V S B ENGINEERING COLLEGE, KARUR

Department of Electronics and Communication Engineering

IBM NALAIYA THIRAN

ASSIGNMENT 4

Name : Balaji B

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";
```

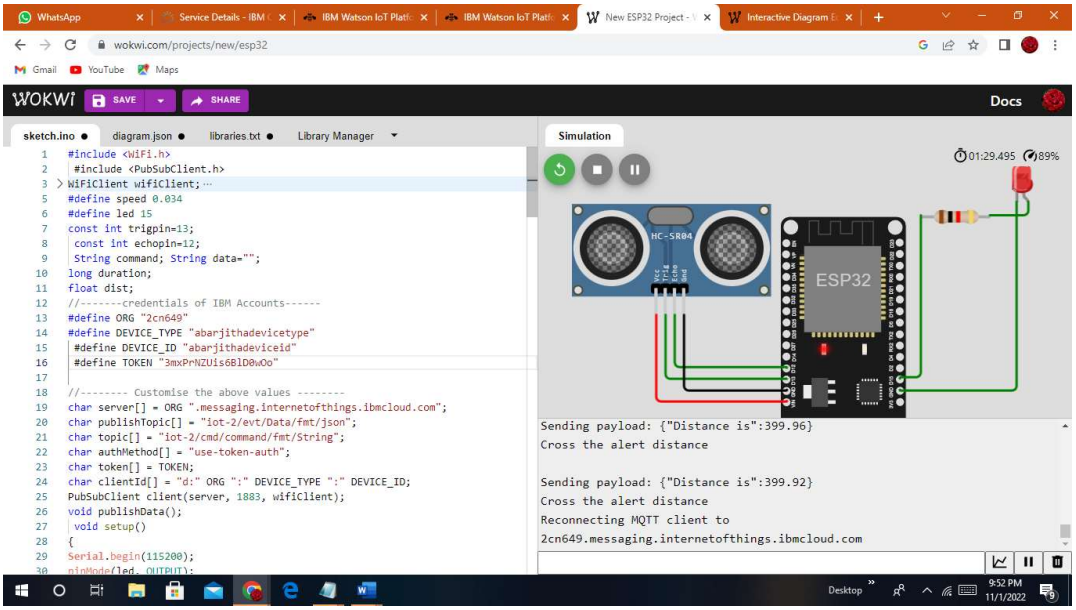
```
char token[] = TOKEN;
char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID;
PubSubClient client(server, 1883, wifiClient);
void publishData()
void setup()
{
Serial.begin(115200);
pinMode(led, OUTPUT);
pinMode(trigpin, OUTPUT);
pinMode(echopin, INPUT);
wifiConnect();
mqttConnect();
}
void loop()
{
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);
```

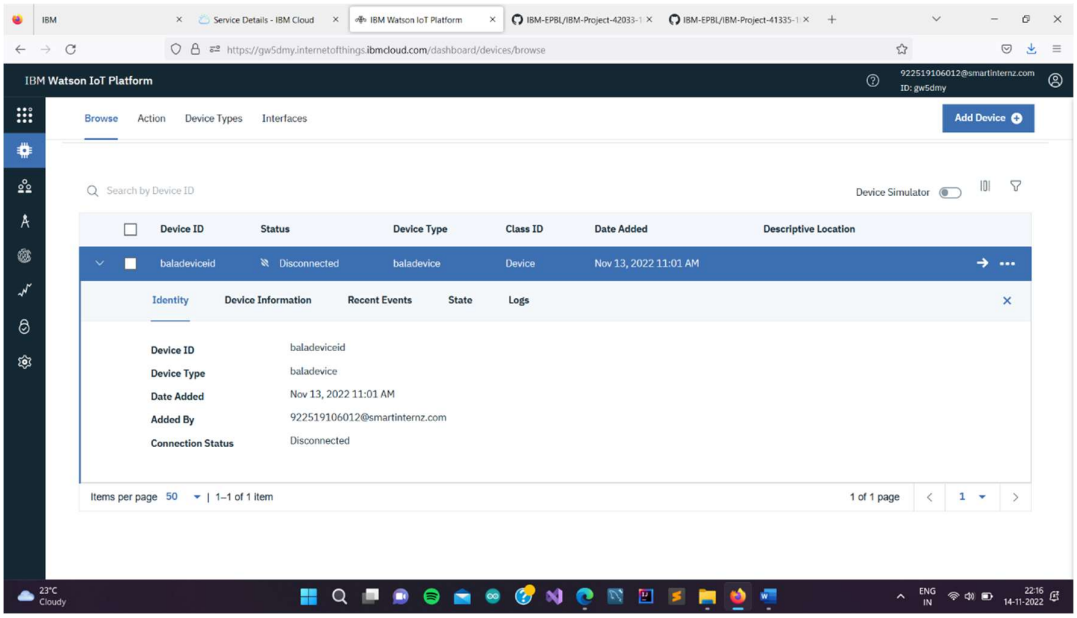
```
Serial.print(".");
}
Serial.print("WiFi connected, IP address: ");
Serial.println(WiFi.localIP());
}
void mqttConnect()
{
if(!client.connected())
{
Serial.print("Reconnecting MQTT client to ");
Serial.println(server);
while(!client.connect(clientId, authMethod, token))
{
Serial.print(".");
delay(500);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


wokwi.com/projects/new/esp32
WOKWI
SAVE
SHARE
Docs
sketch.ino
diagram.json
libraries.txt
Library Manager
#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);
Simulation
01:29.495
89%
HC-SR04
ESP32
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
Desktop
9:52 PM
11/1/2022


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
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
23°C
Cloudy
ENG
IN
22:16
14-11-2022