

## ASSIGNMENT 4

Date	24 October 2022
Team ID	PNT2022TMID48183
Project Name	Project -Real time river water quality monitoring and Control System
Maximum Marks	4 Marks

Project Title: Real Time River water quality monitoring and Control system

Team ID: PNT2022TMID48183

Team Members:

1. Lakshmanan - Team Leader
2. Arun - Team Member
3. Janarthanan - Team Member
4. Seenii Mohamed - Team Member

### QUESTION:

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.

CODE:

```
#include <WiFi.h>
#include
<PubSubClient.h>
void callback(char* subscribtopic, byte* payload, unsigned int
payloadLength);
//-----credentials of IBM Accounts-----
#define ORG "Ashfaq1824"//IBM ORGANITION ID
#define DEVICE_TYPE "ESP32"//Device type mentioned in ibm watson IOT Platform
#define DEVICE_ID "12345"//Device ID mentioned in ibm watson IOT Platform
#define TOKEN "12345678" //Token
String data3;
char server[] = ORG
".messaging.internetofthings.ibmcloud.com"; char
publishTopic[] = "iot-2/evt/Data/fmt/json"; char
subscribtopic[] = "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);
const int trigPin = 5;
const int echoPin = 18;
```

```

#define    SOUND_SPEED
0.034 long duration; float
distance; void setup() {
Serial.begin(115200);
pinMode(trigPin, OUTPUT);
pinMode(echoPin, INPUT);
wifiConnect(); mqttConnect(); }
void loop() {
digitalWrite(trigPin, LOW);
delayMicroseconds(2);
digitalWrite(trigPin, HIGH);
delayMicroseconds(10);
digitalWrite(trigPin, LOW);
duration = pulseIn(echoPin,
HIGH); distance = duration *
SOUND_SPEED/2;
Serial.print("Distance (cm): ");
Serial.println(distance);
if(distance<100)
{
Serial.println("ALERT!!"
); delay(1000);
PublishData(distance);
delay(1000); if
(!client.loop()) {
mqttConnect();
} }
delay(1000)
; }
void PublishData(float dist) {
mqttConnect();
String payload = "{\"Distance\":";
payload += dist;
payload += ", \"ALERT!!\": \"\"Distance less than 100cms\"\"";
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 client to
");
Serial.println(server);
while (!client.connect(clientId, authMethod, token)) {
Serial.print(".");
delay(500);
}
initManagedDevice();
Serial.println();

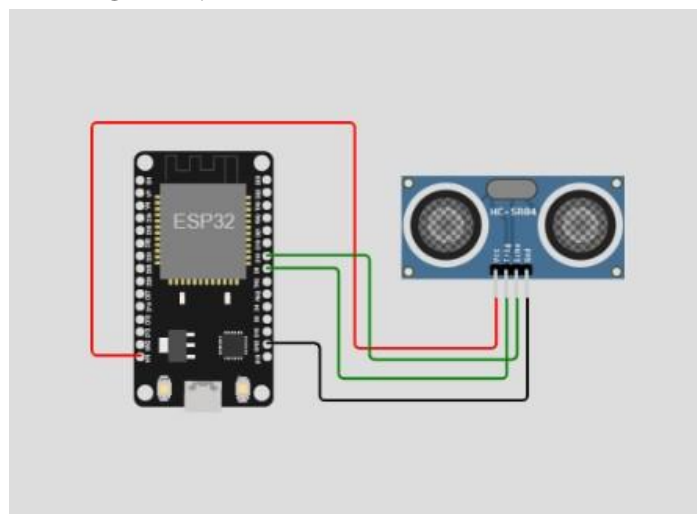
```

```

} }
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++) {
  //Serial.print((char)payload[i]); data3 +=
(char)payload[i];
}
  Serial.println("data:    "+    data3);
  data3="";
}

```

SCHEMATIC/CIRCUIT DIAGRAM:



IBM CLOUD OUTPUT:

