## **Assignment 4**

Date	03 November 2022
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Project Name	River Water Quality Monitoring
-	and Control System
Maximum Marks	4 Marks

## **Program:**

```
#include <WiFi.h>
#include<PubSubClient.h>
void callback(char* subscribetopic,byte* payload,unsigned int
payloadLength);
#define ORG "rj0qwb"
#define DEVICE TYPE "RivWatQuality"
#define DEVICE ID "RivWatQuality"
#define TOKEN "UFT PB+dHA3k)0 pA7"
#define SOUND SPEED 0.034
#define CM TO INCH 0.393701
const int trigPin = 5;
const int echoPin = 18;
long duration;
float distanceCm;
float distanceInch;
String data;
char server[]=ORG ".messaging.internetofthings.ibmcloud.com";
char publishTopic[] = "iot-2/evt/RivWatQuality/fmt/json";
char subscribeTopic[] = "iot-2/cmd/home/fmt/String";
char authMethod[] = "use-token-auth";
char token[] =TOKEN;
char clientId[] = "d:" ORG ":" DEVICE TYPE ":" DEVICE ID;
```

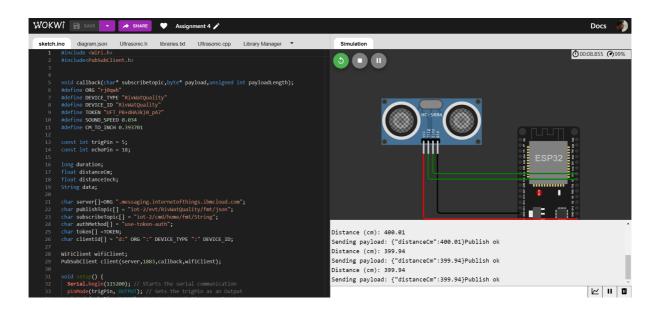
```
WiFiClient wifiClient;
PubSubClient client(server,1883,callback,wifiClient);
void setup() {
 Serial.begin(115200); // Starts the serial communication
 pinMode(trigPin, OUTPUT); // Sets the trigPin as an Output
 wificonnect();
 mqttconnect();
void loop() {
 digitalWrite(trigPin, LOW);
 delayMicroseconds(2);
 digitalWrite(trigPin, HIGH);
 digitalWrite(trigPin, LOW);
 distanceCm = duration * SOUND SPEED/2;
  distanceInch = distanceCm * CM_TO_INCH;
  Serial.print("Distance (cm): ");
  Serial.println(distanceCm);
  PublishData(distanceCm);
  delay(1000);
   mqttconnect();
```

```
void PublishData(float distanceCm)
 mqttconnect ();
 String payload;
 if(distanceCm<100.0)</pre>
   payload = "{\"Alert\":";
   payload += distanceCm;
   payload += "}";
   payload = "{\"distanceCm\":";
   payload += distanceCm;
   payload += "}";
  Serial.print("Sending payload: ");
 Serial.print(payload);
 if(client.publish(publishTopic , (char*) payload.c str())){
 Serial.println("Publish ok");}
  { 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);
   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");
    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++)
    {
        data +=(char)payload[i];
    }
    Serial.println("data: "+data);
    if(data>(char)100)
    {
        Serial.println("Alert!");
    }*/
}
```

## Wokwi Platform:



## **IBM Watson Platform Cloud**

