ASSIGNMENT-4
DISTANCE DETECTION USING
ULTRASONIC SENSOR

Date	22 October 2022
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Maximum Marks	2Marks

Question1:

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

WOKWILINK:

https://wokwi.com/projects/305566932847821378

CODE:

```
36    pinMode(trig,OUTPUT);
37    pinMode(echo,INPUT);
38    pinMode(LED, OUTPUT);
39    delay(10);
40    wificonnect();
41    mqttconnect();
42    }
43    void loop()// Recursive Function
44    {
45
46     digitalWrite(trig,LOW);
47      digitalWrite(trig,HIGH);
48      delayMicroseconds(10);
49      digitalWrite(trig,LOW);
50      float dur = pulseIn(echo,HIGH);
51      float dist = (dur * 0.0343)/2;
52      Serial.print ("Distancein cm");
53      Serial.println(dist);
54
55
56      PublishData(dist);
57      delay(1000);
58      if (!client.loop()) {
59        mqttconnect();
60      }
61    }
62
63
64
65    /*.............................retrieving to Cloud.............................*/
66
67    void PublishData(float dist) {
68      mqttconnect();//function call for connecting to ibm
69      /*
70       creating the String in in form JSon to update the data to ibm cloud
```

```
70        creating the String in in form JSon to update the data to ibm cloud
71    */
72    String object;
73    if (dist <100)
74    {
75      digitalWrite(LED,HIGH);
76      Serial.println("object is near");
77      object = "Near";
78    }
79    else
80    {
81      digitalWrite(LED,LOW);
82      Serial.println("no object found");
83      object = "No";
84    }
85
86    String payload = "{\"distance\":";
87    payload += dist;
88    payload += "," "\"object\":\"";
89    payload += object;
90    payload += "\"}";
91
92
93    Serial.print("Sending payload: ");
94    Serial.println(payload);
95
96
97
98
```

esp32-blink.ino ●   diagram.json ●   libraries.txt ●   Library Manager *

```
98
99     if (client.publish(publishTopic, (char*) payload.c_str())) {
100      Serial.println("Publish ok");// if it sucessfully upload data on the cloud then it will print publish ok in serial monitor or else it will print publish failed
101    } else {
102      Serial.println("Publish failed");
103    }
104
105  }
106  void mqttconnect() {
107    if (!client.connected()) {
108      Serial.print("Reconnecting client to ");
109      Serial.println(server);
110      while (!!!client.connect(clientId, authMethod, token)) {
111        Serial.print(".");
112        delay(500);
113      }
114
115      initManagedDevice();
116      Serial.println();
117    }
118  }
119  void wificonnect() ///function defination for wificonnect
120  {
121    Serial.println();
122    Serial.print("Connecting to ");
123
124    WiFi.begin("wokwi-GUEST", "", 6);//passing the wifi credentials to establish the connection
125    while (WiFi.status() != WL_CONNECTED) {
126      delay(500);
127      Serial.print(".");
128    }
129    Serial.println("");
130    Serial.println("WiFi connected");
131    Serial.println("IP address: ");
132    Serial.println(WiFi.localIP());
```

```
123
124      WiFi.begin("Wokwi-GUEST", "", 6);//passing the wifi credentials to establish the connection
125      while (WiFi.status() != WL_CONNECTED) {
126        delay(500);
127        Serial.print(".");
128      }
129      Serial.println("");
130      Serial.println("WiFi connected");
131      Serial.println("IP address: ");
132      Serial.println(WiFi.localIP());
133    }
134
135    void initManagedDevice() {
136      if (client.subscribe(subscribetopic)) {
137        Serial.println((subscribetopic));
138        Serial.println("subscribe to cmd OK");
139      } else {
140        Serial.println("subscribe to cmd FAILED");
141      }
142    }
143
144    void callback(char* subscribetopic, byte* payload, unsigned int payloadLength)
145    {
146
147      Serial.print("callback invoked for topic: ");
148      Serial.println(subscribetopic);
149      for (int i = 0; i < payloadLength; i++) {
150        //Serial.print((char)payload[i]);
151        data3 += (char)payload[i];
152      }
153
154    //   Serial.println("data: "+ data3);
155    //   if(data3=="Near")
156    //   {
152    // Serial.println(data3);
```

```
142   }
143
144   void callback(char* subscribetopic, byte* payload, unsigned int payloadLength)
145   {
146
147     Serial.print("callback invoked for topic: ");
148     Serial.println(subscribetopic);
149     for (int i = 0; i < payloadLength; i++) {
150       //Serial.print((char)payload[i]);
151       data3 += (char)payload[i];
152     }
153
154   //    Serial.println("data: "+ data3);
155   //    if(data3=="Near")
156   //    {
157   // Serial.println(data3);
158   // digitalWrite(LED,HIGH);
159
160   //   }
161
162   //    else
163   //    {
164   // Serial.println(data3);
165   // digitalWrite(LED,LOW);
166
167   //   }
168   data3="";
169
170
171   }
```
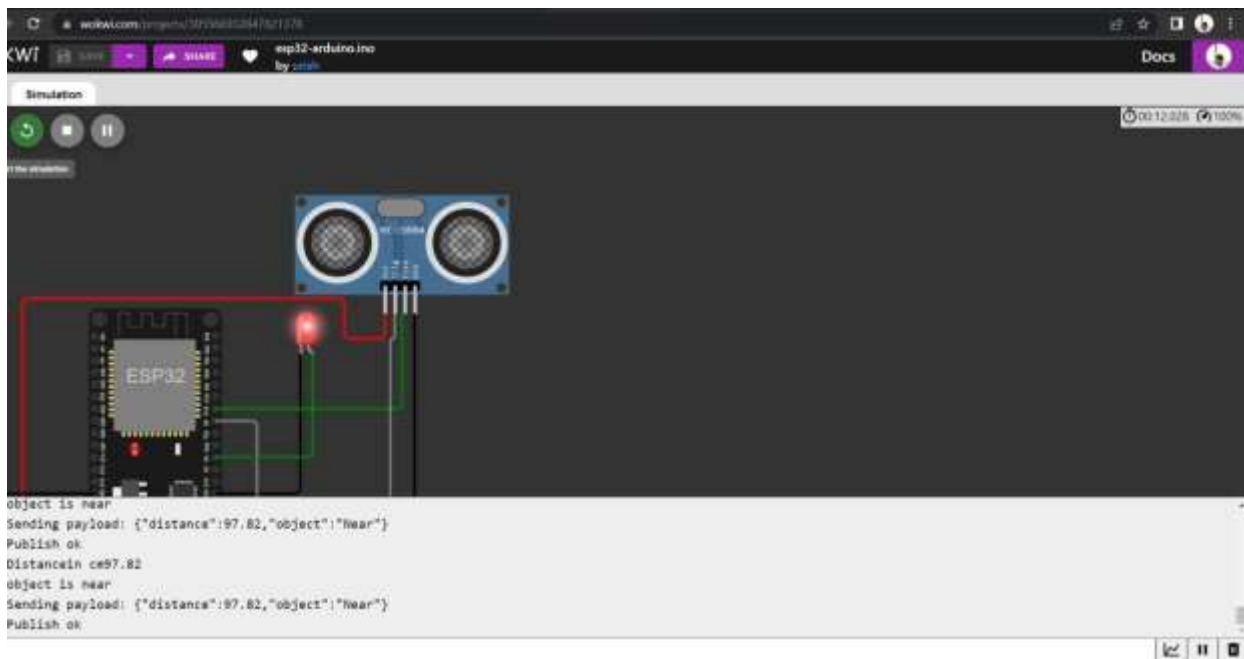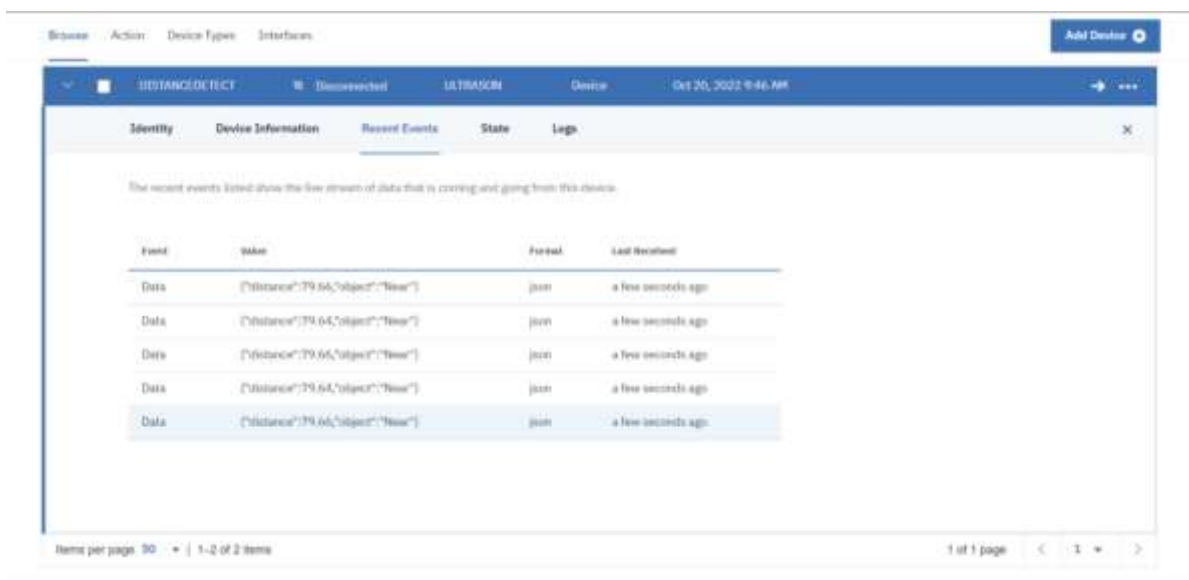
OUTPUT:
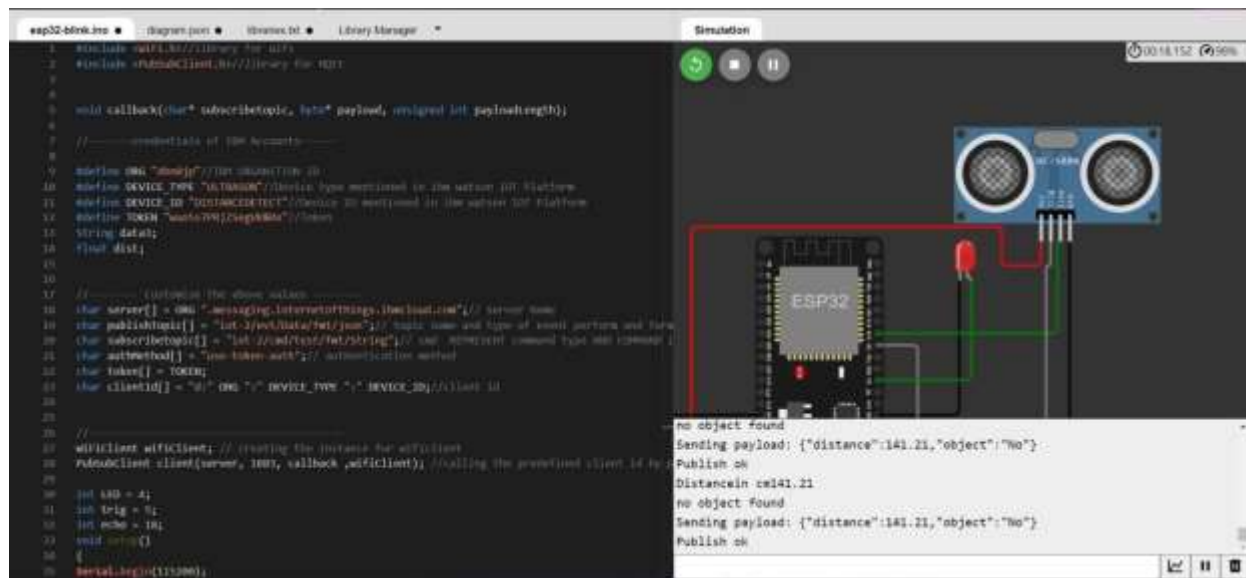
DatasendtotheIBMclouddevicewhentheobjectisfar
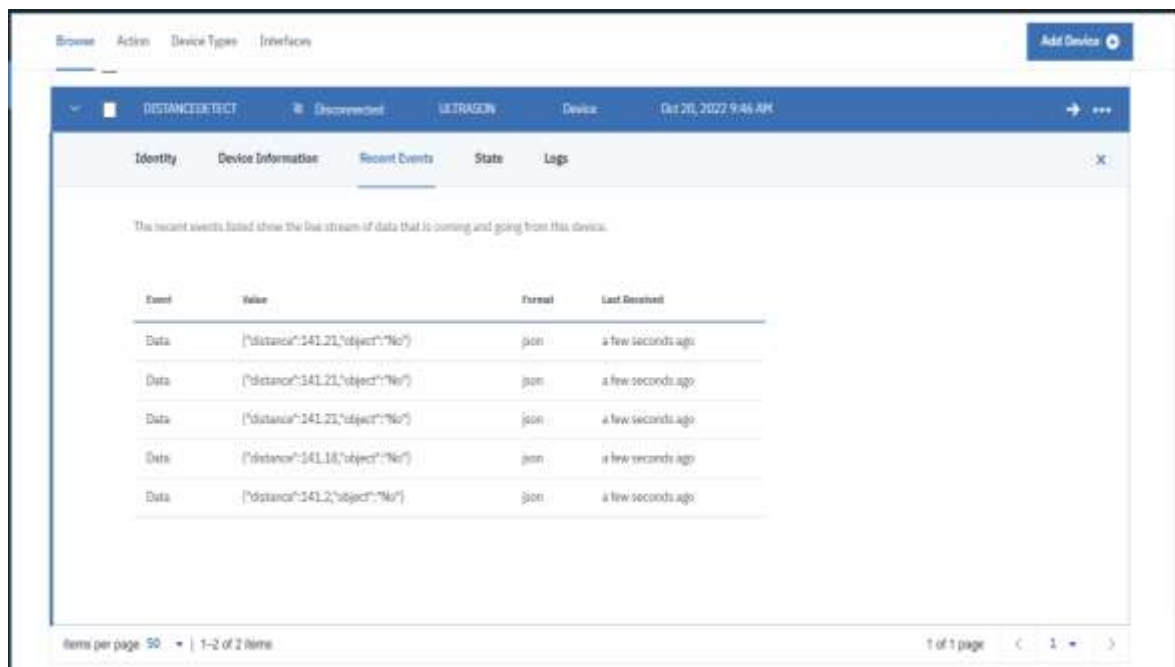
whenobjectisneartotheultrasonicsensor

DatasenttotheIBMCloudDevicewhentheobjectisnear

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