

## Assignment-4

Assignment Date	1 October 2022
Student Name	MR. VIGNESH.K
Student Roll Number	AC19UCS135
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.

### Solution :

```
#include <WiFi.h> #include
<PubSubClient.h>
void callback(char* subscribetopic,byte* payload, unsigned int payloadLength);
#define ORG "fdd82r"
#define DEVICE_TYPE "Pi"
#define DEVICE_ID "123"
#define TOKEN "12345678"
String data3;

char server[]= ORG ".messaging.internetofthings.ibmcloud.com";
char publishTopic[]="iot-2/evt/distance/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);

#define ECHO_PIN 2
#define TRIG_PIN 4
#define led 5

void setup() {
  // put your setup code here, to run
  once: Serial.begin(115200);
  pinMode(led, OUTPUT);
  pinMode(TRIG_PIN, OUTPUT);
  pinMode(ECHO_PIN, INPUT);
  wificonnect();
  mqttconnect();
}
float readDistanceCM() {
```

```

digitalWrite(TRIG_PIN, LOW);
delayMicroseconds(2);
digitalWrite(TRIG_PIN, HIGH);
delayMicroseconds(10);
digitalWrite(TRIG_PIN, LOW); int
duration=random(1,200);
//Serial.println(duration);
//duration = pulseIn(ECHO_PIN, HIGH);
return duration ;
//Serial.println(duration);
}

void loop() {
  float distance = readDistanceCM();
  //Serial.println(distance);

  bool isNearby = distance < 100;
  digitalWrite(led, isNearby);

  Serial.print("Measured distance: ");
  Serial.println(distance);
  if(distance<100){ PublishData2(dist
  ance);

  }else{ PublishData1(dista
  nce);

  }
  //PublishData(distance);
  delay(1000);
  if(!client.loop()){ mqttc
  onnect();
  }

  //delay(2000);
}
void PublishData1(float
dist){ mqttconnect();
String payload= "{\"distance\":";
payload += dist;
payload+="}";

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 PublishData2(float
dist){ mqttconnect();
String payload= "{\"ALERT\":"; payload
+= dist;
payload+="}";

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 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(subscribeTo
pic)){ 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);
if(data3=="lighton"){ Serial.p
rintln(data3);
digitalWrite(led,HIGH);
}else{ Serial.println(data3);
digitalWrite(led,LOW);
}
data3="";
}
}

```



