

## Assignment -4

NAME	Jeevanandham S
TEAM ID	PNT2022TMID25961
Project	Real-Time River Water Quality Monitoring and Control System

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

The image displays two screenshots of the Wokwi IDE interface, showing the code for an ESP32 project. The top screenshot shows the initial code setup, including MQTT connection and distance measurement. The bottom screenshot shows the completed code with a loop for distance measurement and an alert function for distances less than 100cm.

**Top Screenshot Code:**

```

67 Serial.println("no object found");
68 object="No";
69 }
70 String payload="{\"distance\":";
71 payload +=dist;
72 payload +="," \"object\":\";
73 payload += object;
74 payload += "\";";
75
76 Serial.print("Sending payload: ");
77 Serial.println(payload);
78 if(client.publish(topic, (char*) payload.c_str())){
79   Serial.println("Publish ok");/* If its successfully upload data on the cloud then it will print
80   publish ok in serial monitor or else it will print publish failed*/
81 } else{
82   Serial.println("Publish failed");
83 }
84
85 void mqttconnect(){
86   if(!client.connected()){
87     Serial.print("Reconnecting client to ");
88     Serial.println(server);
89     while(!client.connect(clientid,authMethod, token)){
90       Serial.print(".");
91       delay(500);
92     }
93     initManagedDevice();
94     Serial.println();
95   }
96 }
97 void wificonnect()//function definition for wificonnect
98 {
99   Serial.println();

```

**Bottom Screenshot Code:**

```

24 wificonnect();
25 mqttconnect();
26 }
27 void loop()//recursive function
28 {
29   digitalWrite(trig,LOW);
30   digitalWrite(trig,HIGH);
31   delayMicroseconds(10);
32   digitalWrite(trig,LOW);
33   float dur=pulseIn(echo,HIGH);
34   float dist=(dur * 0.0343)/2;
35   Serial.print("distance in cm");
36   Serial.println(dist);
37   PublishData(dist);
38   delay(1000);
39   if (!client.connected()){
40     mqttconnect();
41   }
42 }
43 /*.....retriving to cloud.....
44 void PublishData(float dist){
45   mqttconnect();//function call for connecting to ibm
46   /*creating the string in form of JSON to update the data to ibm cloud*/
47   String object;
48   if(dist<100)
49   {
50     digitalWrite(LED,HIGH);
51     Serial.println("no object is near");
52     object="near";
53   }
54   else
55   {
56     digitalWrite(LED,LOW);

```

New ESP32 Project - Wokwi Sim

wokwi.com/projects/new/esp32

PIR Sensor based S... ECE - Google Drive 7 Stages of the Ne... TANGEDCO Online... BUSINESS ETIQUETTE U S Polo Assn Men... Types of Menu - Fo... T4RecipeOverview tamil jathagam | viji...

WOKWI SAVE SHARE Docs

sketch.ino diagram.json Library Manager

```

130 //Serial.println(data3);
131 //digitalWrite(LED,HIGH);
132 //}
133 //else
134 //{
135 //Serial.println(data3);
136 //digitalWrite(LED,LOW);
137 //}
138 data3="";
139 }

```

Simulation

26°C Cloudy

New ESP32 Project - Wokwi Sim

wokwi.com/projects/new/esp32

PIR Sensor based S... ECE - Google Drive 7 Stages of the Ne... TANGEDCO Online... BUSINESS ETIQUETTE U S Polo Assn Men... Types of Menu - Fo... T4RecipeOverview tamil jathagam | viji...

WOKWI SAVE SHARE Docs

sketch.ino diagram.json Library Manager

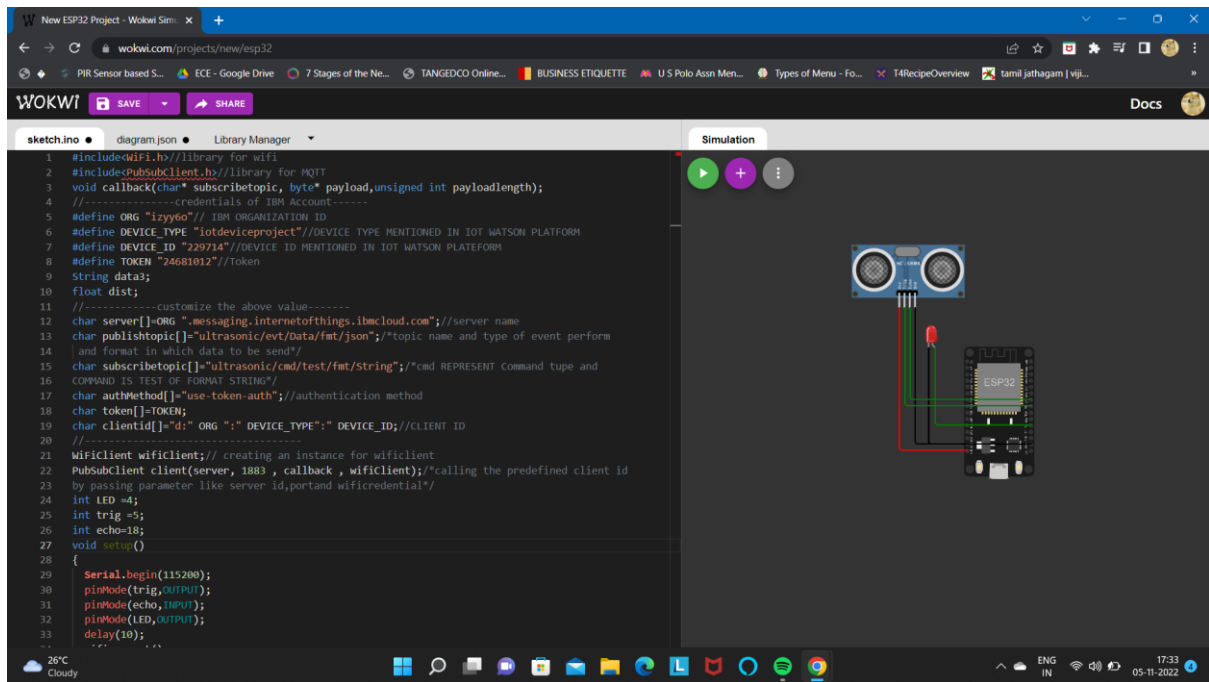
```

98 {
99   Serial.println();
100   Serial.print("Connecting to ");
101   WiFi.begin("wokwi.GUEST", ""); //PASSING THE WIFI CREDENTIALS TO ESTABLISH CONNECTION
102   while (WiFi.status() != WL_CONNECTED) {
103     delay(500);
104     Serial.print(".");
105   }
106   Serial.println("");
107   Serial.println("wifi connected");
108   Serial.println("IP address");
109   Serial.println(WiFi.localIP());
110 }
111 void initManagedDevice(){
112   if(client.subscribe(subscribetopic)){
113     Serial.println((subscribetopic));
114     Serial.println("subscribe to cmd OK");
115   }else{
116     Serial.println("subscribe to cmd failed");
117   }
118 }
119 void callback(char* subscribetopic,byte*payload,unsigned int payloadlength)
120 {
121   Serial.print("callback invoked for topic: ");
122   Serial.println(subscribetopic);
123   for(int i=0; i< payloadlength; i++){
124     //Serial.print((char)payload[i]);
125     data3 +=(char)payload[i];
126   }
127   //Serial.println("dta: "+ data3);
128   //If(data3=="Near")
129   //{
130   //Serial.println(data3);

```

Simulation

26°C Cloudy



<https://wokwi.com/projects/347489586971148882>

Browse	Action	Device Types	Interfaces		Add Device
DISANCEDETECT	Disconnected	ULTRASON	Device	Oct 20, 2022 9:46 AM	
Identity	Device Information	Recent Events	State	Logs	
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		
Items per page: 50   1-2 of 2 items					
1 of 1 page					

Data sent to the IBM Cloud Device when the object is near

Browse	Action	Device Types	Interfaces		Add Device
DISANCEDETECT	Disconnected	ULTRASON	Device	Oct 20, 2022 9:46 AM	
Identity	Device Information	Recent Events	State	Logs	
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		
Items per page: 50   1-2 of 2 items					
1 of 1 page					

Data sent to the IBM Cloud Device when the object is far.