)/2;
    58
               Serial.print ("Distance in cm : ");
               Serial.println(dist);
    59
    60
    61
               PublishData(dist);
    62
               delay(1000);
    63
    64
               if (!client.loop()) {
    65
    66
    67
                mqttconnect();
\leftarrow \  \  \, \rightarrow \  \  \, \mathbf{C} \quad \, \mathbf{\hat{a}} \quad \text{https://wokwi.com/projects/346506498129527380}
WOKWi

→ SHARE

                diagram.json libraries.txt Library Manager ▼
 sketch.ino
    68
              }
    69
    70
          void PublishData(float dist) {
    71
    72
           mqttconnect();
    73
    74
            String object;
    75
    76
            if (dist<100)
    77
              digitalWrite(LED, HIGH);
Serial.println("object is near");
object = "ALERT! object is near";
    78
    79
    80
    81
    83
    84
              digitalWrite(LED,LOW);
    85
              Serial.println("no object found");
object ="No object found";
    86
    87
    88
    89
    90
            String payload="{\"distance\":";
            payload += dist;
payload += "," "\"object\":\"";
payload += object;
    91
    92
    93
            payload += "\"}";
    94
    95
            Serial.print("Sending payload: ");
    97
            Serial println(payload);
    98
            if (client.publish(publishTopic, (char*) payload.c_str()))
   99
   100
              Serial.println("Publish ok"); // if it successfully upload
   101
```

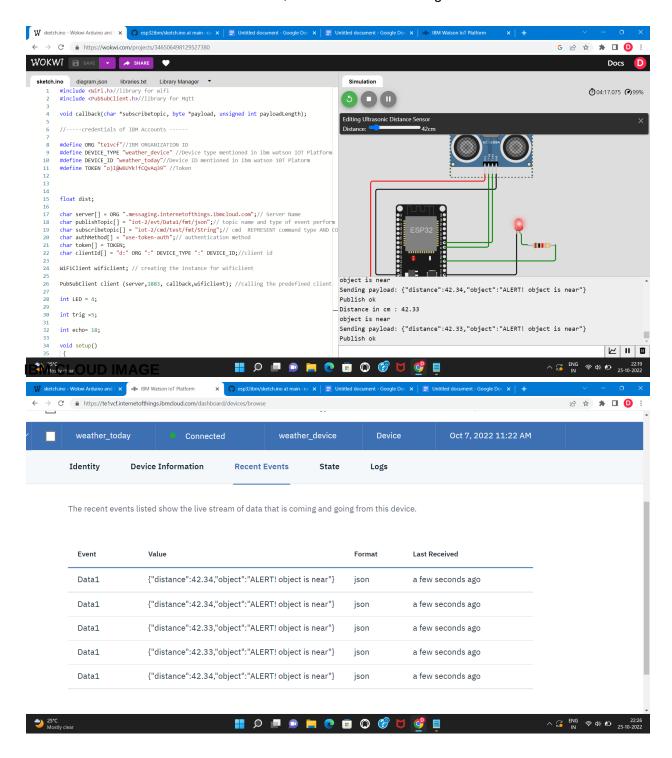
```
← → C • https://wokwi.com/projects/346506498129527380
WOKWi

→ SHARE

 sketch.ino
              diagram.json
                             libraries.txt
                                          Library Manager
  103
  104
             Serial.println("Publish failed");
  105
  106
  107
  108
         void mqttconnect() {
  109
           if (!client.connected()) {
  110
             Serial.print("Reconnecting client to ");
             Serial.println(server);
  111
             while (!!!client.connect(clientId, authMethod, token)) {
  112
               Serial print(".");
  113
               delay(500);
  114
  115
             }
  116
  117
              initManagedDevice();
              Serial.println();
  118
  119
  120
         }
  121
  122
  123
         void wificonnect() //function defination for wificonnect
  124
           Serial.println();
  125
           Serial.print("Connecting to ");
  126
  127
           WiFi.begin("Wokwi-GUEST", "", 6);//passing the wifi credentials to establish the connection
  128
  129
           while (WiFi.status() != WL_CONNECTED) {
  130
             delay(500);
  131
             Serial.print(".");
  132
  133
           Serial.println("");
           Serial.println("WiFi connected");
  134
  135
           Serial.println("IP address: ");
  136
           Serial.println(WiFi.localIP());
  137
← → C • https://wokwi.com/projects/346506498129527380
WOKWI 🖪 SAVE
                                     Library Manager ▼
 sketch.ino
             diagram.json
                           libraries.txt
        void initManagedDevice() {
  140
  141
          if (client.subscribe(subscribetopic)) {
  142
            Serial.println((subscribetopic));
            Serial.println("subscribe to cmd OK");
  143
  144
  145
          else {
  146
            Serial.println("subscribe to cmd FAILED");
          }
  148
  149
  150
        void callback(char* subscribetopic, byte* payload, unsigned int payloadLength)
  151
         Serial.print("callback invoked for topic: ");
  152
  153
          Serial.println(subscribetopic);
  154
          for (int i = 0; i < payloadLength; i++) {</pre>
            //Serial.print((char)payload[i]);
  155
          // data3 += (char)payload[i];
  157
  158
         // Serial.println("data: "+ data3);
//if(data3=="lighton")
  159
  160
  161
        //Serial.println(data3);
  162
          digitalWrite(LED,HIGH);
  163
  165
  166
          //else
  167
  168
        //Serial.println(data3);
  169
        digitalWrite(LED,LOW);
  170
  171
```

## **OUTPUT:**

When the distance is less than 100 cms, send an "alert" message to IBM Watson IoT Platform.



When the object is far( greater than 100 cms), send "no object found" to the IBM Watson IOT Platform.

