

## Assignment -4

### Python Programming

|                     |                 |
|---------------------|-----------------|
| Assignment Date     | 26 October 2022 |
| Student Name        | Madhavan        |
| Student Roll Number | MECR19EC046     |
| Maximum Marks       | 2 Marks         |

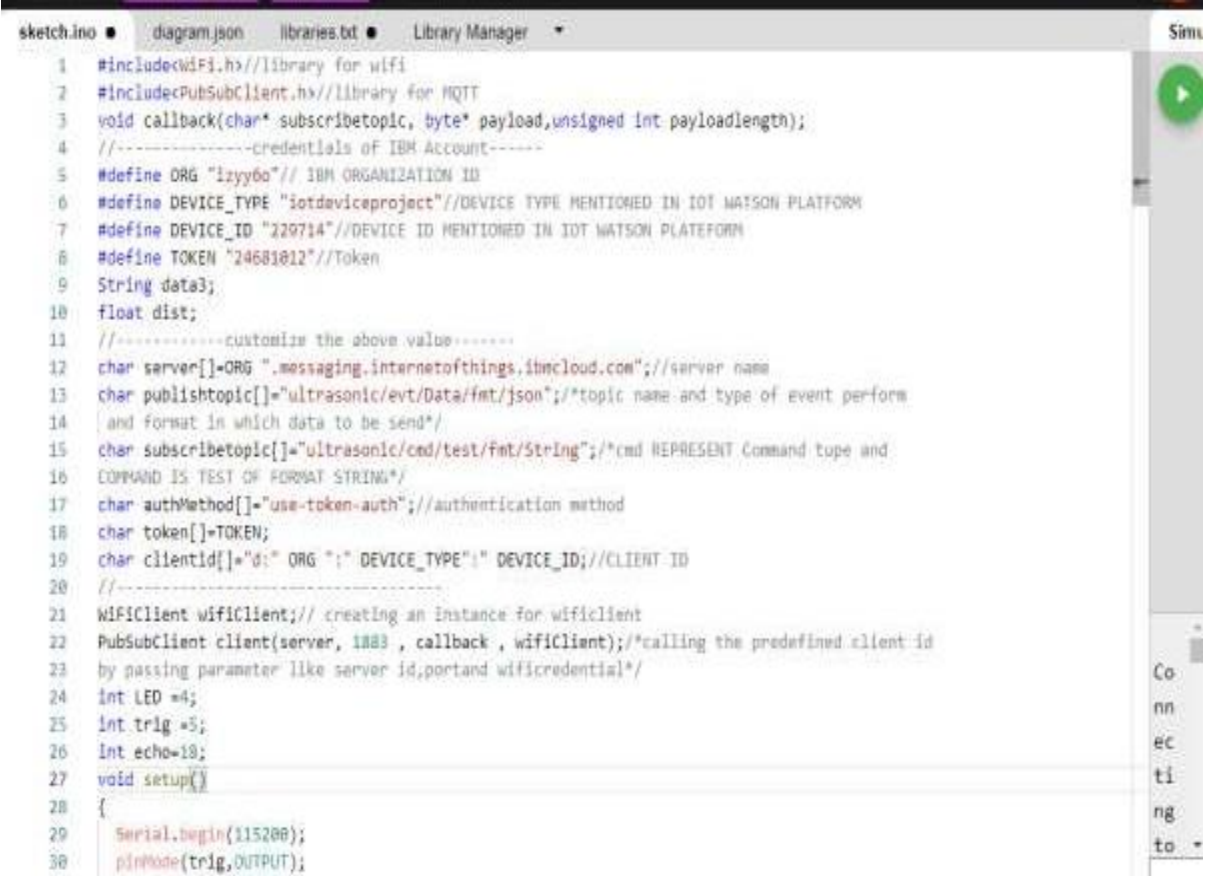
#### Question-1:

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 recentevents.

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 "i2yy6o" // 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 "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 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);
```

```

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("wokai.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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```
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

Browser

Action

Device Types

Interfaces

Add Device

DistanceDetect

Disconnected

ULTRASON

Device

Oct 20, 2022 9:46 AM

Identity

Device Information

Recent Events

State

Logs

No records found. Click here to see the first page of data or change the filters to refine the results.

Event

Value

Format

Last Received

Data

[{"Distance": 79.66, "Object": "None"}]

json

a few seconds ago

Data

[{"Distance": 79.66, "Object": "None"}]

json

a few seconds ago

Data

[{"Distance": 79.66, "Object": "None"}]

json

a few seconds ago

Data

[{"Distance": 79.66, "Object": "None"}]

json

a few seconds ago

Data

[{"Distance": 79.66, "Object": "None"}]

json

a few seconds ago

Items per page: 50

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1 of 1 page

1

When no object is detected

Browser

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No records found. Click here to see the first page of data or change the filters to refine the results.

| Event | Value                                   | Format | Last Received     |
|-------|---|--------|-------------------|
| Data  | [{"Distance": 79.66, "Object": "None"}] | json   | a few seconds ago |
| Data  | [{"Distance": 79.66, "Object": "None"}] | json   | a few seconds ago |
| Data  | [{"Distance": 79.66, "Object": "None"}] | json   | a few seconds ago |
| Data  | [{"Distance": 79.66, "Object": "None"}] | json   | a few seconds ago |
| Data  | [{"Distance": 79.66, "Object": "None"}] | 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

