

Assignment -4
Python Programming

Assignment Date	26 October 2022
Student Name	VINITH K.A
Student Roll Number	731619106045
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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```
61 Serial.println("no object is near");
62 object="Near";
63 }
64 else
65 {
66   digitalWrite(LED,LOW);
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(publishtopic, (char*) payload.c_str())){
79   Serial.println("Publish ok");/* If its sucessfully upload data on the cloud then it will print
80   publish ok in serial monitor or else it will print poblish 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);
```

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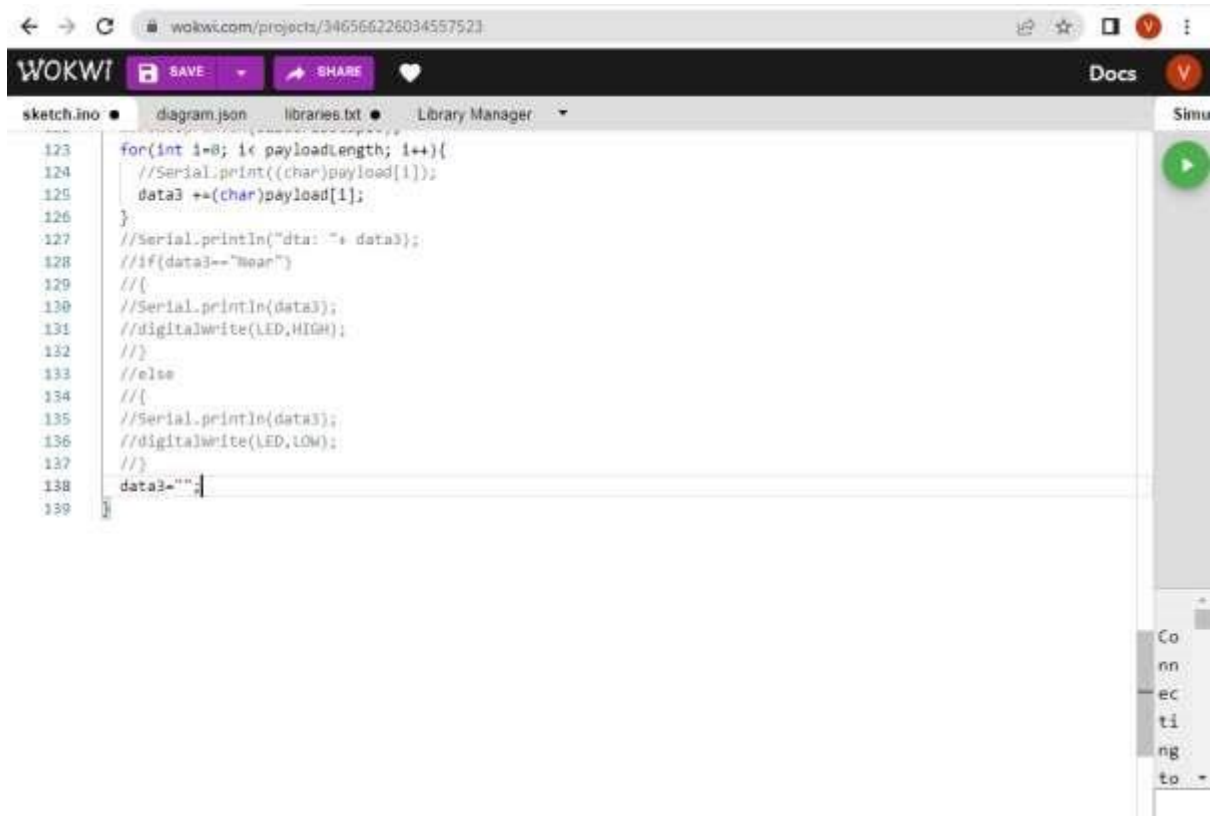
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```
92 }
93   initManagedDevice();
94   Serial.println();
95 }
96 }
97 void wificonnect();//function defenition for wificonnect
98 {
99   Serial.println();
100   Serial.print("Connecting to ");
101   WiFi.begin("Wokwi.GUEST", "",6);//PASSING THE WIFI 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);
```

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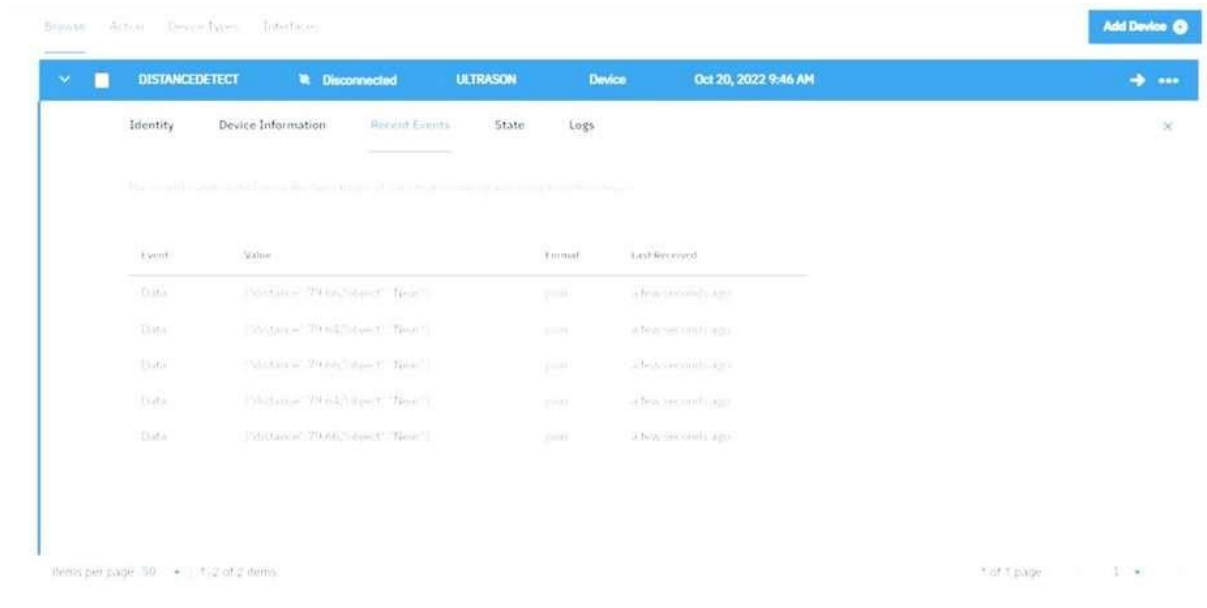
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OUTPUT:
DATA IS SENT TO IBM CLOUD WHEN NO OBJECT IS DETECTED

DISTANCEDETECT				
Disconnected				
ULTRASON				
Device				
Oct 20, 2022 9:46 AM				
Identity	Device Information	Recent Events	State	Logs
No events found. Add Events. No new events found. No new events found. No new events found.				
Event	Value	Format	Last Received	
Data	[{"distance": 79.46, "object": "Near"}]	json	a few seconds ago	
Data	[{"distance": 79.46, "object": "Near"}]	json	a few seconds ago	
Data	[{"distance": 79.46, "object": "Near"}]	json	a few seconds ago	
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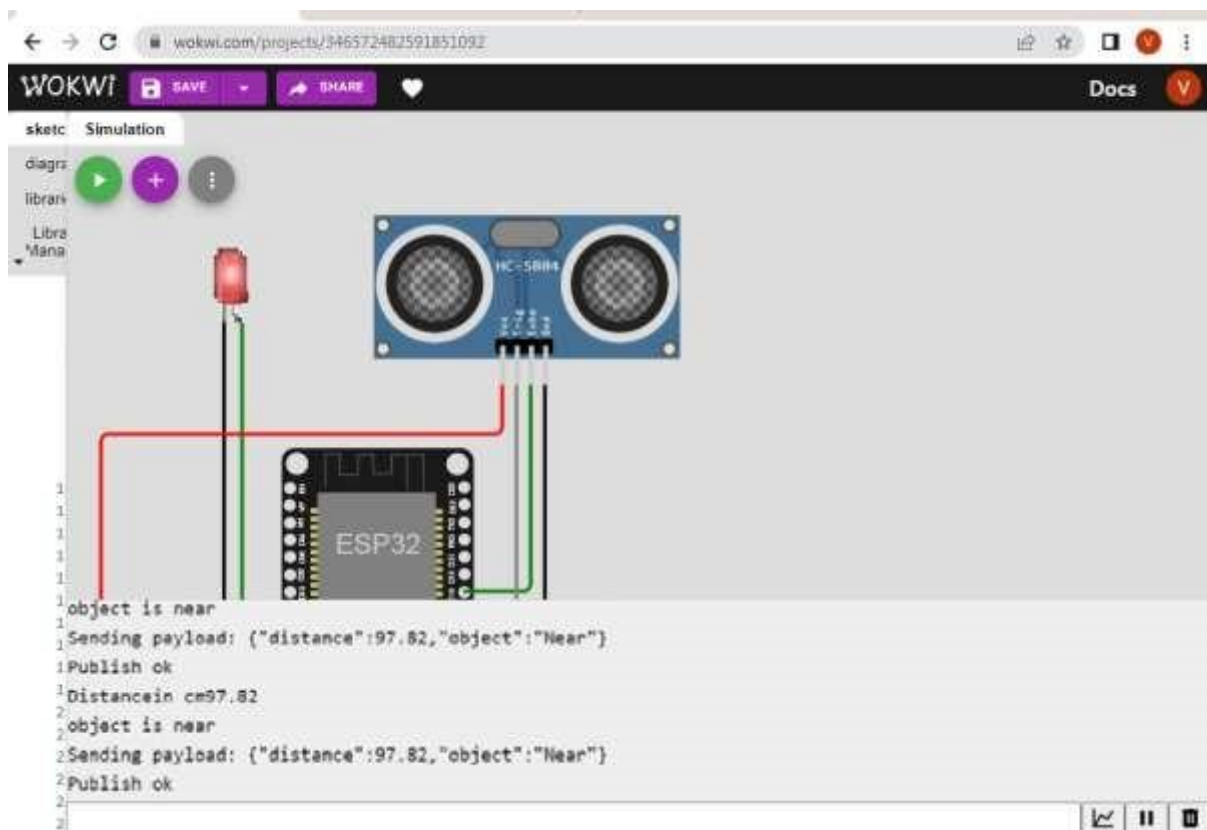
When no object is detected



The screenshot shows the Wokwi IoT dashboard for a device named 'DISTANCEDETECT'. The device status is 'Disconnected'. The 'Recent Events' tab is selected, showing a table of events. The table has columns for 'Event', 'Value', 'Format', and 'Last Received'. There are five events listed, all with a 'Distance' value of '97.82' and an 'object' value of 'Near'. The 'Last Received' column shows the time of each event, ranging from 'a few seconds ago' to 'a few seconds ago'.

Event	Value	Format	Last Received
Data	{Distance: 97.82, object: "Near"}	json	a few seconds ago
Data	{Distance: 97.82, object: "Near"}	json	a few seconds ago
Data	{Distance: 97.82, object: "Near"}	json	a few seconds ago
Data	{Distance: 97.82, object: "Near"}	json	a few seconds ago
Data	{Distance: 97.82, object: "Near"}	json	a few seconds ago

When object is detected in ultrasonic detector



The screenshot shows the Wokwi IoT dashboard for a device named 'DISTANCEDETECT'. The device status is 'Connected'. The 'Recent Events' tab is selected, showing a table of events. The table has columns for 'Event', 'Value', 'Format', and 'Last Received'. There are five events listed, all with a 'Distance' value of '97.82' and an 'object' value of 'Near'. The 'Last Received' column shows the time of each event, ranging from 'a few seconds ago' to 'a few seconds ago'.

Event	Value	Format	Last Received
Data	{Distance: 97.82, object: "Near"}	json	a few seconds ago
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Data	{Distance: 97.82, object: "Near"}	json	a few seconds ago
Data	{Distance: 97.82, object: "Near"}	json	a few seconds ago
Data	{Distance: 97.82, object: "Near"}	json	a few seconds ago