ASSIGNMENT - 4

DISTANCE DETECTION USING ULTRASONIC SENSOR

Date	10 NOVEMBER 2022
Team ID	**PNT2022TMID47589**
Name	RK.Pavithra
Register Number	911019104014
Maximum Marks	2 Marks

PROGRAM:

```
#include <WiFi.h>//library for wifi
#include <PubSubClient.h>//library for MQtt

#define ECHO_GPIO 12
#define TRIGGER_GPIO 13
#define MAX_DISTANCE_CM 100 // Maximum of 5 meters#include
"Ultrasonic.h"

Ultrasonic ultrasonic(13, 12);int
distance;

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

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

#define ORG "kizp10"//IBM ORGANITION ID
#define DEVICE_TYPE "IOTdevice"//Device type mentioned in ibm watson IOT Platform#define
DEVICE_ID "1234567890"//Device ID mentioned in ibm watson IOT Platform #define TOKEN
"1234567890"                                //Token
String data3;
float h, t;
```

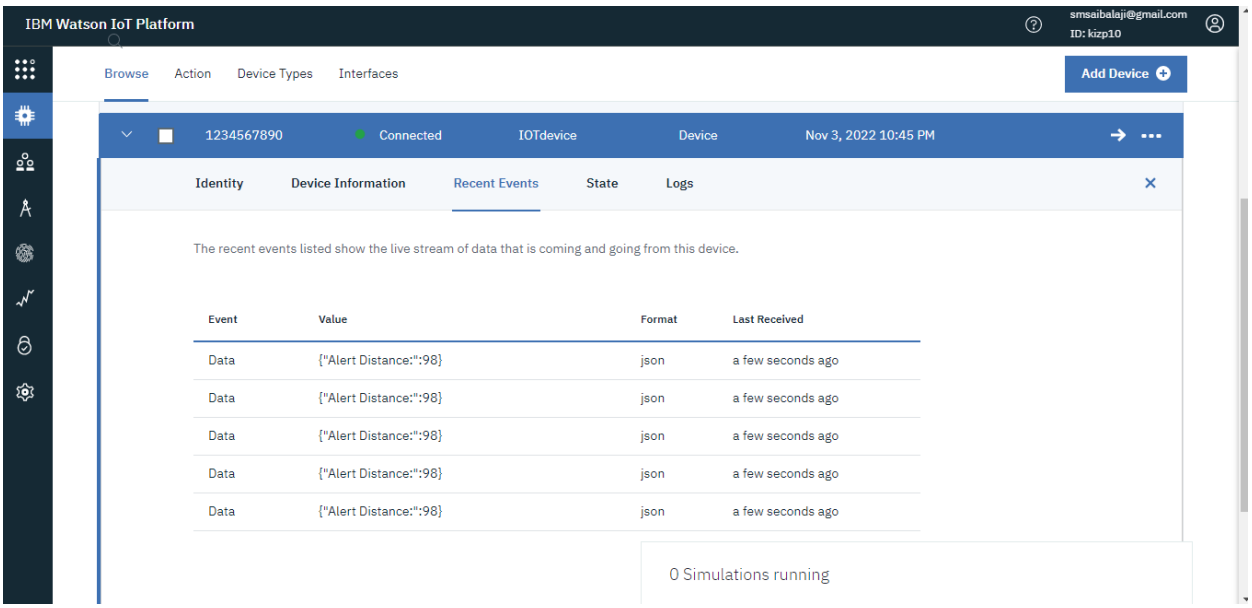
```
//-------- Customise the above values --------
char server[] = ORG ".messaging.internetofthings.ibmcloud.com";// Server Namechar
publishTopic[] = "iot-2/evt/Data/fmt/json";// topic name and type of event perform and format in
which data to be send
char subscribetopic[] = "iot-2/cmd/command/fmt/String";// cmd REPRESENT commandtype AND
COMMAND IS TEST OF FORMAT STRING
char authMethod[] = "use-token-auth";// authentication methodchar token[] =
TOKEN;
char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID;//client id


//--------------------------------------------------
WiFiClient wifiClient; // creating the instance for wificlient
PubSubClient client(server, 1883, callback, wifiClient); //calling the predefined client idby passing
parameter like server id,portand wificredential

void setup()// configureing the ESP32
{
  Serial.begin(115200);
  delay(10); Serial.println();
  wificonnect(); mqttconnect();
}

void loop()// Recursive Function
{

  distance = ultrasonic.read(CM); if
  (distance < 100) {
  Serial.print("Distance in CM: ");
  Serial.println(distance);
  PublishData(distance); delay(1000);
    if (!client.loop()) {
      mqttconnect();
    }

  }

  delay(1000);
```

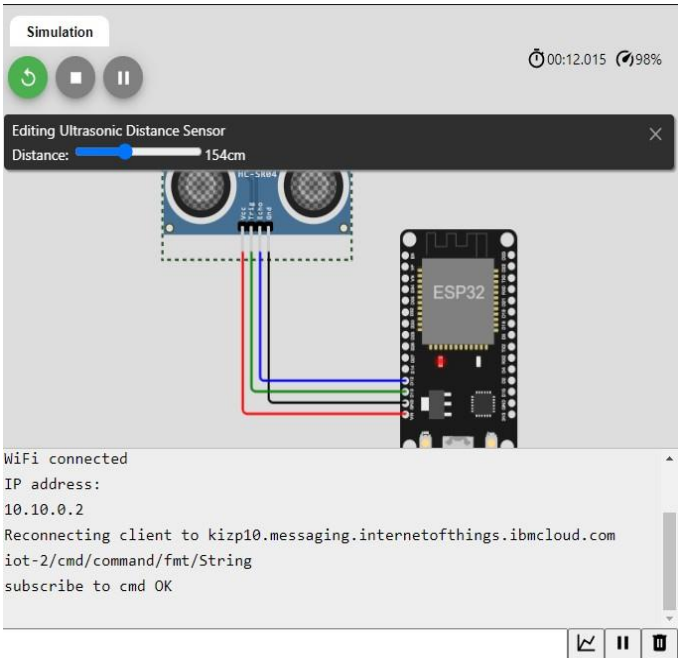
```
}

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

void PublishData(float temp) { mqttconnect();//function call
  for connecting to ibm
  /*
     creating the String in in form JSon to update the data to ibm cloud
  */
  String payload = "{\"Alert Distance:\":";
  payload += temp;
  payload += "}";


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


  if (client.publish(publishTopic, (char*) payload.c_str())) {
    Serial.println("Publish ok");// if it sucessfully upload data on the cloud then it willprint publish
ok in Serial monitor or else it will print publish failed
  } 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();




  }
```

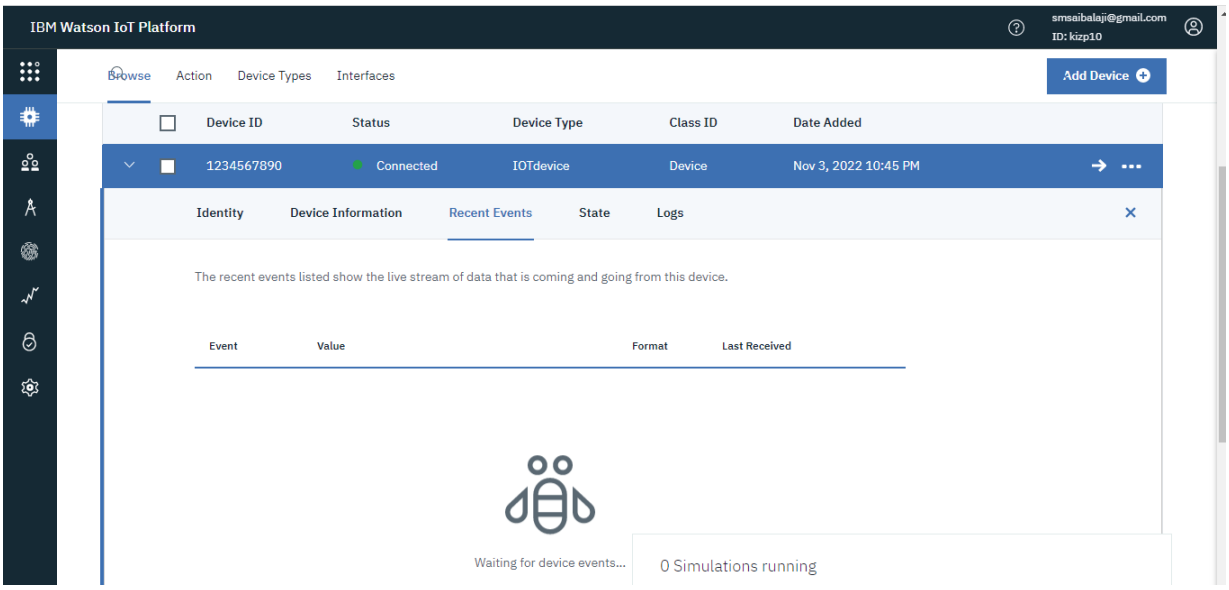
```
}
void wificonnect() //function defination for wificonnect
{
  Serial.println();
  Serial.print("Connecting to
  ");

  WiFi.begin("Wokwi-GUEST", "", 6);//passing the wifi credentials to establish theconnection
  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);if
  (data3 == "lighton")
  {
    Serial.println(data3);




  }
```

```
  else
  {
    Serial.println(data3);
  }
  data3 = "";
}
```

OUTPUT:




Simulation
00:12.015
98%
Editing Ultrasonic Distance Sensor
Distance:
154cm
ESP32
WiFi connected
IP address:
10.10.0.2
Reconnecting client to kizp10.messaging.internetofthings.ibmcloud.com
iot-2/cmd/command/fmt/String
subscribe to cmd OK


IBM Watson IoT Platform
smsaibalaji@gmail.com
ID: kizp10
Browse
Action
Device Types
Interfaces
Add Device
Device ID
Status
Device Type
Class ID
Date Added
1234567890
Connected
IOTdevice
Device
Nov 3, 2022 10:45 PM
Identity
Device Information
Recent Events
State
Logs
The recent events listed show the live stream of data that is coming and going from this device.
Event
Value
Format
Last Received
Waiting for device events...
0 Simulations running