ASSIGNMENT - 4

DATE	17 October 2022
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MAXIMUM MARKS	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

CODE:

```
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    {
52      delayMicroseconds(10);
53      digitalWrite(trig, LOW);
54      digitalWrite(trig, LOW);
55      digitalWrite(trig,HIGH);
56      float dur= pulseIn(echo,HIGH);
57      float dist = (dur* 0.0343)/2;
58      Serial.print ("Distance in cm : ");
59      Serial.println(dist);
60
61      PublishData(dist);
62
63      delay(1000);
64
65      if (!client.loop()) {
66
67        mqttconnect();
68    }
```
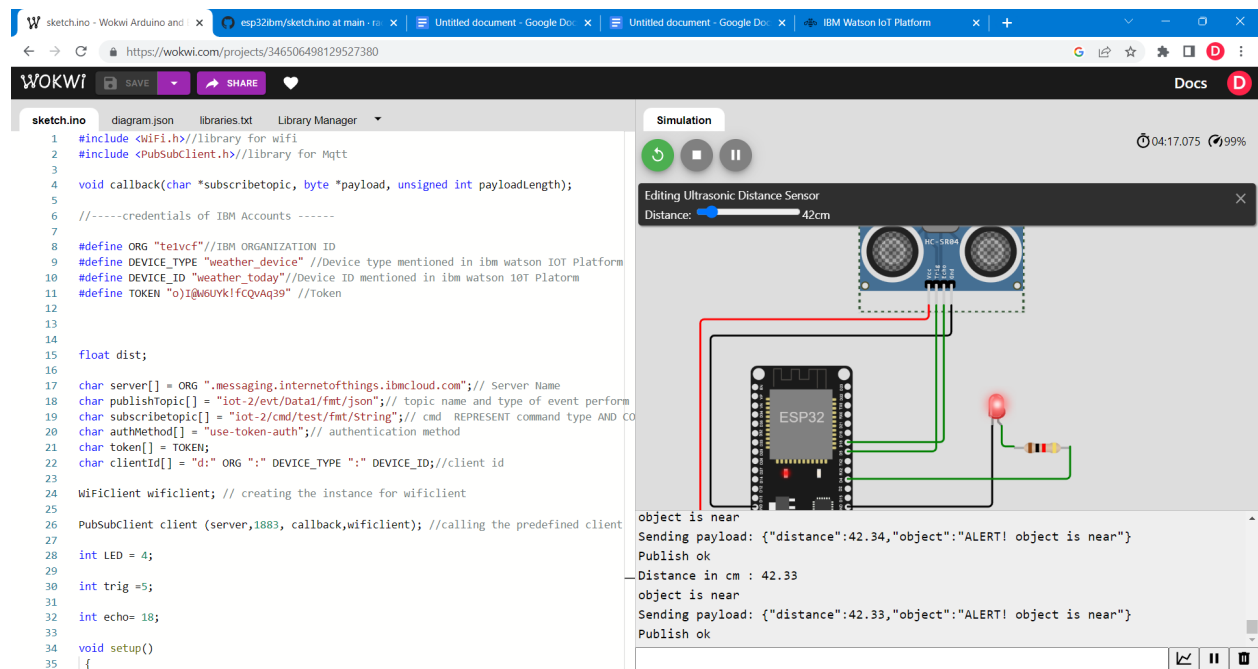
```
68      }
69    }
70
71    void PublishData(float dist) {
72      mqttconnect();
73
74      String object;
75
76      if (dist<100)
77      {
78        digitalWrite(LED, HIGH);
79        Serial.println("object is near");
80        object = "ALERT! object is near";
81      }
82
83      else
84      {
85        digitalWrite(LED,LOW);
86        Serial.println("no object found");
87        object ="No object found";
88      }
89
90      String payload="{\"distance\":";
91      payload += dist;
92      payload += "," "\"object\":\"";
93      payload += object;
94      payload += "\"}";
95
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     }
```

```
103      else {
104        Serial.println("Publish failed");
105      }
106    }
107
108    void mqttconnect() {
109      if (!client.connected()) {
110        Serial.print("Reconnecting client to ");
111        Serial.println(server);
112        while (!!!client.connect(clientId, authMethod, token)) {
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) {
130        delay(500);
131        Serial.print(".");
132      }
133      Serial.println("");
134      Serial.println("WiFi connected");
135      Serial.println("IP address: ");
136      Serial.println(WiFi.localIP());
137    }
```

```
137    }
138
139    void initManagedDevice() {
140
141      if (client.subscribe(subscribetopic)) {
142        Serial.println((subscribetopic));
143        Serial.println("subscribe to cmd OK");
144      }
145      else {
146        Serial.println("subscribe to cmd FAILED");
147      }
148    }
149
150    void callback(char* subscribetopic, byte* payload, unsigned int payloadLength)
151    {
152     Serial.print("callback invoked for topic: ");
153      Serial.println(subscribetopic);
154      for (int i = 0; i < payloadLength; i++) {
155        //Serial.print((char)payload[i]);
156       // data3 += (char)payload[i];
157      }
158
159     // Serial.println("data: "+ data3);
160      //if(data3=="lighton")
161      {
162    //Serial.println(data3);
163      digitalWrite(LED,HIGH);
164
165      }
166
167      //else
168      {
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.

IBM CLOUD IMAGE

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