ASSIGNMENT - 4

DATE	28 October 2022
TEAM ID	PNT2022TMID10141
Maximum mark	2 marks

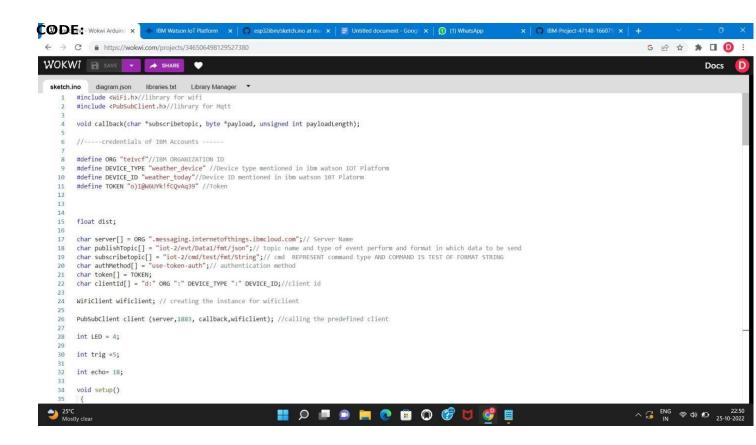
QUESTION:

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



```
\leftarrow \  \  \, \rightarrow \  \  \, \mathbf{C} \quad \, \mathbf{\triangleq} \  \, \mathrm{https://wokwi.com/projects/346506498129527380}
WOKWI 🖹 SAVE

→ SHARE

 sketch.ino
                diagram.json
                                libraries.txt
                                               Library Manager ▼
    34
          void setup()
    35
           {
    36
    37
             Serial.begin(115200);
    38
             pinMode(trig, OUTPUT);
    39
             pinMode(echo, INPUT);
    40
             pinMode(LED, OUTPUT);
    41
             delay(10);
    42
    43
             wificonnect();
    44
    45
             mqttconnect();
    46
    47
    48
    49
          void loop()// Recursive Function
    50
    51
               delayMicroseconds(10);
    52
               digitalWrite(trig, LOW);
    53
               digitalWrite(trig, LOW);
    54
    55
               digitalWrite(trig,HIGH);
               float dur= pulseIn(echo,HIGH);
float dist = (dur* 0.0343)/2;
    56
    57
               Serial.print ("Distance in cm : ");
    58
               Serial.println(dist);
    59
    60
               PublishData(dist);
    61
    62
    63
               delay(1000);
    64
               if (!client.loop()) {
    65
    66
    67
                mqttconnect();
    68
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WOKWI B SAVE

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 sketch.ino
               diagram.json libraries.txt
                                          Library Manager ▼
    68
             }
    69
    70
    71
         void PublishData(float dist) {
    72
           mqttconnect();
    73
    74
            String object;
    75
    76
            if (dist<100)
    77
    78
              digitalWrite(LED, HIGH);
             Serial.println("object is near");
object = "ALERT! object is near";
    79
    80
    81
    82
            else
    83
    85
              digitalWrite(LED,LOW);
    86
              Serial.println("no object found");
    87
              object ="No object found";
    88
    89
            String payload="{\"distance\":";
    90
           payload += dist;
payload += "," "\"object\":\"";
    91
            payload += object;
payload += "\"}";
    93
    94
    95
            Serial.print("Sending payload: ");
    96
            Serial.println(payload);
    97
    98
            if (client.publish(publishTopic, (char*) payload.c_str()))
   100
  101
              Serial.println("Publish ok"); // if it successfully upload
   102
```

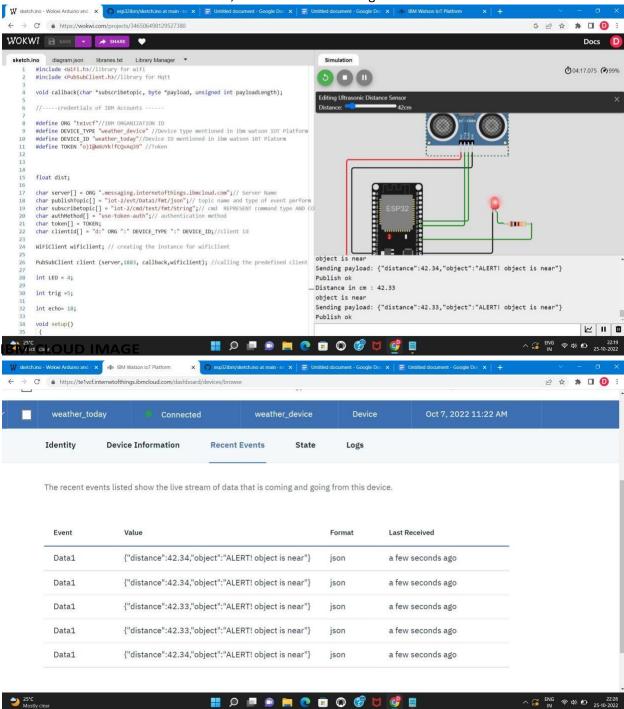
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 sketch.ino
                              libraries.txt
                                          Library Manager ▼
               diagram.json
  103
           else {
  104
             Serial.println("Publish failed");
  105
  106
  107
         void mqttconnect() {
  108
           if (!client.connected()) {
  109
  110
             Serial.print("Reconnecting client to ");
  111
              Serial.println(server);
             while (!!!client.connect(clientId, authMethod, token)) {
  112
  113
               Serial.print(".");
  114
               delay(500);
  115
  116
  117
               initManagedDevice();
  118
               Serial.println();
   119
  120
  121
   122
  123
         void wificonnect() //function defination for wificonnect
   124
  125
           Serial.println();
  126
           Serial.print("Connecting to ");
  127
   128
           WiFi.begin("Wokwi-GUEST", "", 6);//passing the wifi credentials to establish the connection
  129
           while (WiFi.status() != WL_CONNECTED) {
             delay(500);
  130
  131
             Serial.print(".");
  132
  133
           Serial.println("");
           Serial.println("WiFi connected");
Serial.println("IP address: ");
  134
  135
           Serial.println(WiFi.localIP());
  136
  137
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 sketch.ino
              diagram.json
                            libraries.txt
                                         Library Manager *
  138
         void initManagedDevice() {
  139
  140
           if (client.subscribe(subscribetopic)) {
  141
             Serial.println((subscribetopic));
  143
             Serial.println("subscribe to cmd OK");
  144
  145
           else {
             Serial.println("subscribe to cmd FAILED");
  146
  147
           }
  148
  149
         void callback(char* subscribetopic, byte* payload, unsigned int payloadLength)
  150
  152
          Serial.print("callback invoked for topic: ");
  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
          // Serial.println("data: "+ data3);
  160
           //if(data3=="lighton")
  161
         //Serial.println(data3);
  162
  163
           digitalWrite(LED,HIGH);
  164
  165
           }
  166
           //else
  167
  169
         //Serial.println(data3);
  170
         digitalWrite(LED,LOW);
  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.

