DATE	17 October 2022
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MAXIMUM MARKS	2 Marks

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/346687532774195794

CODE:

```
54      digitalWrite(trig,HIGH);
55      float dur= pulseIn(echo,HIGH);
56      float dist = (dur* 0.0343)/2;
57      Serial.print ("Distance in cm : ");
58      Serial.println(dist);
59
60      PublishData(dist);
61
62      delay(1000);
63
64      if (!client.loop()) {
65
66        mqttconnect();
67      }
68  }
69
70  void PublishData(float dist) {
71    mqttconnect();
72
73    String object;
74
75    if (dist<100)
76    {
77      digitalWrite(LED, HIGH);
78      Serial.println("object is near");
79      object = "ALERT! object is near";
80    }
81
```

```
82      else
83      {
84        digitalWrite(LED,LOW);
85        Serial.println("no object found");
86        object ="No object found";
87      }
88
89    String payload="{\"distance\":";
90    payload += dist;
91    payload += "," "\"object\":\"";
92    payload += object;
93    payload += "\"}";
94
95    Serial.print("Sending payload: ");
96    Serial.println(payload);
97
98    if (client.publish(publishTopic, (char*) payload.c_str()))
99    {
100       Serial.println("Publish ok"); // if it sucessfully upload
101     }
102     else {
103       Serial.println("Publish failed");
104     }
105   }
106
107   void mqttconnect() {
108     if (!client.connected()) {
109       Serial.print("Reconnecting client to ");
```

```cpp
111      while (!!!client.connect(clientId, authMethod, token)) {
112        Serial.print(".");
113        delay(500);
114      }
115
116      initManagedDevice();
117      Serial.println();
118    }
119  }
120
121
122  void wificonnect() //function defination for wificonnect
123  {
124    Serial.println();
125    Serial.print("Connecting to ");
126
127    WiFi.begin("Wokwi-GUEST", "", 6);//passing the wifi credentials to establish the connection
128    while (WiFi.status() != WL_CONNECTED) {
129      delay(500);
130      Serial.print(".");
131    }
132    Serial.println("");
133    Serial.println("WiFi connected");
134    Serial.println("IP address: ");
135    Serial.println(WiFi.localIP());
136  }
137
```

```cpp
54      digitalWrite(trig,HIGH);
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56      float dist = (dur* 0.0343)/2;
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73    String object;
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75    if (dist<100)
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77      digitalWrite(LED, HIGH);
78      Serial.println("object is near");
79      object = "ALERT! object is near";
80    }
81
```

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

```
157
158    // Serial.println("data: "+ data3);
159    //if(data3=="lighton")
160    {
161    //Serial.println(data3);
162    digitalWrite(LED,HIGH);
163
164    }
165
166    //else
167    {
168    //Serial.println(data3);
169    digitalWrite(LED,LOW);
170
171    }
172    //data3="";
173    }
```
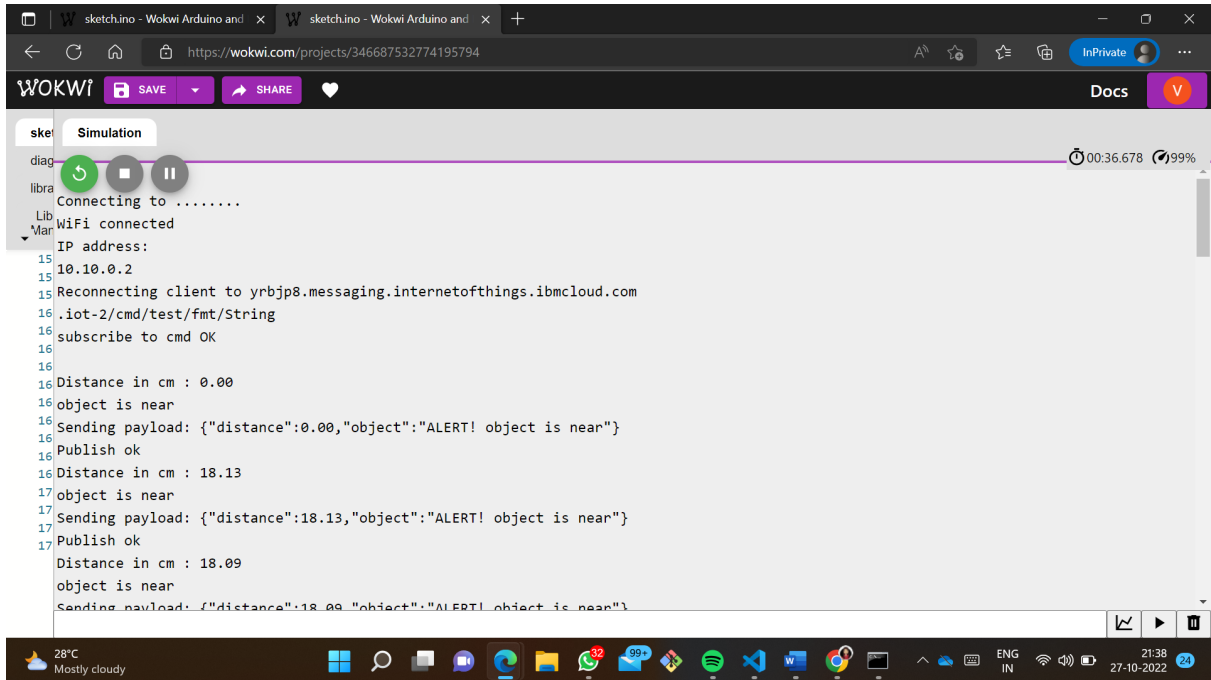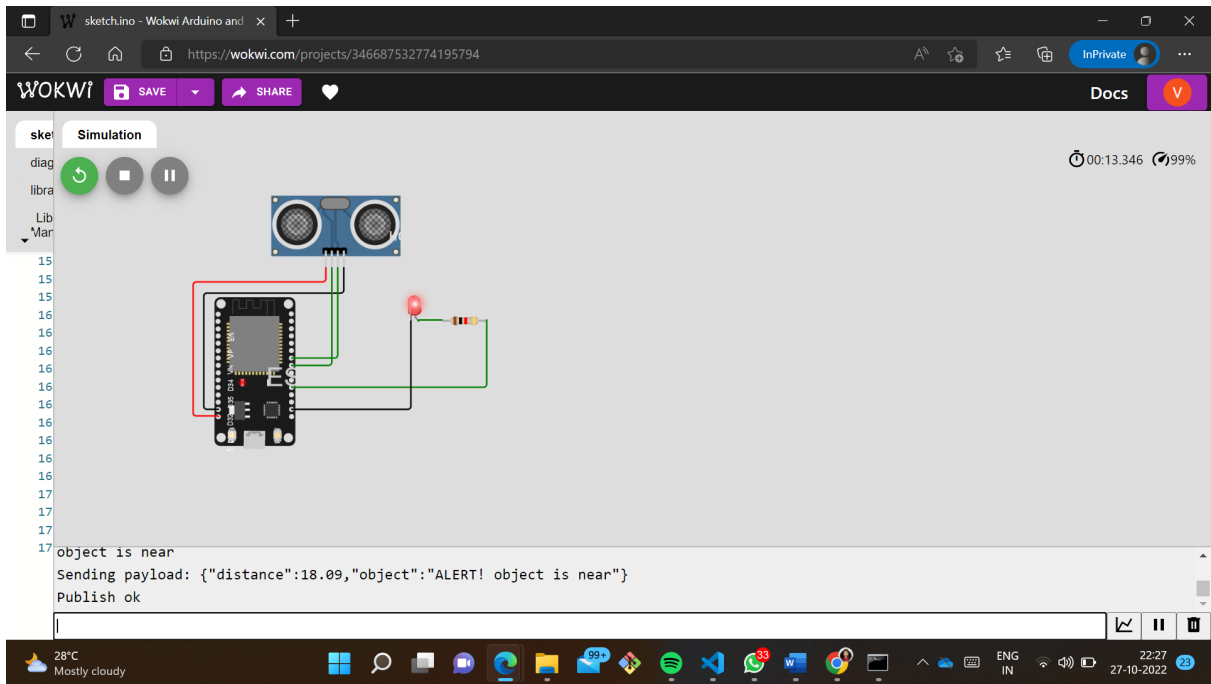
```
28
29    int trig =5;
30
31    int echo= 18;
32
33    void setup()
34    {
35
36      Serial.begin(115200);
37      pinMode(trig, OUTPUT);
38      pinMode(echo, INPUT);
39      pinMode(LED, OUTPUT);
40      delay(10);
41
42      wificonnect();
43
44      mqttconnect();
45
46    }
47
48    void loop()// Recursive Function
49
50    {
51      delayMicroseconds(10);
52      digitalWrite(trig, LOW);
53      digitalWrite(trig, LOW);
54      digitalWrite(trig,HIGH);
```

OUTPUT:

When the distance is less than 100 cms, send an "alert" message to IBM Watson IoT Platform

object is near
Sending payload: {"distance":18.09,"object":"ALERT! object is near"}
Publish ok

Connecting to ....
WiFi connected
IP address:
10.10.0.2
Reconnecting client to yrbjp8.messaging.internetofthings.ibmcloud.com
.iot-2/cmd/test/fmt/String
subscribe to cmd OK

Distance in cm : 0.00
object is near
Sending payload: {"distance":0.00,"object":"ALERT! object is near"}
Publish ok
Distance in cm : 18.13
object is near
Sending payload: {"distance":18.13,"object":"ALERT! object is near"}
Publish ok
Distance in cm : 18.09
object is near
Sending payload: {"distance":18.09,"object":"ALERT! object is near"}

IBM CLOUD IMAGE

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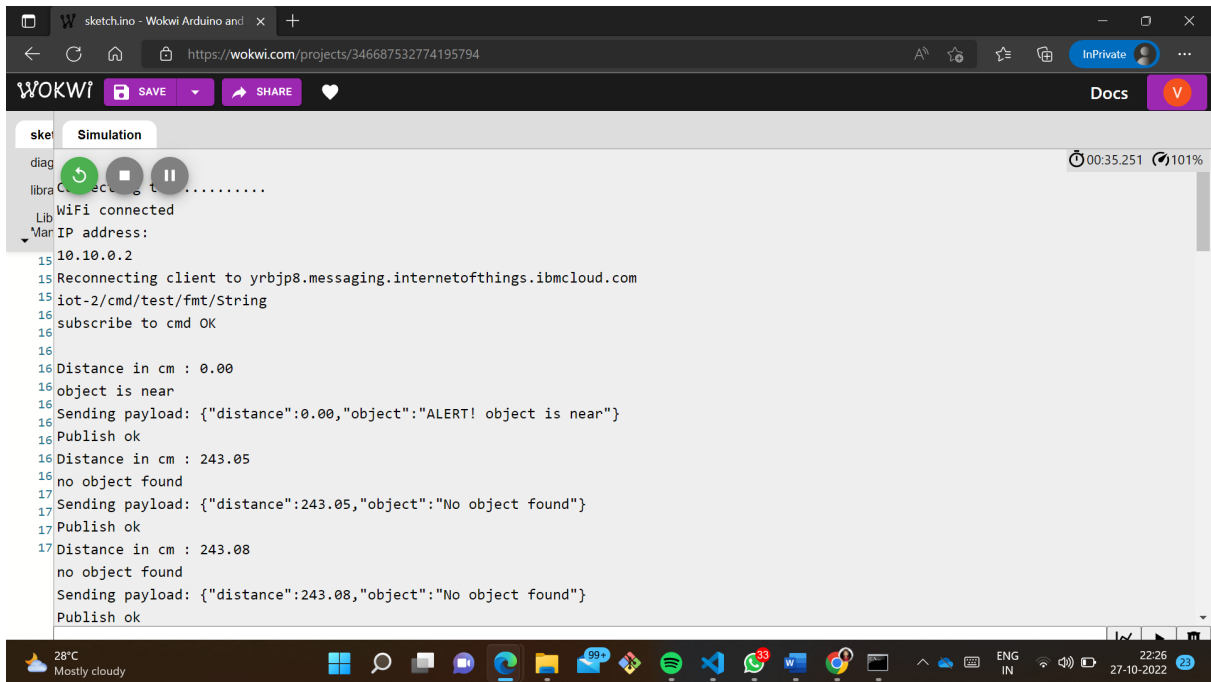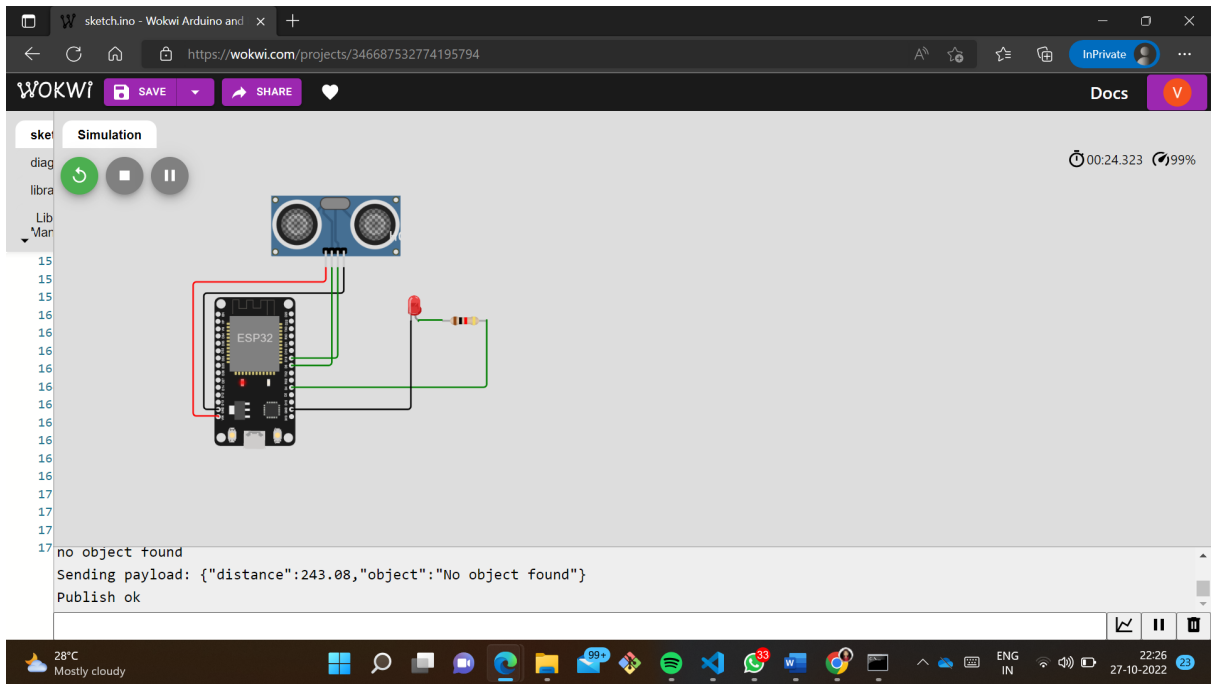
IBM CLOUD IMAGE

vars.1918143@gct.ac.in
ID: yrbjp8

Browse   Action   Device Types   Interfaces

Add Device

Event	Value	Format	Last Received
Data1	{"distance":243.08,"object":"No object found"}	json	a few seconds ago
Data1	{"distance":243.08,"object":"No object found"}	json	a few seconds ago
Data1	{"distance":243.08,"object":"No object found"}	json	a few seconds ago
Data1	{"distance":243.08,"object":"No object found"}	json	a few seconds ago
Data1	{"distance":243.08,"object":"No object found"}	json	a few seconds ago

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