ASSIGNMENT-4

DISTANCEDETECTIONUSINGULTRASONICSENS OR

Date	20 October2022
TeamID	PNT2022TMID29941
Name	S Divya(TL)

Question:
Writecodeandconnectionsinwokwiforultrasonicsensor.Wheneverdistanceislessthan100cm ssend" alert"toibmcloudanddisplayindevicerecentevents.

CODE:

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

#include <PubSubClient.h>//library for MQtt

#include "DHT.h"// Library for dht11

#define DHTPIN 15   // what pin we're connected to

#define DHTTYPE DHT22   // define type of sensor DHT 11

#define LED 2

DHT dht (DHTPIN, DHTTYPE);// creating the instance by passing pin and typr of dht connected


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


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


#define ORG "ketslb"//IBM ORGANITION ID

#define DEVICE_TYPE "testbatchass1"//Device type mentioned in ibm watson IOT Platform
```

```
#define DEVICE_ID "testass4"//Device ID mentioned in ibm watson IOT Platform
#define TOKEN "t4444cvn97m78mx4r3467rg0cq3"     //Token
String data3;
float t;



//-------- Customise the above values --------
char server[] = ORG ".messaging.internetofthings.ibmcloud.com";// Server Name
char 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 command type AND COMMAND IS TEST OF FORMAT STRING
char authMethod[] = "use-token-auth";// authentication method
char 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 id by passing parameter like server id,portand wificredential
void setup()// configureing the ESP32
{
  Serial.begin(115200);
  dht.begin();
  pinMode(LED, OUTPUT);
  delay(10);
  Serial.println();
  wificonnect();
  mqttconnect();
```

```
}


void loop()// Recursive Function
{


  t = dht.readTemperature();
  Serial.print("temperature:");
  Serial.println(t);


  PublishData(t);
  delay(1000);
  if (!client.loop()) {
    mqttconnect();
  }
}




/*.....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 = "{\"temperature\":";
```

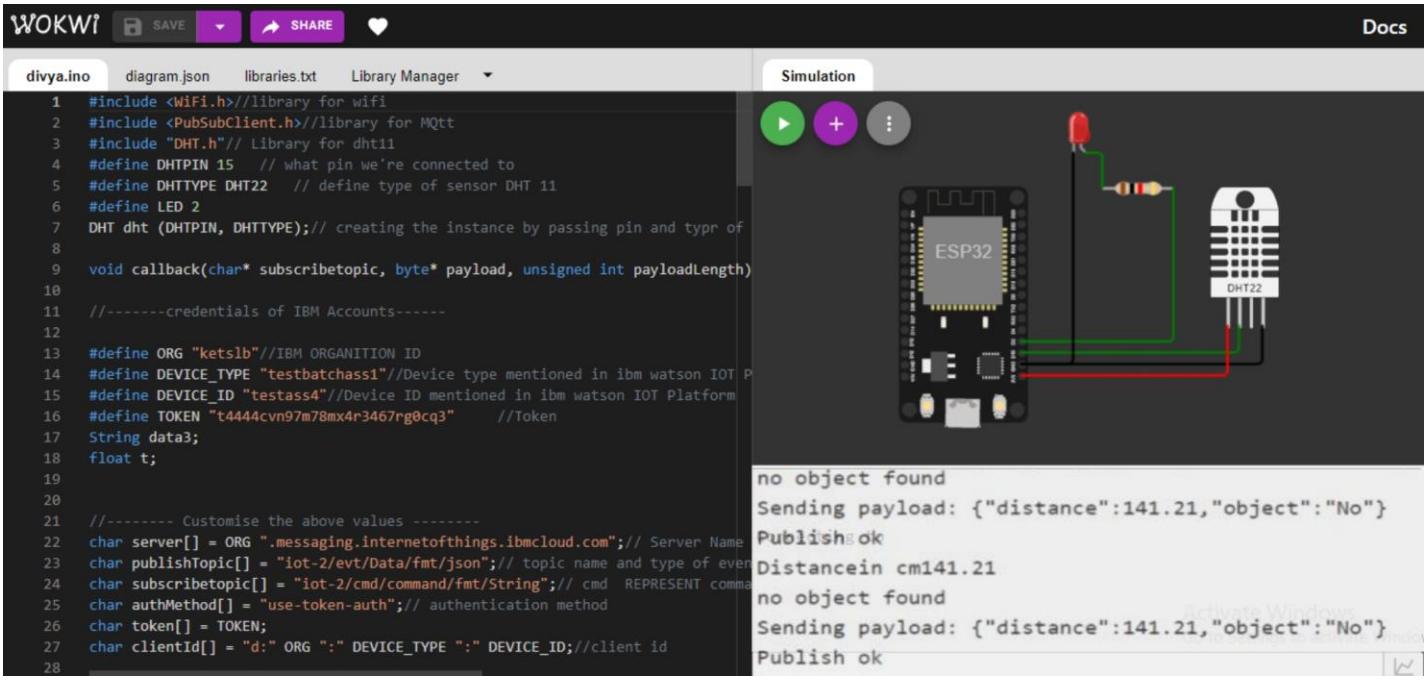
```
  payload += temp;
  payload += "}";



  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 will print 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
the connection
  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);
    digitalWrite(LED, HIGH);


  }


  else
  {
    Serial.println(data3);
    digitalWrite(LED, LOW);

  }
  data3 = "";
```

}

OUTPUT:



Data send to the IBM cloud device when the object is far: