## **ASSIGNMENT - 4**

## **QUESTION:**

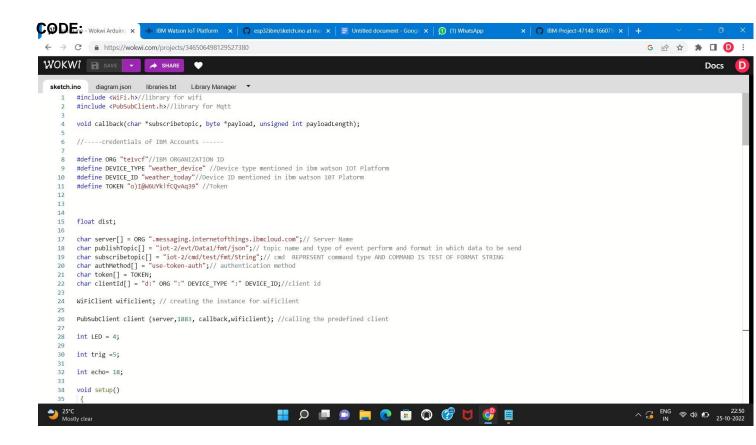
Write code and connections in wokwi for ultrasonic sensor.

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
                                 A SHARE
                                libraries.txt
                                             Library Manager *
 sketch.ino
                diagram.json
          void setup()
    34
    35
           {
    36
             Serial.begin(115200);
    37
             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);
    55
              float dur= pulseIn(echo, HIGH);
    56
              float dist = (dur* 0.0343)/2;
    57
              Serial.print ("Distance in cm : ");
Serial.println(dist);
    58
    59
    60
              PublishData(dist);
   61
    62
              delay(1000);
   63
    64
              if (!client.loop()) {
   65
    66
   67
               mqttconnect();
    68
    \rightarrow G

    https://wokwi.com/projects/346506498129527380

WOKWi
                          libraries.txt
               diagram.json
                                          Library Manager ▼
   68
             }
   69
   70
   71
         void PublishData(float dist) {
   72
           mqttconnect();
   73
   74
           String object;
   75
           if (dist<100)
   77
   78
             digitalWrite(LED, HIGH);
             Serial.println("object is near");
object = "ALERT! object is near";
   79
80
   81
           }
   82
   83
           else
   84
             digitalWrite(LED,LOW);
Serial.println("no object found");
   85
   86
             object ="No object found";
   87
   89
   90
           String payload="{\"distance\":";
   91
           payload += dist;
payload += "," "\"object\":\"";
   92
           payload += object;
   93
   94
           payload += "\"}";
   96
           Serial.print("Sending payload: ");
   97
           Serial.println(payload);
   98
   99
           if (client.publish(publishTopic, (char*) payload.c_str()))
  100
  101
             Serial.println("Publish ok"); // if it sucessfully upload
   102
```

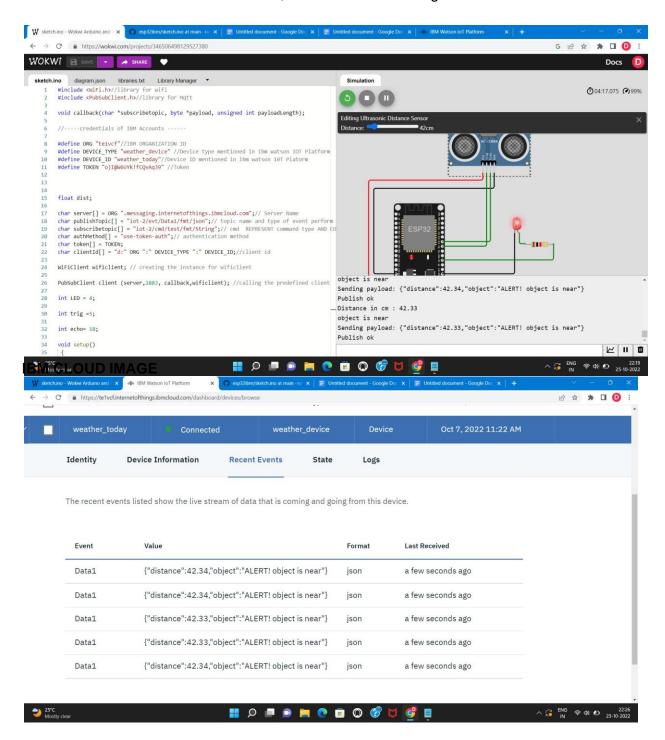
```
← → C • https://wokwi.com/projects/346506498129527380
WOKWi

→ 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
  114
               delay(500);
  115
             }
  116
              initManagedDevice();
  117
              Serial.println();
  118
  119
           }
  120
  121
  122
  123
         void wificonnect() //function defination for wificonnect
  124
  125
           Serial.println();
  126
           Serial.print("Connecting to ");
  127
           WiFi.begin("Wokwi-GUEST", "", 6);//passing the wifi credentials to establish the connection
  128
  129
           while (WiFi.status() != WL_CONNECTED) {
  130
             delay(500);
             Serial.print(".");
   131
   132
  133
           Serial.println("");
  134
           Serial.println("WiFi connected");
           Serial.println("IP address: ");
  135
           Serial.println(WiFi.localIP());
  136
  137
   → C https://wokwi.com/projects/346506498129527380
WOKWI 🖪 SAVE
 sketch.ino
             diagram.json
                           libraries.txt
                                     Library Manager ▼
  138
        void initManagedDevice() {
  139
  140
          if (client.subscribe(subscribetopic)) {
  141
  142
            Serial.println((subscribetopic));
  143
            Serial.println("subscribe to cmd OK");
  144
  145
          else {
            Serial.println("subscribe to cmd FAILED");
  146
  147
  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>
  155
            //Serial.print((char)payload[i]);
  156
          // data3 += (char)payload[i];
  157
  158
  159
         // Serial.println("data: "+ data3);
          //if(data3=="lighton")
  161
        //Serial.println(data3);
  162
  163
          digitalWrite(LED,HIGH);
  164
  165
          }
  166
  167
          //else
  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.

