

DATE	17 October 2022
TEAM ID	PNT2022TMID07000
NAME	VARSHINI S
STUDENT ROLL NUMBER	GCTC1918143
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:**

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sketch.ino diagram.json libraries.txt Library Manager ▾

```
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 }
```

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```
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 ");
```

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```
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
```

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```
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
```

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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
```

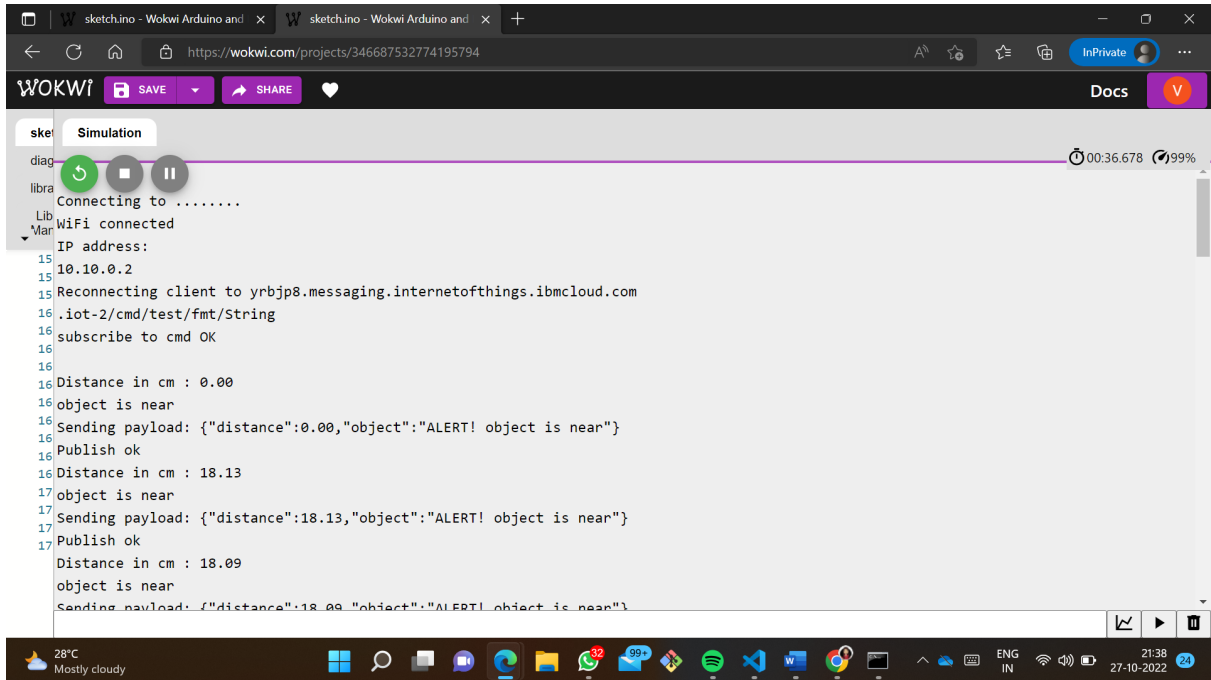
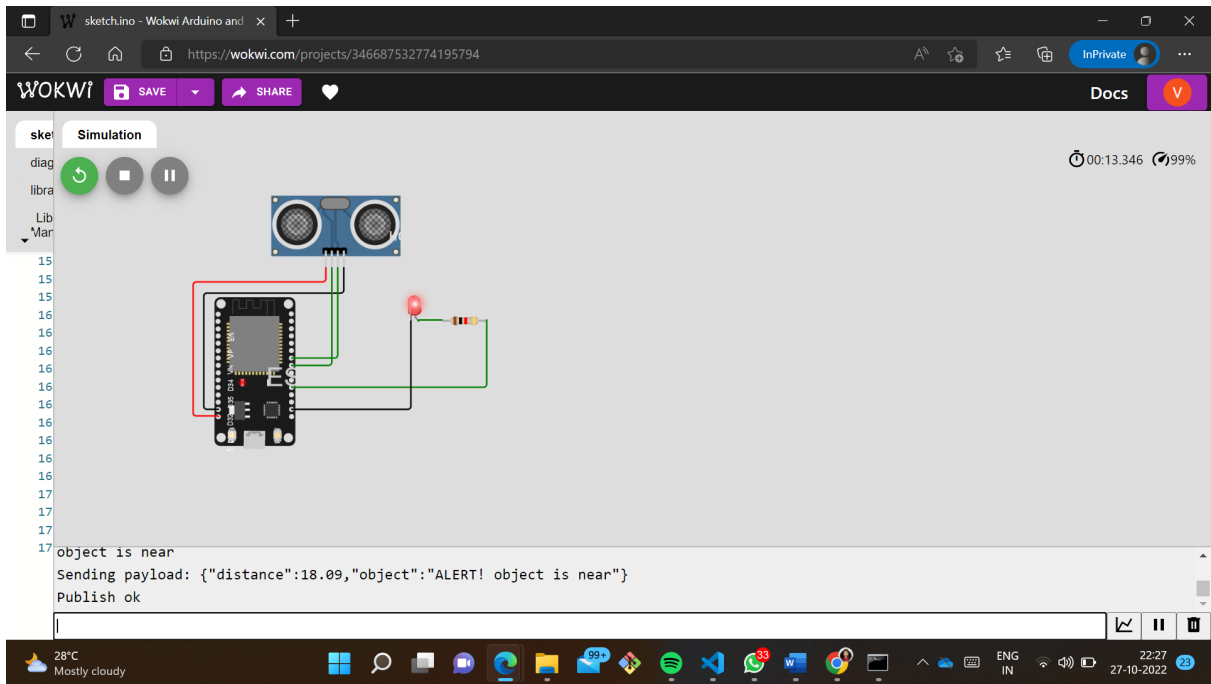
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```
157
158 // Serial.println("data: "+ data3);
159 //if(data3=="lighton")
160 {
161 //Serial.println(data3);
162 digitalWrite(LED,HIGH);
163 }
164
165
166 //else
167 {
168 //Serial.println(data3);
169 digitalWrite(LED,LOW);
170 }
171 }
172 //data3="";
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   mqttconnect();
44
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



IBM CLOUD IMAGE

cloud.ibm.com login | Service Details - IBM | IBM Watson IoT Platform | GOVERNMENT COL | Assignment 4.pdf | sketch.ino - Wokwi

https://yrbjp8.internetofthings.ibmcloud.com/dashboard/devices/browse

IBM Watson IoT Platform vars.1918143@gct.ac.in ID: yrbjp8

Browse Action Device Types Interfaces Add Device

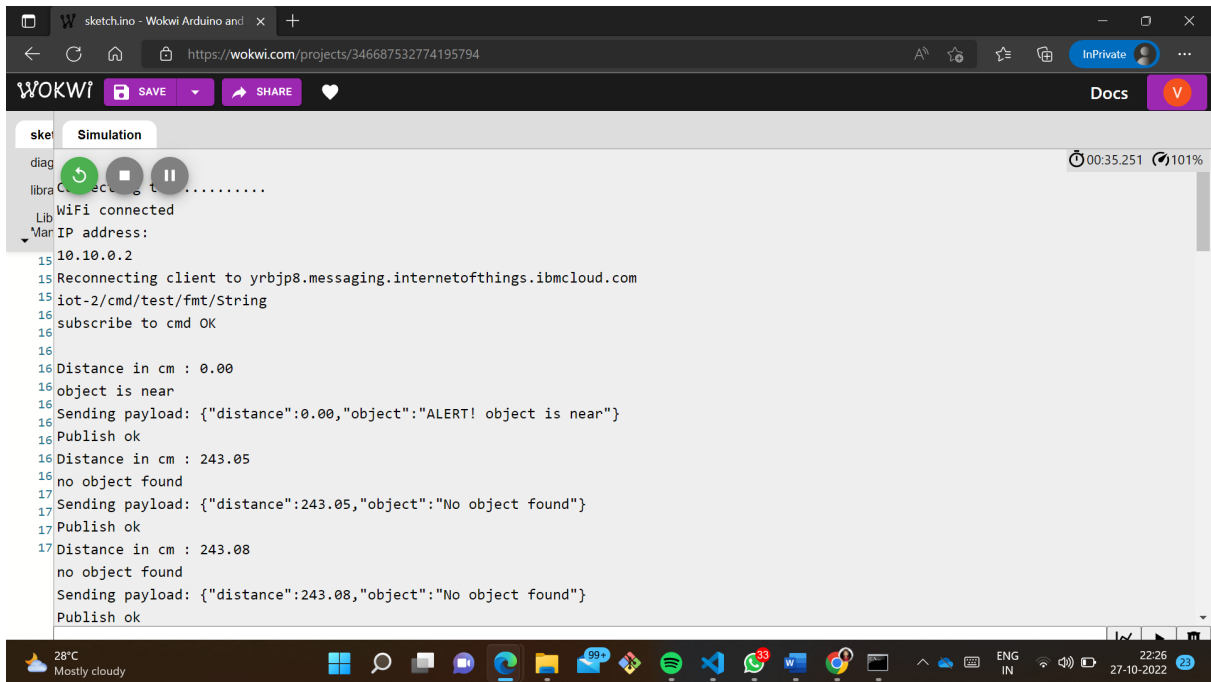
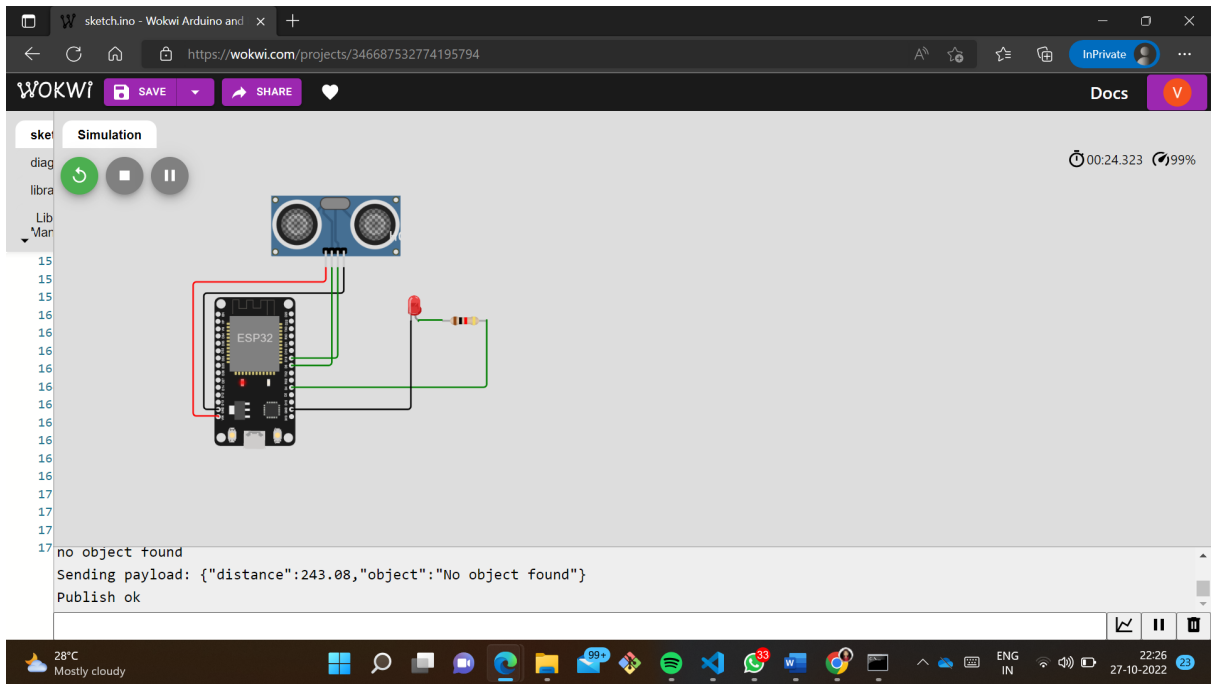
The recent events listed show the live stream of data that is coming and going from this device.

Event	Value	Format	Last Received
Data1	{"distance":18.09,"object":"ALERT! object is near"}	json	a few seconds ago
Data1	{"distance":18.09,"object":"ALERT! object is near"}	json	a few seconds ago
Data1	{"distance":18.09,"object":"ALERT! object is near"}	json	a few seconds ago
Data1	{"distance":18.09,"object":"ALERT! object is near"}	json	a few seconds ago
Data1	{"distance":18.16,"object":"ALERT! object is near"}	json	a few seconds ago

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



**IBM CLOUD IMAGE**



The screenshot displays the IBM Watson IoT Platform interface. The top navigation bar includes the IBM logo and the text "IBM Watson IoT Platform". Below this, there are tabs for "Browse", "Action", "Device Types", and "Interfaces". The "Browse" tab is currently selected. On the right side of the navigation bar, there is a user profile icon and the text "vars.1918143@gcl.ac.in ID: yrbjp8".

The main content area shows a table of events. The table has four columns: "Event", "Value", "Format", and "Last Received". There are five rows of data, all showing "Data1" as the event type and a JSON string as the value. The format is "json" and the last received time is "a few seconds ago".

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

At the bottom of the table, there is a pagination control showing "Items per page 50" and "1 of 1 page".