

Assignment -4

Assignment Date	20 OCTOBER 2022
Student Name	KAILASH S
Student Roll Number	722819106036
Maximum Marks	2 Marks

Question-1:

Write code and connections in wowki for ultrasonic sensor.

Whenever distance is less than 100 cms send “alert” to IBM cloud and display in device recent events.

Solution:

WOWKI LINK: <https://wokwi.com/projects/346235465961046612>

```
#include <WiFi.h>
#include <PubSubClient.h>
#define TRIGGER 2
#define ECHO 15
#define sound_speed 0.034
int distance;

void callback(char* subscribetopic, byte* payload, unsigned int payloadLength);

//-----credentials of IBM Accounts-----

#define ORG "wp72r7"
#define DEVICE_TYPE "iot-device-1"
#define DEVICE_ID "123456789"
#define TOKEN "987654321"
String data3;

//----- Customise the above values -----
```

```
char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
char publishTopic[] = "iot-2/evt/Data/fmt/json"; char
subscribetopic[] = "iot-2/cmd/test/fmt/String"; char
authMethod[] = "use-token-auth"; char token[] = TOKEN;
char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID;
```

```
//----- WiFiClient
wifiClient;
PubSubClient client(server, 1883, callback ,wifiClient); void
setup()
{
  Serial.begin(115200);
  pinMode(TRIGGER, OUTPUT);
  pinMode(ECHO, INPUT);
  delay(10);
  Serial.println();
  wificonnect();
  mqttconnect();
}

void loop()
{

  digitalWrite(TRIGGER, HIGH);
  delayMicroseconds(10); digitalWrite(TRIGGER,
LOW);

  int duration=pulseIn(ECHO,HIGH);
  distance=(duration*sound_speed)/2;
  Serial.print("Distance:");
  Serial.print(distance);
  Serial.println("cms"); if(distance<100){
  PublishData(distance);
  }
```

```
    delay(1000); if  
(!client.loop()) {  
    mqttconnect();  
    }  
}
```

/.....retrieving to Cloud...../

```
void PublishData(int d) {  
    mqttconnect();
```

```
    String payload = "{\"message\":\"alert\"}";
```

```
    Serial.print("Sending payload: ");  
    Serial.println(payload);
```

```
    if (client.publish(publishTopic, (char*) payload.c_str())) {  
        Serial.println("Publish ok");  
    } else {  
        Serial.println("Publish failed");  
    }  
}
```

```
}  
void mqttconnect() { if  
(!client.connected()) {  
    Serial.print("Reconnecting client to ");  
    Serial.println(server);  
    while (!client.connect(clientId, authMethod, token)) {  
        Serial.print(".");  
        delay(500);  
    }  
    initManagedDevice();  
    Serial.println();  
}
```

```

}
void wificonnect()
{
    Serial.println();
    Serial.print("Connecting to ");

    WiFi.begin("Wokwi-GUEST", "", 6);
    while (WiFi.status() != WL_CONNECTED) {
        delay(500);
        Serial.print("."); }
    Serial.println("");
    Serial.println("WiFi connected");
    Serial.println("IP address: ");
    Serial.println(WiFi.localIP());
}

void initManagedDevice() {
    if (client.subscribe(subscribetopic)) {
        Serial.println((subscribetopic));
        Serial.println("subscribe to cmd OK");
    } else {
        Serial.println("subscribe to cmd FAILED");
    }
}

void callback(char* subscribetopic, byte* payload, unsigned int payloadLength)
{

    Serial.print("callback invoked for topic: ");
    Serial.println(subscribetopic);
    for (int i = 0; i < payloadLength; i++) {    data3 +=
(char)payload[i];
    }

    Serial.println("data: "+ data3);

    data3="";

```

}

CIRCUIT DIAGRAM:

WOKWI

SAVE

SHARE

Docs

sketch.ino

diagram.json

libraries.txt

Library Manager

1

#include <WiFi.h>

2

#include <PubSubClient.h>

3

#define TRIGGER 2

4

#define ECHO 15

5

#define sound_speed 0.034

6

int distance;

7

8

void callback(char* subscribetopic, byte* payload, unsigned int payloadlength);

9

10

//-----credentials of IBM Accounts-----

11

12

#define ORG "wp72r7"

13

#define DEVICE_TYPE "iot-device-1"

14

#define DEVICE_ID "123456789"

15

#define TOKEN "987654321"

16

String data3;

17

18

19

//----- Customise the above values -----

20

char server[] = ORG ".messaging.internetofthings.ibmcloud.com";

21

char publishTopic[] = "iot-2/evt/Data/fmt/json";

22

char subscribetopic[] = "iot-2/cmd/test/fmt/String";

23

char authMethod[] = "use-token-auth";

24

char token[] = TOKEN;

25

char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID;

26

27

28

//-----

29

WiFiClient wificlient;

30

PubSubClient client(server, 1883, callback ,wificlient);

31

void setup()

32

{

33

Serial.begin(115200);

34

pinMode(TRIGGER, OUTPUT);

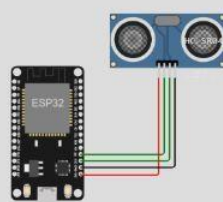
35

pinMode(ECHO, INPUT);

36

}

Simulation



Connecting to
WiFi connected
IP address:
10.10.0.2
Reconnecting client to wp72r7.messaging.internetofthings.ibmcloud.com
iot-2/cmd/test/fmt/String
subscribe to cmd OK

399 cms.
399 cms.
399 cms.
212 cms.
30 cms.
Sending payload: {"message":"alert"}
Publish ok
30 cms

IBM CLOUD RECENT EVENTS:

All Devices

Device Simulator 

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