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
```

```
98
99     if (client.publish(publishTopic, (char*) payload.c_str())) {
100      Serial.println("Publish ok");// if it successfully 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());
```

```
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   }
```
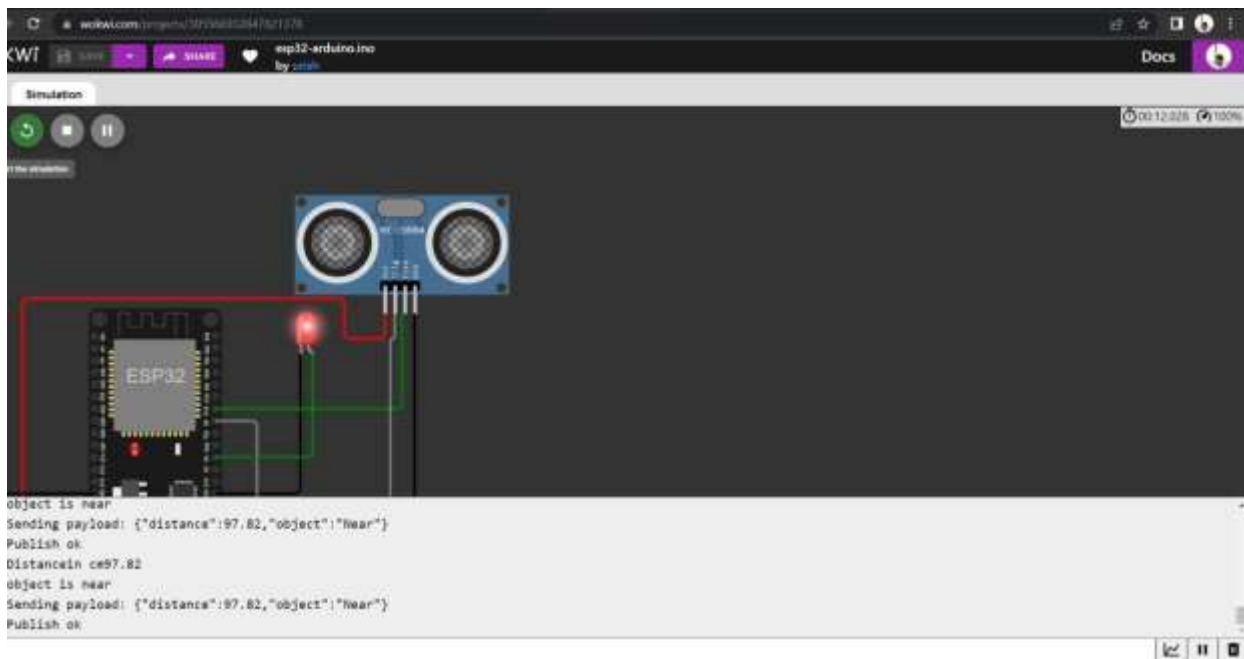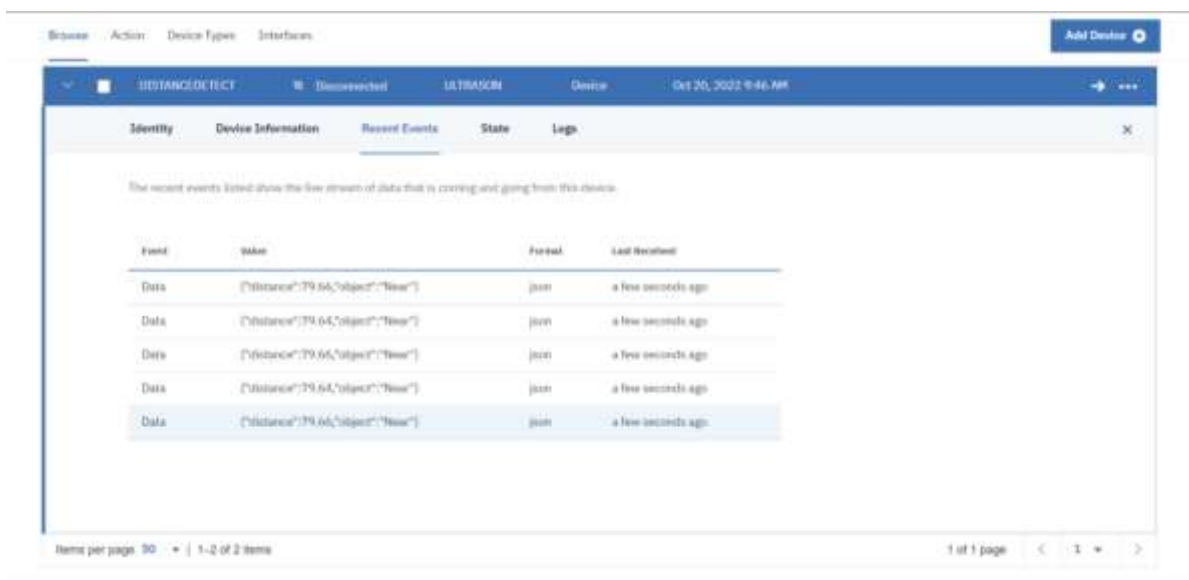
OUTPUT:
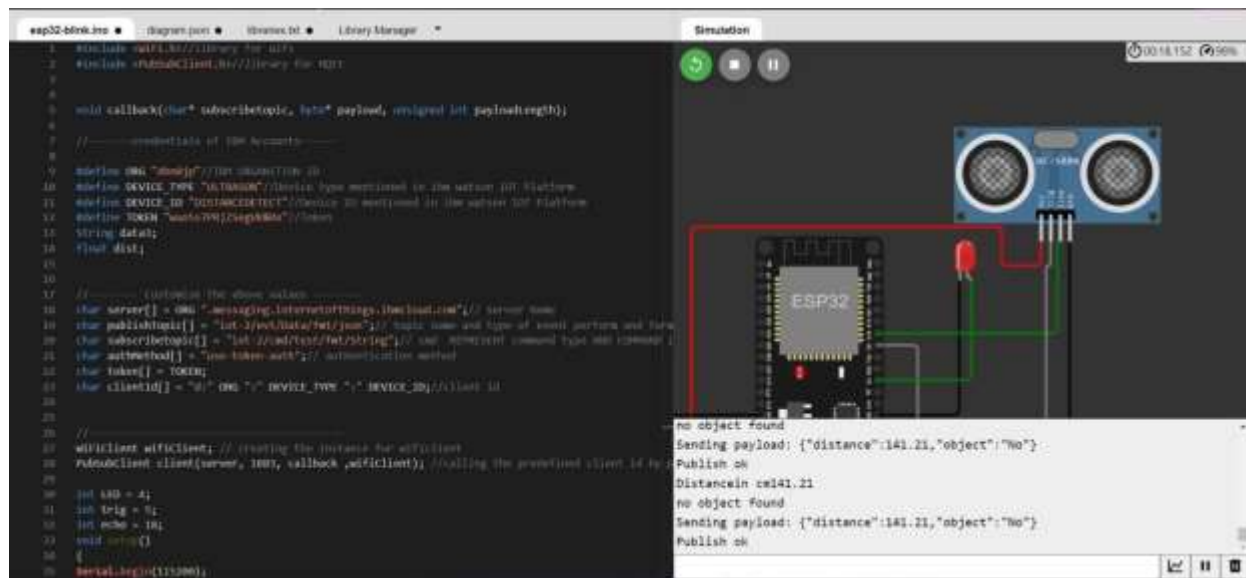


DatasendtotheIBMclouddevicewhentheobjectisfar
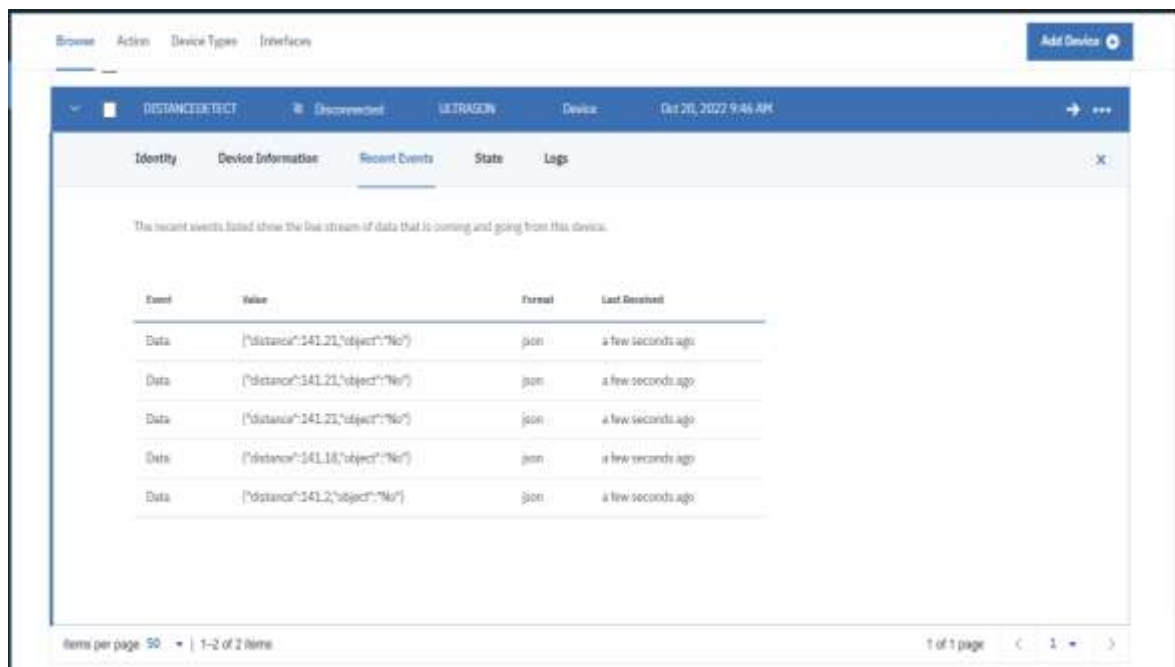
whenobjectisneartotheultrasonicsensor



DatasenttotheIBMCloudDevicewhentheobjectisnear



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