

**Assignment -4**  
Python Programming

Assignment Date	26 October 2022
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Team I'D	PNT2022TMID20965
Maximum Marks	2 Marks

**Question-1:**

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.

**Solution:**

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

1 #include<WiFi.h> //library for wifi  
2 #include<PubSubClient.h> //library for MQTT  
3 void callback(char\* subscribetopic, byte\* payload,unsigned int payloadlength);  
4 //-----credentials of IBM Account-----  
5 #define ORG "izyy6o" // IBM ORGANIZATION ID  
6 #define DEVICE\_TYPE "iotedeviceproject" //DEVICE TYPE MENTIONED IN IOT WATSON PLATFORM  
7 #define DEVICE\_ID "229714" //DEVICE ID MENTIONED IN IOT WATSON PLATFORM  
8 #define TOKEN "24681012" //Token  
9 String data3;  
10 float dist;  
11 //-----customize the above value-----  
12 char server[] = ORG ".messaging.internetofthings.ibmcloud.com"; //server name  
13 char publishstopic[] = "ultrasonic/evt/Data/fmt/json"; //topic name and type of event perform  
14 | and format in which data to be send\*/  
15 char subscribetopic[] = "ultrasonic/cmd/test/fmt/String"; //cmd REPRESENT Command type and  
16 | COMMAND IS TEST OF FORMAT STRING\*/  
17 char authMethod[] = "use-token-auth"; //authentication method  
18 char token[] = TOKEN;  
19 char clientId[] = "d:" ORG ":" DEVICE\_TYPE ":" DEVICE\_ID; //CLIENT ID  
20 //-----  
21 WiFiClient wificlient; // creating an instance for wificlient  
22 PubSubClient client(server, 1883, callback, wificlient); //calling the predefined client id  
23 | by passing parameter like server id,portand wificredential\*/  
24 int LED = 4;  
25 int trig = 5;  
26 int echo = 18;  
27 void setup()  
28 {  
29     Serial.begin(115200);  
30     pinMode(trig,OUTPUT);  
...

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61Serial.println("no object is near");  
62object="Near";  
63}  
64else  
65{  
66digitalWrite(LED,LOW);  
67Serial.println("no object found");  
68object="No";  
69}  
70String payload="{\"distance\":";  
71payload +=dist;  
72payload +=\",\" + \"\"object\"\":\";  
73payload += object;  
74payload += \"\"}\"";  
75  
76Serial.print("Sending payload: ");  
77Serial.println(payload);  
78if(client.publish(publishtopic, (char\*) payload.c\_str())){  
79Serial.println("Publish ok");/\* If its sucessfully upload data on the cloud then it will print  
80publish ok in serial monitor or else it will print poblish failed\*/  
81}  
82else{  
83Serial.println("Publish failed");  
84}  
85  
86void mqttconnect(){  
87if(!client.connected()){  
88Serial.print("Reconnecting client to ");  
89Serial.println(server);  
90while(!client.connect(clientid,authMethod, token)){  
91Serial.print(".");  
92delay(500);  
93

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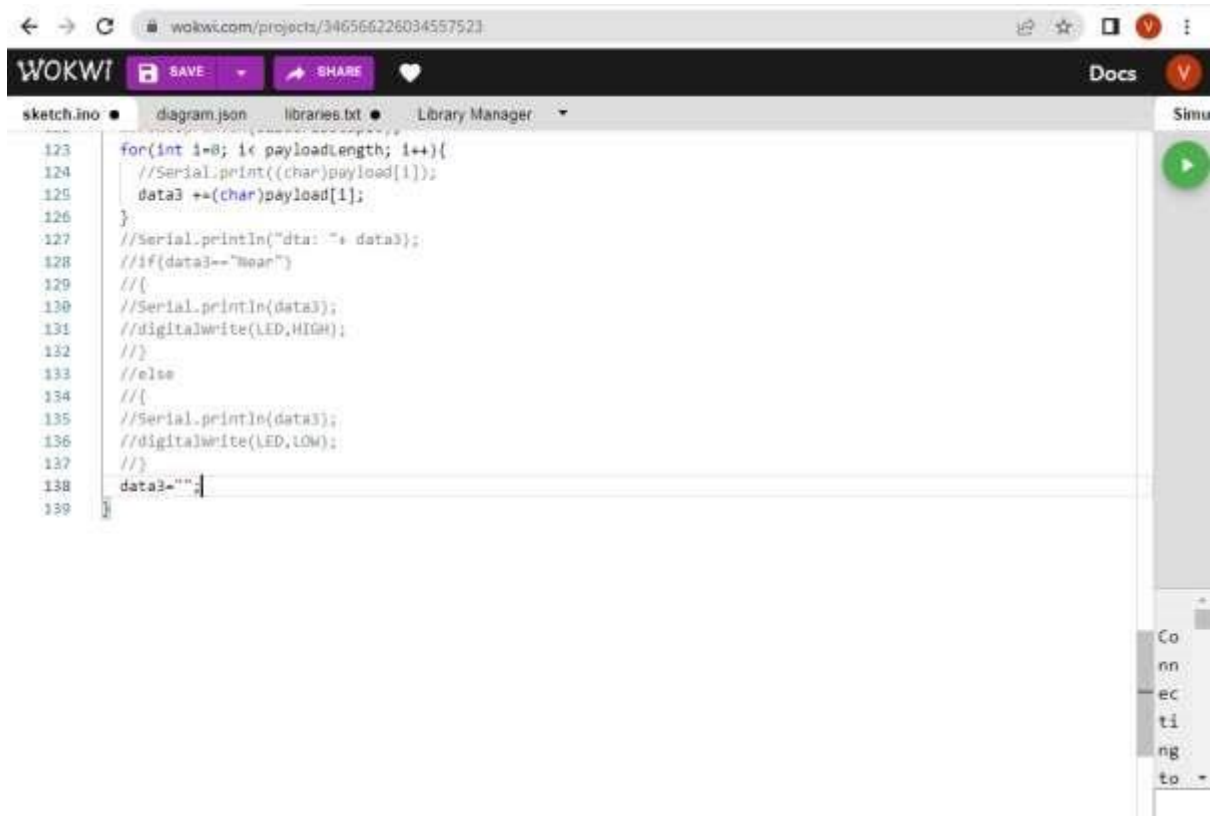
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sketch.ino ● diagram.json libraries.txt ● Library Manager

92}  
93initManagedDevice();  
94Serial.println();  
95}  
96}  
97void wificonnect();//function defenition for wificonnect  
98{  
99Serial.println();  
100Serial.print("Connecting to ");  
101WiFi.begin("Wokwi.GUEST", "",6);//PASSING THE WIFI CREDENTIALS TO ESTABLISH CONNECTION  
102while (WiFi.status() !=WL\_CONNECTED){  
103delay(500);  
104Serial.print(".");  
105}  
106Serial.println("");  
107Serial.println("WiFi connected");  
108Serial.println("IP address");  
109Serial.println(WiFi.localIP());  
110}  
111void initManagedDevice(){  
112if(client.subscribe(subscribetopic)){  
113Serial.println((subscribetopic));  
114Serial.println("subscribe to cmd OK");  
115}  
116else{  
117Serial.println("subscribe to cmd failed");  
118}  
119}  
120void callback(char\* subscribetopic,byte\*payload,unsigned int payloadLength)  
121{  
122Serial.print("callback invoked for topic: ");  
123Serial.println(subscribetopic);  
124



OUTPUT:  
DATA IS SENT TO IBM CLOUD WHEN NO OBJECT IS DETECTED

DISTANCEDETECT				
Disconnected				
ULTRASON				
Device				
Oct 20, 2022 9:46 AM				
Identity	Device Information	Recent Events	State	Logs
No record found. Add a new record to the log by clicking on the log icon in the top right corner.				
Event	Value	Format	Last Received	
Data	[{"distance": 79.68, "object": "Near"}]	json	a few seconds ago	
Data	[{"distance": 79.68, "object": "Near"}]	json	a few seconds ago	
Data	[{"distance": 79.68, "object": "Near"}]	json	a few seconds ago	
Data	[{"distance": 79.68, "object": "Near"}]	json	a few seconds ago	
Data	[{"distance": 79.68, "object": "Near"}]	json	a few seconds ago	

## When no object is detected

**Browse**   **Action**   **Device Types**   **Interfaces**

**Add Device**

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▼ ■ **DISTANCEDETECT**   **Disconnected**   **ULTRASON**   **Device**   **Oct 20, 2022 9:46 AM**   ➔ ...

Identity	Device Information	Recent Events	State	Logs
This would be great if you had access to the device logs or if you could connect it to your network.				
Event	Value	Error	Last Received	
Data	"Distance": "79.66"/object/"Near"	null	a few seconds ago	
Data	"Distance": "79.66"/object/"Near"	null	a few seconds ago	
Data	"Distance": "79.66"/object/"Near"	null	a few seconds ago	
Data	"Distance": "79.66"/object/"Near"	null	a few seconds ago	
Data	"Distance": "79.66"/object/"Near"	null	a few seconds ago	

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When object is detected in ultrasonic detector

