Assignment - 4

wokwi for the ultrasonic sensor

Date	01 November 2022
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Student Roll No	911719104009
Maximum Marks	2 Marks

Question-3:

Write code and connections in wokwi for the ultrasonic sensor. Whenever the distance is less than 100 cms send an "alert" to the IBM cloud and display in the device recent events. Upload document with wokwi share link and images of IBM cloud.

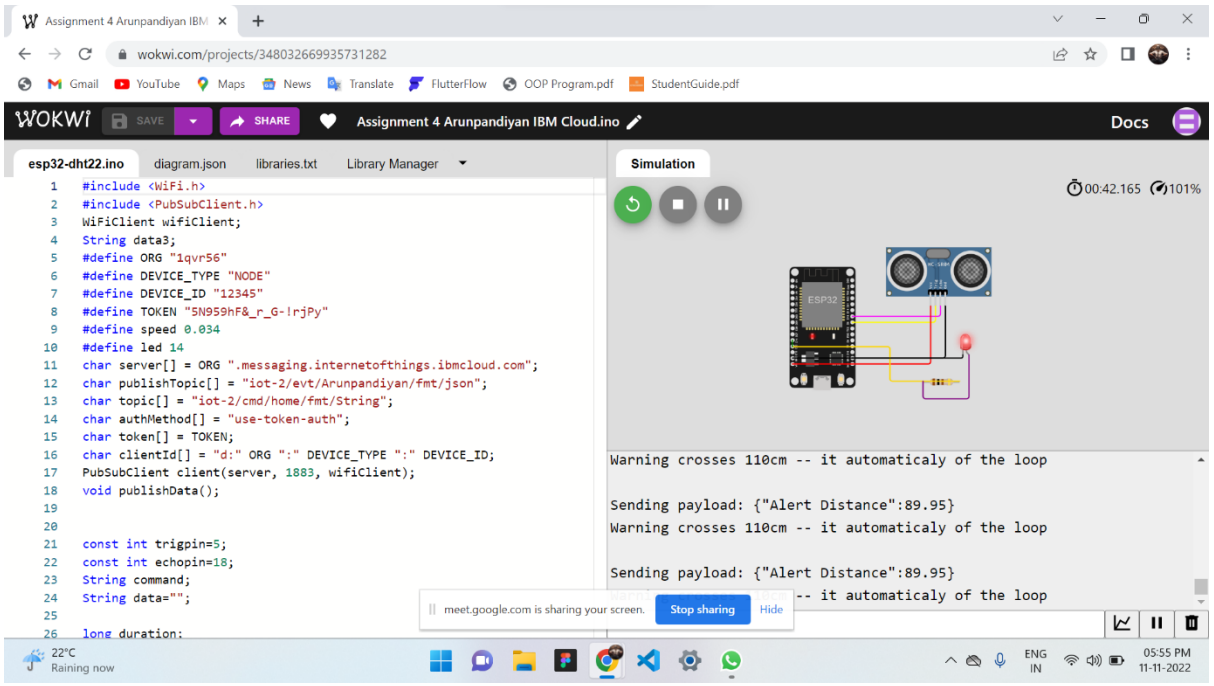
Code :

```
#include <WiFi.h>
#include <PubSubClient.h>
WiFiClient wifiClient;
String data3;
#define ORG "1qvr56"
#define DEVICE_TYPE "NODE"
#define DEVICE_ID "12345"
#define TOKEN "5N959hF&_r_G-!rjPy"
#define speed 0.034
#define led 14
char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
char publishTopic[] = "iot-2/evt/Arunpandiyan/fmt/json";
char topic[] = "iot-2/cmd/home/fmt/String";
char authMethod[] = "use-token-auth";
char token[] = TOKEN;
char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID;
PubSubClient client(server, 1883, wifiClient);
void publishData();


const int trigpin=5;
const int echopin=18;
String command;
String data="";

long duration;
float dist;



void setup()
{
  Serial.begin(115200);
  pinMode(led, OUTPUT);
  pinMode(trigpin, OUTPUT);
  pinMode(echopin, INPUT);
  wifiConnect();
```

```
  mqttConnect();
}

void loop() {
  bool isNearby = dist < 100;
  digitalWrite(led, isNearby);

  publishData();
  delay(500);

  if (!client.loop()) {
    mqttConnect();
  }
}

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

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

void initManagedDevice() {
  if (client.subscribe(topic)) {

    Serial.println("IBM subscribe to cmd OK");
  } else {
    Serial.println("subscribe to cmd FAILED");
  }
}
void publishData()
{
  digitalWrite(trigpin,LOW);
  digitalWrite(trigpin,HIGH);
  delayMicroseconds(10);
  digitalWrite(trigpin,LOW);
  duration=pulseIn(echopin,HIGH);
  dist=duration*speed/2;
  if(dist<100){
    String payload = "{\"Alert Distance\":";
```

```
    payload += dist;
    payload += "}";

    Serial.print("\n");
    Serial.print("Sending payload: ");
    Serial.println(payload);
      if(client.publish(publishTopic, (char*) payload.c_str())) {
      Serial.println("Warning crosses 110cm -- it automaticaly of the loop");
      digitalWrite(led,HIGH);
    }

  }
    if(dist>101 && dist<111){
    String payload = "{\"Normal Distance\":";
    payload += dist;
    payload += "}";

    Serial.print("\n");
    Serial.print("Sending payload: ");
    Serial.println(payload);

    }

  }



  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++){
    dist += (char)payload[i];
  }
  Serial.println("data:"+ data3);
  if(data3=="lighton"){
    Serial.println(data3);
    digitalWrite(led,HIGH);
  }
  data3="";
}
```

Output :


Assignment 4 Arunpandiyan IBM
wokwi.com/projects/348032669935731282
WOKWI
SAVE
SHARE
Assignment 4 Arunpandiyan IBM Cloud.ino
Docs
esp32-dht22.ino
diagram.json
libraries.txt
Library Manager
#include <WiFi.h>
#include <PubSubClient.h>
WiFiClient wifiClient;
String data3;
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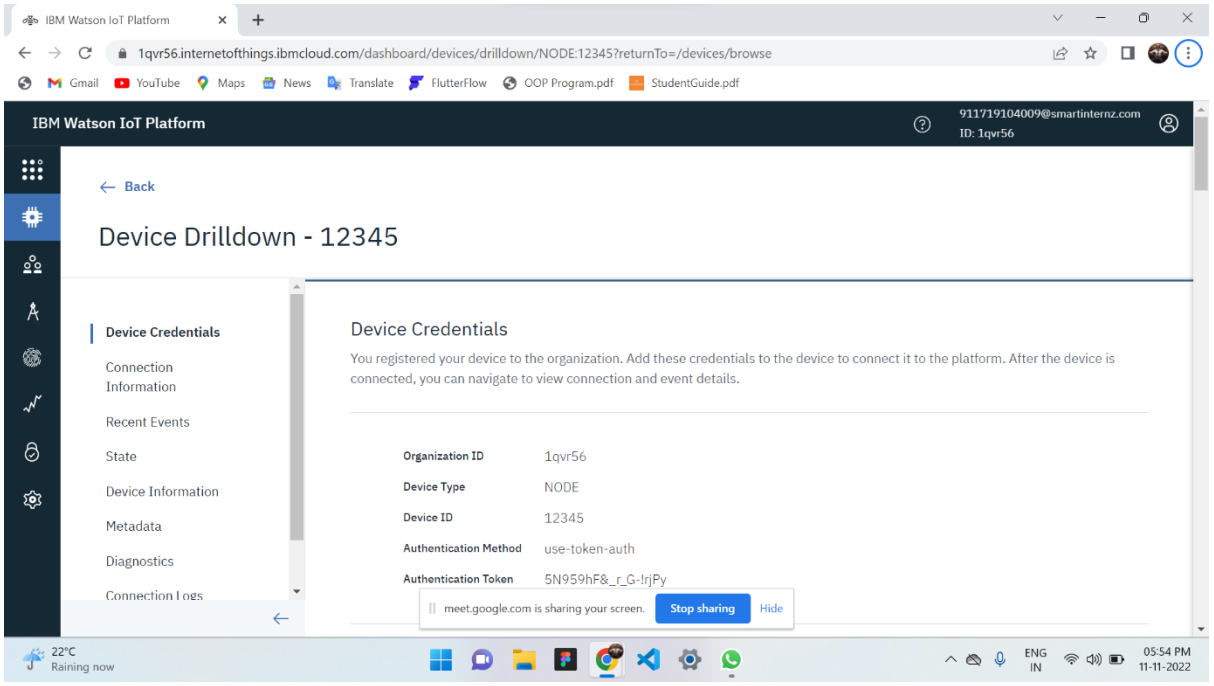
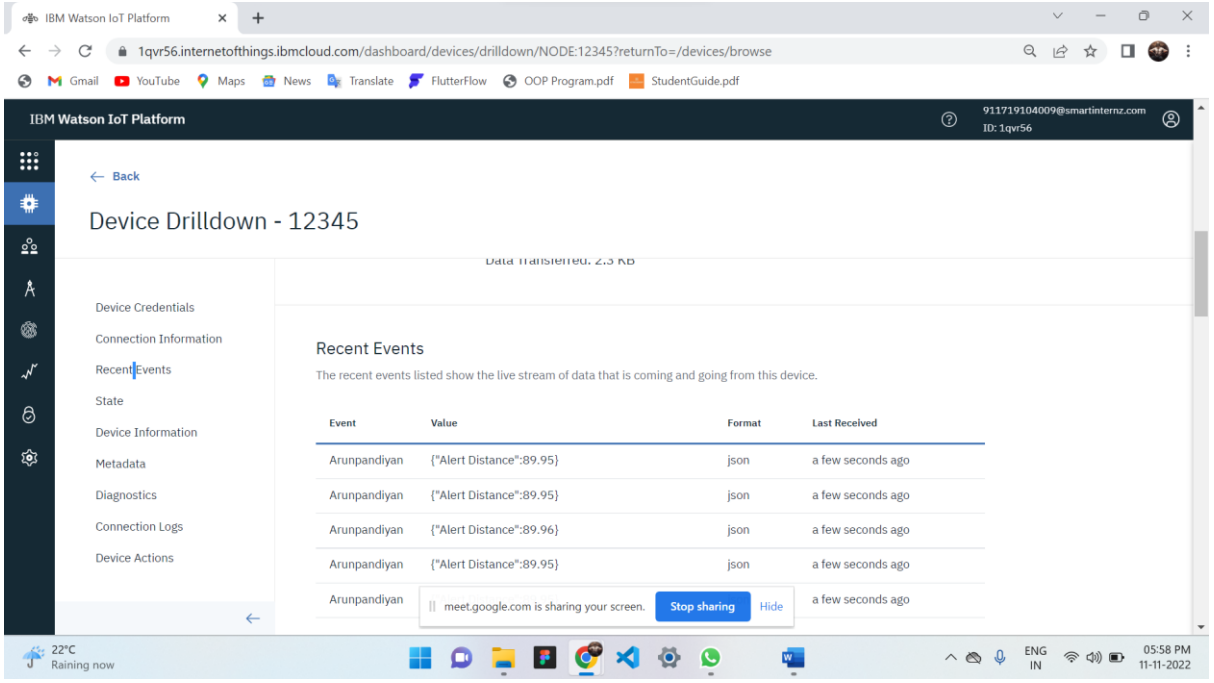
char authMethod[] = "use-token-auth";
char token[] = TOKEN;
char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID;
PubSubClient client(server, 1883, wifiClient);
void publishData();
const int trigpin=5;
const int echopin=18;
String command;
String data="";
long duration;
Simulation
00:42.165
101%
Warning crosses 110cm -- it automaticaly of the loop
Sending payload: {"Alert Distance":89.95}
Warning crosses 110cm -- it automaticaly of the loop
Sending payload: {"Alert Distance":89.95}
-- it automaticaly of the loop
meet.google.com is sharing your screen.
Stop sharing
Hide
22°C
Raining now
ENG
IN
05:55 PM
11-11-2022


IBM Watson IoT Platform
1qvr56.internetofthings.ibmcloud.com/dashboard/devices/drilldown/NODE:12345?returnTo=/devices/browse
IBM Watson IoT Platform
911719104009@smartinternz.com
ID: 1qvr56
Back
Device Drilldown - 12345
Device Credentials
Connection Information
Recent Events
State
Device Information
Metadata
Diagnostics
Connection Logs
Device Credentials
You registered your device to the organization. Add these credentials to the device to connect it to the platform. After the device is connected, you can navigate to view connection and event details.
Organization ID 1qvr56
Device Type NODE
Device ID 12345
Authentication Method use-token-auth
Authentication Token 5N959hF&_r_G-!rjPy
meet.google.com is sharing your screen.
Stop sharing
Hide
22°C
Raining now
ENG
IN
05:54 PM
11-11-2022


IBM Watson IoT Platform
1qvr56.internetofthings.ibmcloud.com/dashboard/devices/drilldown/NODE:12345?returnTo=/devices/browse
Gmail
YouTube
Maps
News
Translate
FlutterFlow
OOP Program.pdf
StudentGuide.pdf
IBM Watson IoT Platform
911719104009@smartinternz.com
ID: 1qvr56
Back
Device Drilldown - 12345
Device Credentials
Connection Information
Recent Events
State
Device Information
Metadata
Diagnostics
Connection Logs
Device Actions
Recent Events
The recent events listed show the live stream of data that is coming and going from this device.
Event
Value
Format
Last Received
Arunpandiyan
{"Alert Distance":89.95}
json
a few seconds ago
Arunpandiyan
{"Alert Distance":89.95}
json
a few seconds ago
Arunpandiyan
{"Alert Distance":89.96}
json
a few seconds ago
Arunpandiyan
{"Alert Distance":89.95}
json
a few seconds ago
Arunpandiyan
meet.google.com is sharing your screen.
Stop sharing
Hide
a few seconds ago
22°C
Raining now
ENG
IN
05:58 PM
11-11-2022