V S B ENGINEERING COLLEGE, KARUR

Department of Electronics and Communication Engineering

IBM NALAIYA THIRAN

ASSIGNMENT 4

Name : Gokulraj P

Assignment:

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 devicerecent events.

Code:

```
#include <WiFi.h>

#include <PubSubClient.h>

WiFiClient wifiClient;String data3;

#define speed 0.034

#define led 15

const int trigpin=13;

const int echopin=12;

String command;

String data="";

long duration;

float dist;

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

#define ORG  "gw5dmy"

#defineDEVICE_TYPE "baladevice"

#defineDEVICE_ID ”baladeviceid”

#define TOKEN “3bm0as0lp6ak2nq0jx0iw2cx”

//-------- Customize the above values --------

char server[] = ORG ".messaging.internetofthings.ibmcloud.com";

char publishTopic[] = "iot-2/evt/Data/fmt/json";

char topic[] = "iot-2/cmd/command/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()
void setup()
{
Serial.begin(115200);
pinMode(led, OUTPUT);
pinMode(trigpin, OUTPUT);
pinMode(echopin, INPUT);
wifiConnect();
mqttConnect();
}
void loop()
{
bool Nearby = dist < 100;digitalWrite(led, Nearby);
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);
```

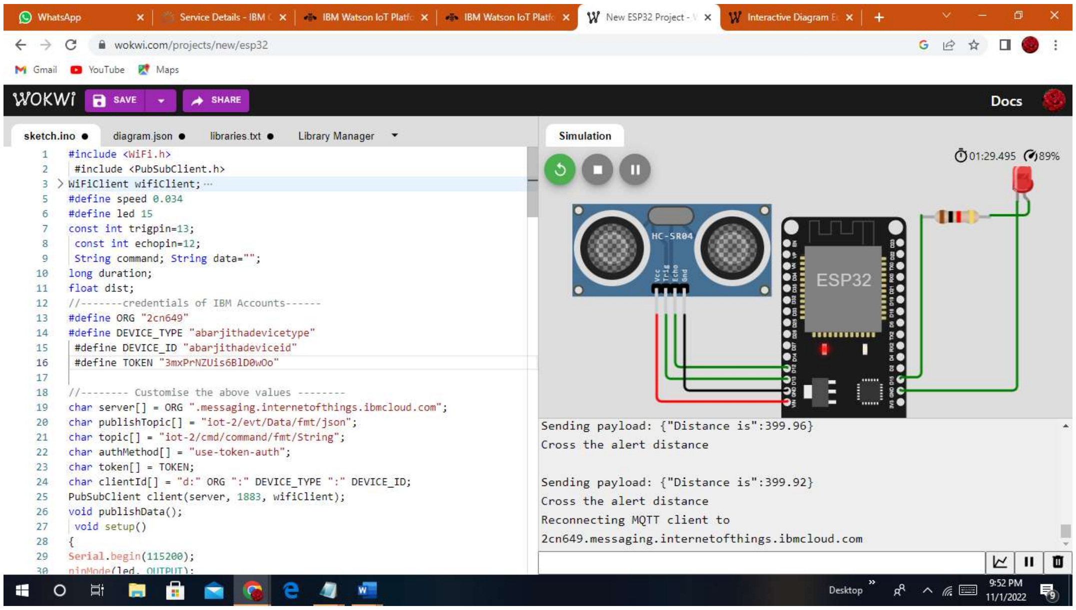
```
Serial.print(".");
}
Serial.print("WiFi connected, IP address: ");
Serial.println(WiFi.localIP());
}
void mqttConnect()
{
if (!client.connected())
{
Serial.print("Reconnecting MQTT client to ");
Serial.println(server);
while (!client.connect(clientId, authMethod, token))
{
Serial.print(".");
delay(500);
}
initManagedDevice();
Serial.println();
}
}
void initManagedDevice()
{
if (client.subscribe(topic))
{
// Serial.println(client.subscribe(topic));
Serial.println("IBM subscribe to cmd OK");
}
else
{
Serial.println("subscribe to cmd FAILED");
```

```
}
}
/*...................................retrieving to
Cloud     */
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 is \":";payload += dist;
payload += "}";


Serial.print("\n");
Serial.print("Sending payload: ");
Serial.println(payload);
if (client.publish(publishTopic, (char*) payload.c_str()))
{
Serial.println("Publish OK");// if it successfully uploads data on thecloud then it will print publish ok in Serial monitor or else it will printpublish failed
digitalWrite(led,HIGH);
}
}
if(dist>100)
{
String payload = "{\"Distance is\":";payload += dist;
payload += "}";
```

```
Serial.print("\n");
 Serial.print("Sending payload: ");
Serial.println(payload);
if(client.publish(publishTopic, (char*) payload.c_str()))
{
Serial.println("Cross the alert distance");
digitalWrite(led,LOW);
}
else
{
Serial.println("Publish FAILED");
}
}
}
void callback(char* subscribeTopic, byte* payload, unsigned intpayloadLength)
{
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="";
}
```

Connection:

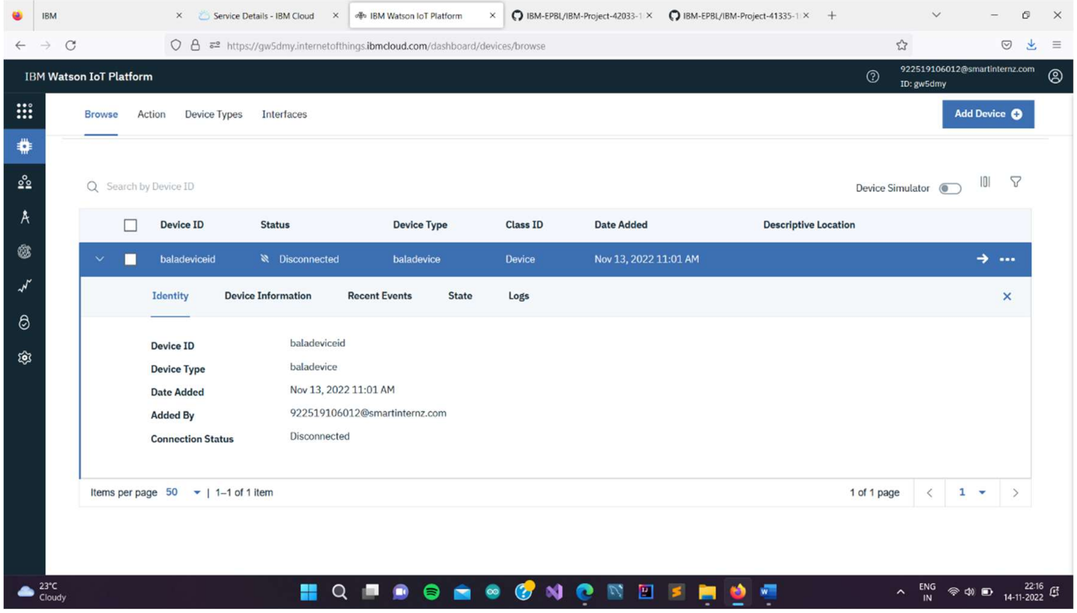


```
#include <WiFi.h>
 #include <PubSubClient.h>
WiFiClient wifiClient;⋯
#define speed 0.034
#define led 15
const int trigpin=13;
 const int echopin=12;
 String command; String data="";
long duration;
float dist;
//-------credentials of IBM Accounts------
#define ORG "2cn649"
#define DEVICE_TYPE "abarjithadevicetype"
 #define DEVICE_ID "abarjithadeviceid"
 #define TOKEN "3mxPrNZUis6BlD0wOo"

//-------- Customise the above values --------
char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
char publishTopic[] = "iot-2/evt/Data/fmt/json";
char topic[] = "iot-2/cmd/command/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();
 void setup()
{
Serial.begin(115200);
pinMode(led, OUTPUT);
```

```
Sending payload: {"Distance is":399.96}
Cross the alert distance

Sending payload: {"Distance is":399.92}
Cross the alert distance
Reconnecting MQTT client to
2cn649.messaging.internetofthings.ibmcloud.com
```


IBM
Service Details - IBM Cloud
IBM Watson IoT Platform
IBM-EPBL/IBM-Project-42033-1
IBM-EPBL/IBM-Project-41335-1
https://gw5dmy.internetofthings.ibmcloud.com/dashboard/devices/browse
IBM Watson IoT Platform
922519106012@smartinternz.com
ID: gw5dmy
Browse
Action
Device Types
Interfaces
Add Device
Search by Device ID
Device Simulator
23°C
Cloudy
ENG
IN
22:16
14-11-2022

	Device ID	Status	Device Type	Class ID	Date Added	Descriptive Location
□	baladeviceid	Disconnected	baladevice	Device	Nov 13, 2022 11:01 AM	

Identity | Device Information | Recent Events | State | Logs

Device ID	baladeviceid
Device Type	baladevice
Date Added	Nov 13, 2022 11:01 AM
Added By	922519106012@smartinternz.com
Connection Status	Disconnected

Items per page 50 | 1–1 of 1 item   1 of 1 page   1