NALAIYA THIRAN

ASSIGNMENT-4

USER CASE: PERSONAL ASSISTANCE FOR SENIORS WHO ARE SELF RELIANT

BY TEAM MEMBER 1: ISHRATH BEGUM.I

Write a code and connection in wokwi for the Ultrasonic sensor. Whenever the distance is less than 100cm send an "Alert" to the IBM cloud and display in the device recent events.

CODE:

```
#include <WiFi.h>

#include <PubSubClient.h>

WiFiClient wifiClient;

String data3;

#define ORG "3eqctu"

#define DEVICE_TYPE "ESP32"

#define DEVICE_ID "0000"

#define TOKEN "123456789"

#define speed 0.034

#define led 14

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

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

char topic[] = "iot-2/cmd/led/fmt/String";

char authMethod[] = "use-token-auth";

char token[] = TOKEN;

char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID;

PubSubClient client(server, 1883, wifiClient);

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());

}

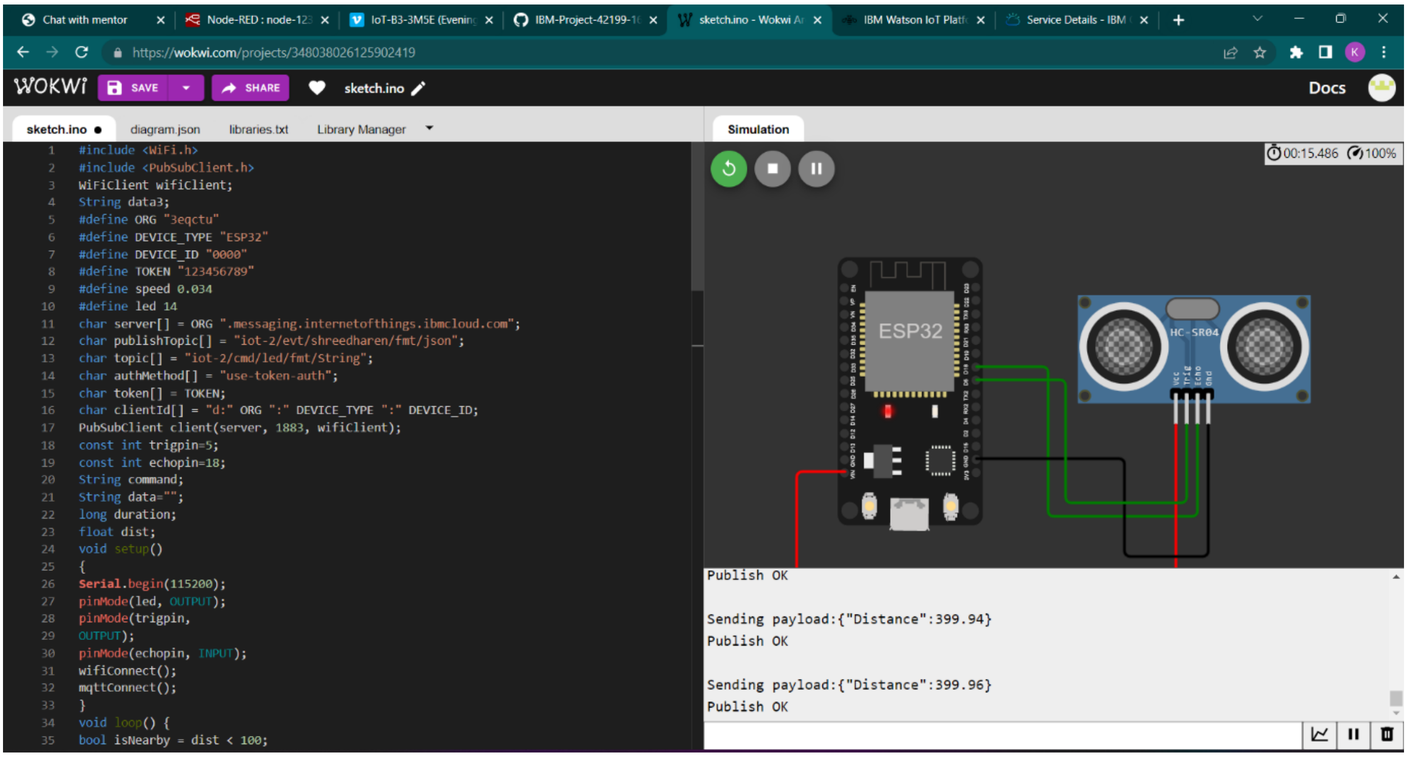
void mqttConnect() {

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("Publish OK");
}
}
if(dist>100){
String payload =
"{\"Distance\":";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");
}else {
Serial.println("Publish FAILED");
}
}}
```

OUTPUT:

LINK: https://wokwi.com/projects/348038026125902419



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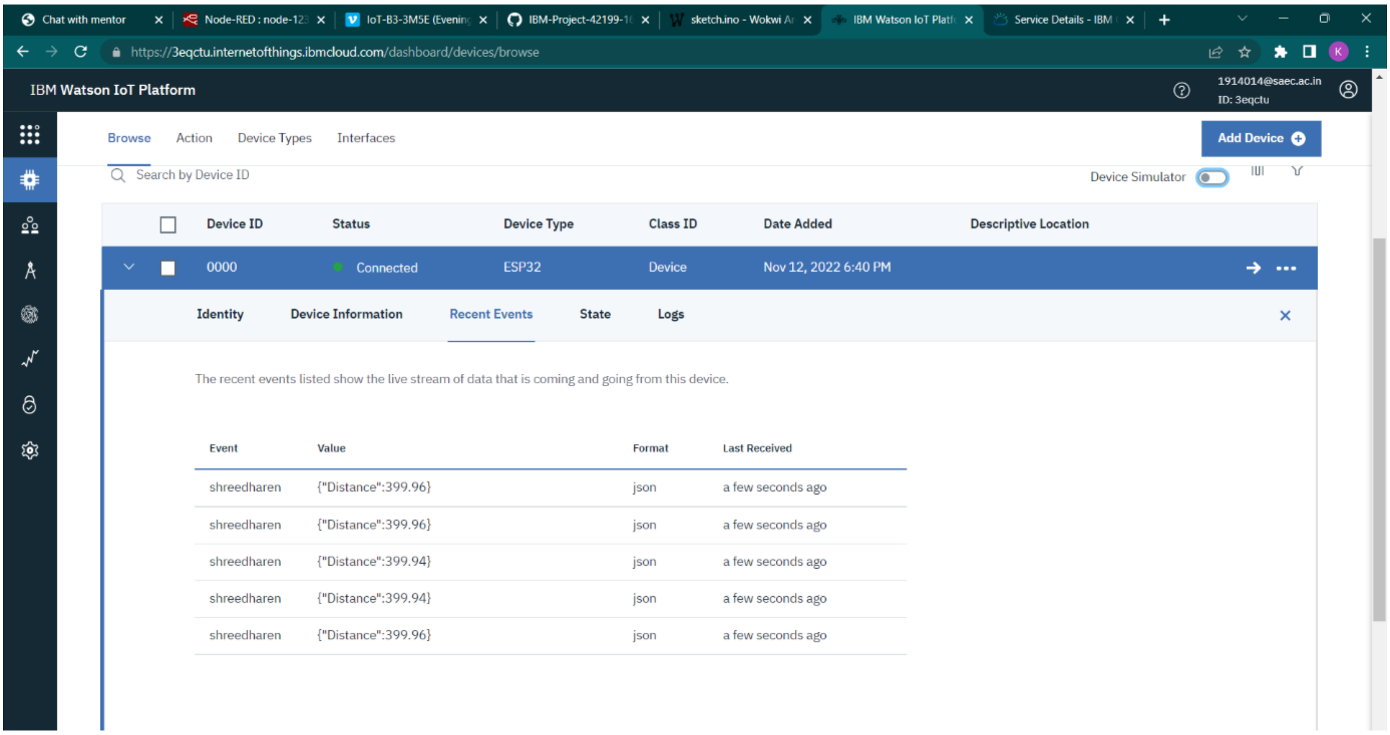
PubSubClient client(server, 1883, wifiClient);
const int trigpin=5;
const int echopin=18;
String command;
String data="";
long duration;
float dist;
void setup()
{
Serial.begin(115200);
pinMode(led, OUTPUT);
pinMode(trigpin,
OUTPUT);
pinMode(echopin, INPUT);
wifiConnect();
mqttConnect();
}
void loop() {
bool isNearby = dist < 100;
```

```
Publish OK

Sending payload:{"Distance":399.94}
Publish OK

Sending payload:{"Distance":399.96}
Publish OK
```



□	Device ID	Status	Device Type	Class ID	Date Added	Descriptive Location
□	0000	● Connected	ESP32	Device	Nov 12, 2022 6:40 PM	

The recent events listed show the live stream of data that is coming and going from this device.

Event	Value	Format	Last Received
shreedharen	{"Distance":399.96}	json	a few seconds ago
shreedharen	{"Distance":399.96}	json	a few seconds ago
shreedharen	{"Distance":399.94}	json	a few seconds ago
shreedharen	{"Distance":399.94}	json	a few seconds ago
shreedharen	{"Distance":399.96}	json	a few seconds ago