

ASSIGNMENT-4

DISTANCE DETECTION USING ULTRASONIC SENSOR

Date	28 September 2022
Team ID	PNT2022TMID46387
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Student Names	Sharitha G
Project Name	Personal Assistance for Seniors Who Are Self Reliant
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.

WOKWI LINK :

<https://wokwi.com/projects/305566932847821378>

CODE :

```
esp32-blink.ino • diagram.json Library Manager
1  #include <WiFi.h>
2  #include <PubSubClient.h>
3
4
5  void callback(char* subscribetopic,byte* payload,unsigned int payloadLength);
6
7  //--credentials--
8
9  #define ORG "qtlvtr"
10 #define DEVICE_TYPE "UltraSonDistance"
11 #define DEVICE_ID "12345"
12 #define TOKEN "UltraSon-Distance_12345"
13 String data3;
14 float dist;
15
16
17
18 char server[]=ORG".messaging.internetofthings.ibmcloud.com";
19 char publishTopic[]="iot-2/evt/Data/fmt/json";
20 char subscribetopic[]="iot-2/cmd/test/fmt/String";
21 char authMethod[]="use-token-auth";
22 char token[]=TOKEN;
23 char clientId[]="d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID;
24
25
26
27 WiFiClient wifiClient;
28 PubSubClient client(server,8083,callback,wifiClient);
```

```
esp32-blink.ino • diagram.json Library Manager ▼

27  WiFiClient wifiClient;
28  PubSubClient client(server,1883,callback,wifiClient);
29
30  int LED=4;
31  int trig=5;
32  int echo=18;
33  void setup()
34  {
35    Serial.begin(115200);
36    pinMode(trig, OUTPUT);
37    pinMode(echo, INPUT);
38    pinMode(LED, OUTPUT);
39    delay(10);
40    wifiConnect();
41    mqttConnect();
42  }
43  void loop()
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("Distance in cm");
53    Serial.println(dist);
```

```
esp32-blink.ino • diagram.json Library Manager ▼

53    Serial.println(dist);
54
55
56    PublishData(dist);
57    delay(1000);
58    if (!client.loop()){
59      mqttConnect();
60    }
61  }
62
63
64
65  /* dv */
66
67  void PublishData(float dist){
68    mqttConnect();
69
70
71
72    String object;
73    if(dist<100){
74      digitalWrite(LED, HIGH);
75      Serial.println("Object is Near");
76      object="Near";
77    }
78    else{
79      digitalWrite(LED, LOW);
```

```
esp32-blink.ino • diagram.json Library Manager
79     digitalWrite(LED, LOW);
80     Serial.println("NO Object Found");
81     object="No";
82 }
83 String payload="{\"distance\":";
84 payload += dist;
85 payload += "," " \"object\":\":";
86 payload += object;
87 payload += "\}";
88
89
90
91
92
93 Serial.print("Sending Payload:");
94 Serial.println(payload);
95
96
97
98
99 if(client.publish(publishTopic,(char*) payload.c_str())){
100     Serial.println("Publish Ok");
101 }else{
102     Serial.println("publish failed");
103 }
104
105 }
```

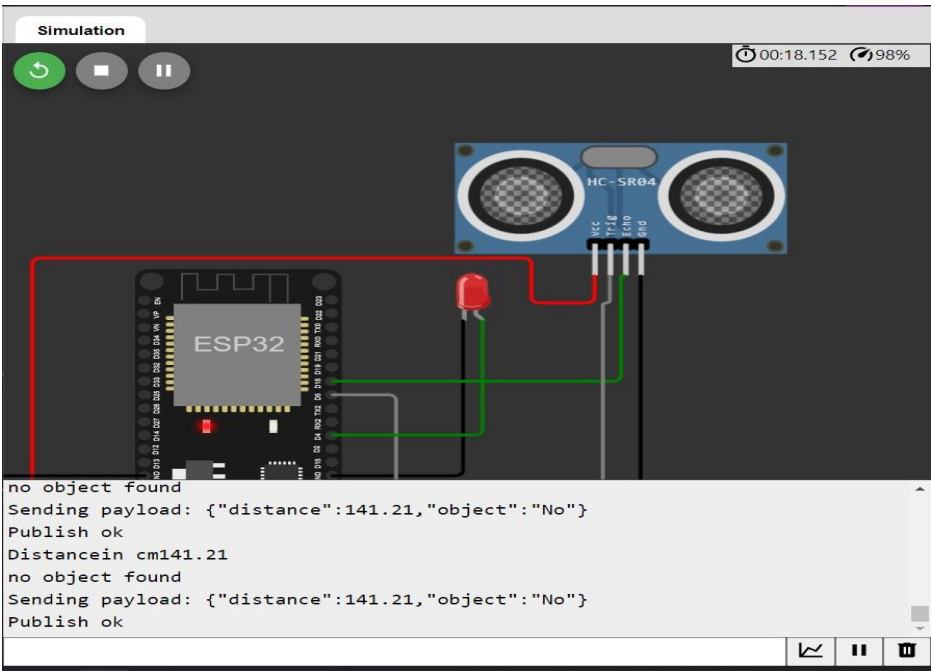
```
esp32-blink.ino • diagram.json Library Manager
105 }
106 void mqttconnect(){
107     if (!client.connected()){
108         Serial.print("Reconnecting client to");
109         Serial.println(server);
110         while(!client.connect(clientId,authMethod,token)) {
111             Serial.print(".");
112             delay(500);
113         }
114
115         initManagedDevice();
116         Serial.println();
117     }
118 }
119 void wificonnect()
120 {
121     Serial.println();
122     Serial.print("Connecting To");
123
124     WiFi.begin("Wokwi-GUEST","",6);
125     while(WiFi.status() !=WL_CONNECTED){
126         delay(500);
127         Serial.println(".");
128     }
129     Serial.println("");
130     Serial.print("WIFI CONNECTED");
131     Serial.println("IP ADDRESS:");
```

```
esp32-blink.ino • diagram.json Library Manager
119 void wificonnect()
120 {
121     Serial.println();
122     Serial.print("Connecting To");
123
124     WiFi.begin("Wokwi-GUEST","",6);
125     while(WiFi.status() !=WL_CONNECTED){
126         delay(500);
127         Serial.println(".");
128     }
129     Serial.println("");
130     Serial.print("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 {
```

```
esp32-blink.ino • diagram.json Library Manager Simulat
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
151         data3 +=(char)payload[i];
152     }
153     data3="";
154 }
```

OUTPUT:

OUTPUT ON WOKWI SITE



IBM CLOUD DATA GENERATION:

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

Event	Value	Format	Last Received
Data	{"distance":141.21,"object":"No"}	json	a few seconds ago
Data	{"distance":141.21,"object":"No"}	json	a few seconds ago
Data	{"distance":141.21,"object":"No"}	json	a few seconds ago
Data	{"distance":141.18,"object":"No"}	json	a few seconds ago
Data	{"distance":141.2,"object":"No"}	json	a few seconds ago

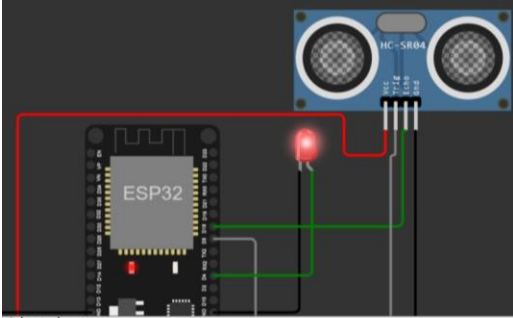
OUTPUT ON WOKWI SITE

wokwi.com/projects/305566932847821378

esp32-arduino.ino
by urish

Simulation

of the simulation



```
object is near
Sending payload: {"distance":97.82,"object":"Near"}
Publish ok
Distancein cm97.82
object is near
Sending payload: {"distance":97.82,"object":"Near"}
Publish ok
```

IBM CLOUD DATA GENERATION

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

Event	Value	Format	Last Received
Data	{"distance":79.66,"object":"Near"}	json	a few seconds ago
Data	{"distance":79.64,"object":"Near"}	json	a few seconds ago
Data	{"distance":79.66,"object":"Near"}	json	a few seconds ago
Data	{"distance":79.64,"object":"Near"}	json	a few seconds ago
Data	{"distance":79.66,"object":"Near"}	json	a few seconds ago

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