

**Assignment -4**  
**Python Programming**

Assignment Date	26 October 2022
Student Name	Mr. Ajay RS
Student Roll Number	310619205006
Maximum Marks	2 Marks

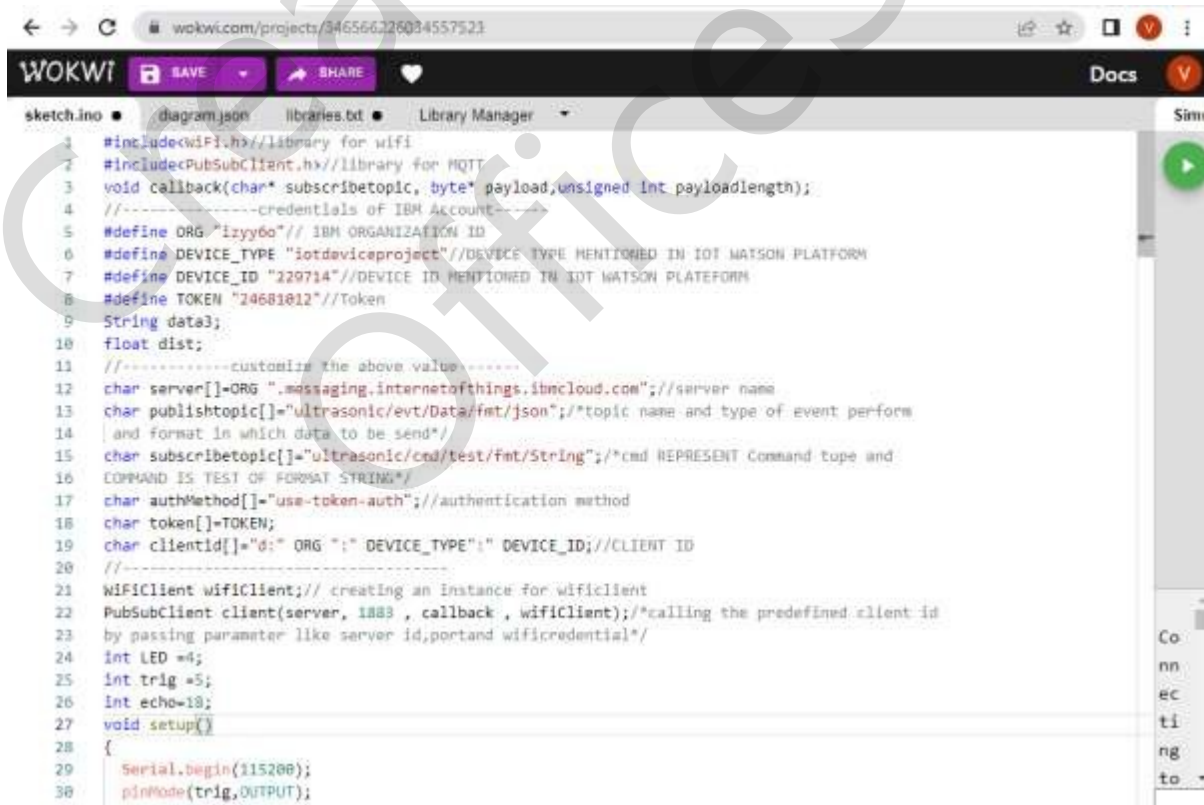
**Question-1:**

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* topic, 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 data;
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 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, port and wifi credential*/
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/346366226034357523

WOKWI SAVE SHARE Docs

sketch.ino diagram.json libraries.txt Library Manager

```
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", ""); //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);
```

Simu

Co  
nn  
ec  
ti  
ng  
to

```
wokwi.com/projects/346566226034557523
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

Browse Action Device Types Interfaces Add Device

DISTANCEDTECT					Disconnected	ULTRASON	Device	Oct 20, 2022 9:46 AM	→ ...
Identity	Device Information	Report Events	State	Logs					
This world would not be a better place if we did not have a data stream coming from our sensors & devices. Right?									
Event	Value	Format	Last Received						
Data	["Distance":79.65,"Object": "None"]	json	a few seconds ago						
Data	["Distance":79.65,"Object": "None"]	json	a few seconds ago						
Data	["Distance":79.65,"Object": "None"]	json	a few seconds ago						
Data	["Distance":79.65,"Object": "None"]	json	a few seconds ago						
Data	["Distance":79.65,"Object": "None"]	json	a few seconds ago						

Items per page: 50 1 of 1 page 1

When no object is detected

Browse
Action
Device Types
Interfaces

Add Device

▼

DISTANCEDETECT

Disconnected

ULTRASON

Device

Oct 20, 2022 9:46 AM

➔
...

Identity
Device Information
Recent Events
State
Logs

This is what you will see when you click on the page.

Event	Value	Format	Last received
Data	"Distance":79.66,"object":"Near"	json	a few seconds ago
Data	"Distance":79.66,"object":"Near"	json	a few seconds ago
Data	"Distance":79.66,"object":"Near"	json	a few seconds ago
Data	"Distance":79.66,"object":"Near"	json	a few seconds ago
Data	"Distance":79.66,"object":"Near"	json	a few seconds ago

Items per page: 50
1 of 2 items
1 of 1 page

When object is detected in ultrasonic detector

