

Assignment -4

Python Programming

Assignment Date	03 November 2022
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Maximum Marks	2 Marks

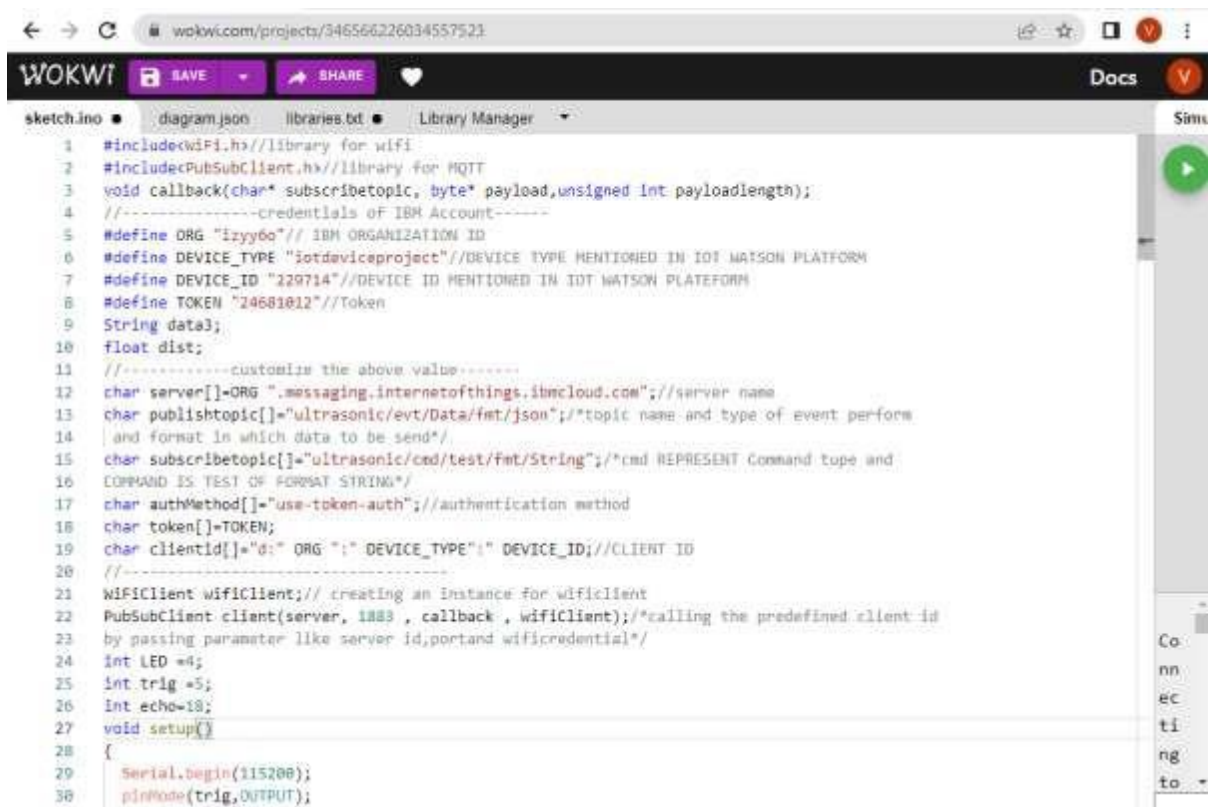
Question-1:

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:



```
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 "iotdeviceproject" //DEVICE TYPE MENTIONED IN IOT WATSON PLATFORM
7 #define DEVICE_ID "229714" //DEVICE ID MENTIONED IN IOT WATSON PLATFORM
8 #define TOKEN "24681812" //Token
9 String data3;
10 float dist;
11 //-----customize the above value-----
12 char server[] = ORG ".messaging.internetofthings.ibmcloud.com"; //server name
13 char publishTopic[] = "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 tupe 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, port and 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);
```

← → C wokwi.com/projects/346566226034557523

WOKWI SAVE SHARE Docs

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

```
92 }
93   initManagedDevice();
94   Serial.println();
95 }
96 }
97 void wificonnect()//function definition 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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WOKWI
SAVE
SHARE
sketch.ino diagram.json libraries.txt Library Manager
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);
131 //digitalwrite(LED,HIGH);
132 //}
133 //else
134 //{
135 //Serial.println(data3);
136 //digitalwrite(LED,LOW);
137 //}
138 data3="";
139 }
```

OUTPUT:

DATA IS SENT TO IBM CLOUD WHEN NO OBJECT IS DETECTED

THIS IS SENT TO IBM CLOUD WHEN NO OBJECT IS DETECTED

BrowserActionsDevice TypesInterfacesAdd Device

▼

■

DISTANCEDTECT

Disconnected

ULTRASON

Device

Oct 20, 2022 9:46 AM

→...

Identity

Device Information

Recent Events

State

Logs

✕

No events found. Click here to see how to add events to your dashboard.

Event	Value	Format	Last Received
Data	[{"distance":79.64,"object":"Near"}]	json	4 hrs, 26 mins ago
Data	[{"distance":79.64,"object":"Near"}]	json	4 hrs, 26 mins ago
Data	[{"distance":79.64,"object":"Near"}]	json	4 hrs, 26 mins ago
Data	[{"distance":79.64,"object":"Near"}]	json	4 hrs, 26 mins ago
Data	[{"distance":79.64,"object":"Near"}]	json	4 hrs, 26 mins ago

Items per page: 50

1 of 2 items

1 of 1 page

1

When no object is detected

Browse

Active

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

✕

No data received from this device. It may be disconnected or not properly configured.

Event	Value	Format	Last Received
Data	["Distance":79.62,"object":"Near"]	json	a few seconds ago
Data	["Distance":79.62,"object":"Near"]	json	a few seconds ago
Data	["Distance":79.62,"object":"Near"]	json	a few seconds ago
Data	["Distance":79.62,"object":"Near"]	json	a few seconds ago
Data	["Distance":79.62,"object":"Near"]	json	a few seconds ago

Items per page: 50

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1 of 1 page

1

When object is detected in ultrasonic detector

WOKWI

SAVE SHARE

Docs

sketch Simulation

diagram

library

Libra Mana

```

1 object is near
1 Sending payload: {"distance":97.82,"object":"Near"}
1 Publish ok
1 Distance in cm 97.82
2 object is near
2 Sending payload: {"distance":97.82,"object":"Near"}
2 Publish ok
2

```