Assignment–4

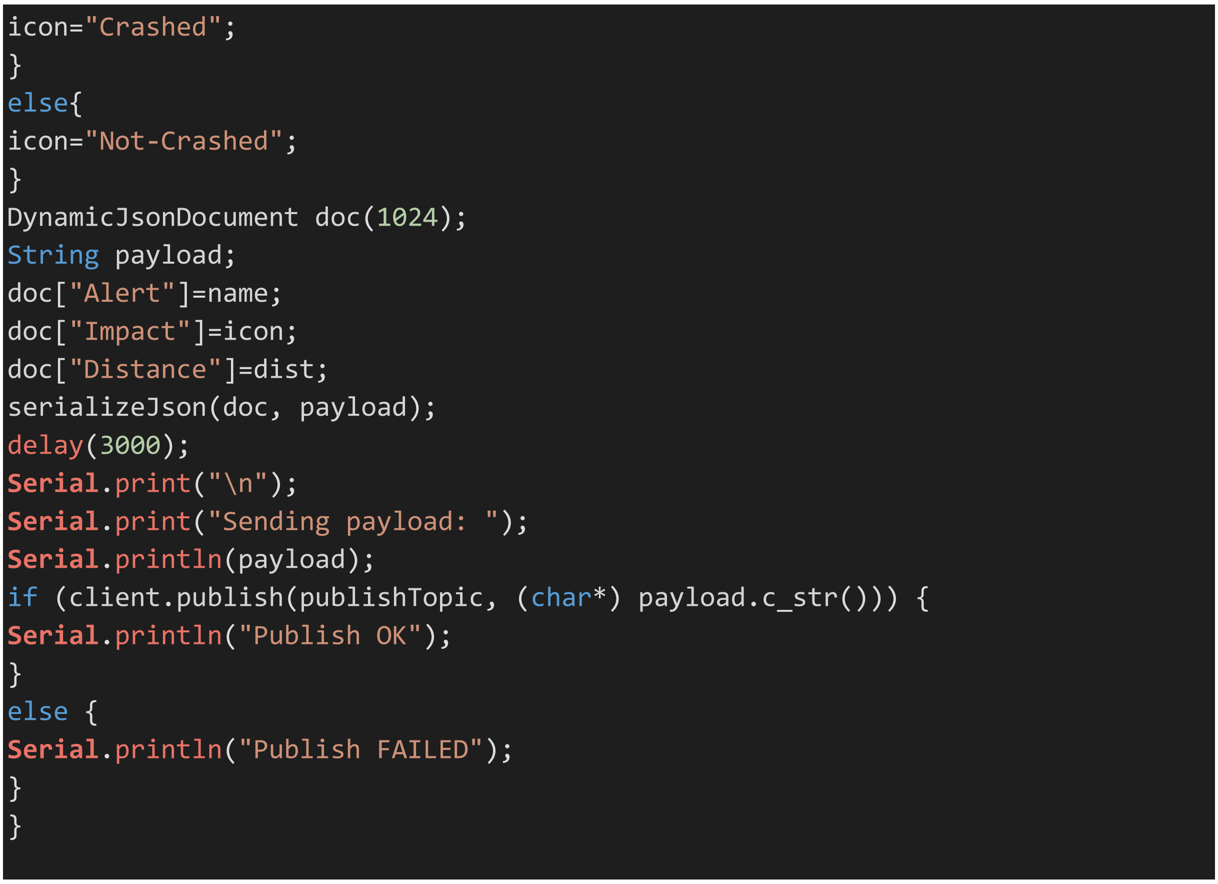
Write code and connections in wokwi for ultra sonic sensor.When ever distance is less than 100 cm send “alert” to IBM cloud and display in device recent events

Date	22-10-2022
Team ID	PNT2022TMID02550
Project Name	Project: Smart Waste management System for Metropolitan Cities
Maximum Marks	2 Marks

CODE:

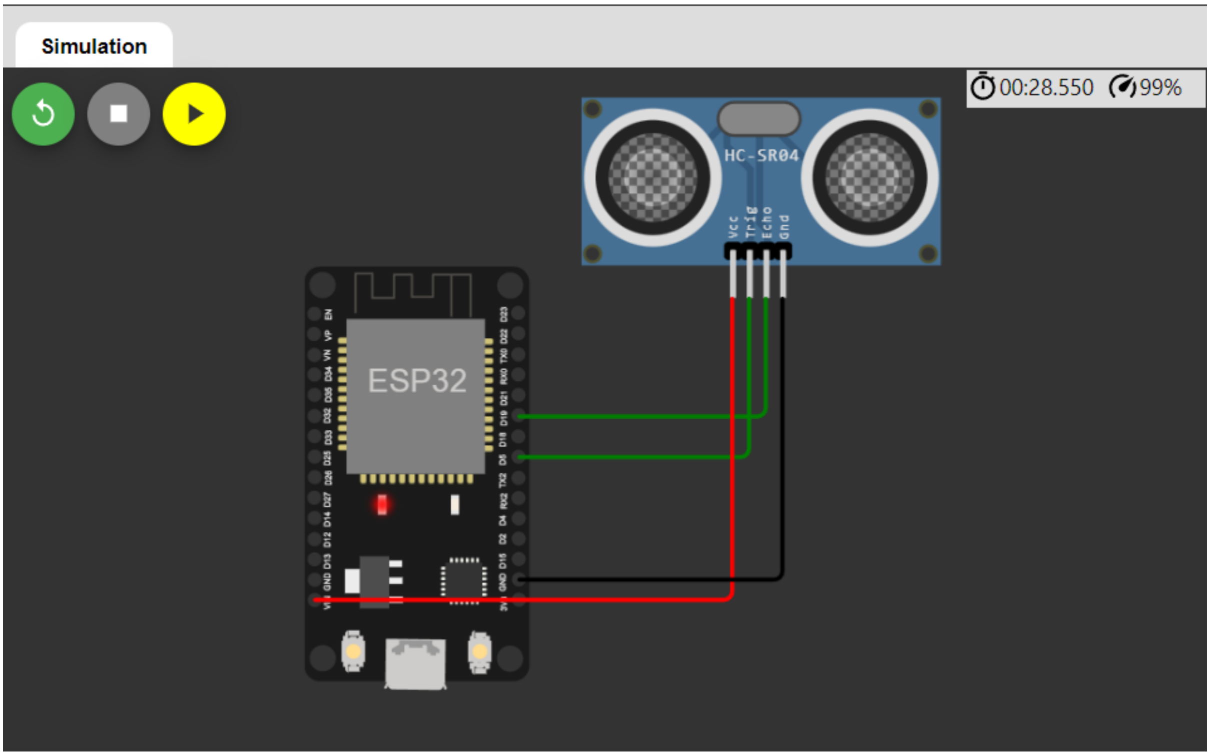
```
#include <WiFi.h>
#include <PubSubClient.h>
#include <ArduinoJson.h>
WiFiClient wifiClient;
#define ORG "nafgr4"
#define DEVICE_TYPE "RaspberryPi"
#define DEVICE_ID "12345"
#define TOKEN "12345678"
#define speed 0.034
char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
char publishTopic[] = "iot-2/evt/status1/fmt/json";
char topic[] = "iot-2/cmd/home/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();
const int trigpin=5;
const int echopin=19;
String command;
String data="";
String name="Alert";
String icon="";
long duration;
int dist;
void setup()
{
Serial.begin(115200);
pinMode(trigpin, OUTPUT);
pinMode(echopin, INPUT);
wifiConnect();
mqttConnect();
```

```
}
void loop() {
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(".");
Serial.print("*");
delay(1000);
}
initManagedDevice();
Serial.println();
}
}
void initManagedDevice() {
if (client.subscribe(topic)) {
Serial.println(client.subscribe(topic));
Serial.println("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){
```

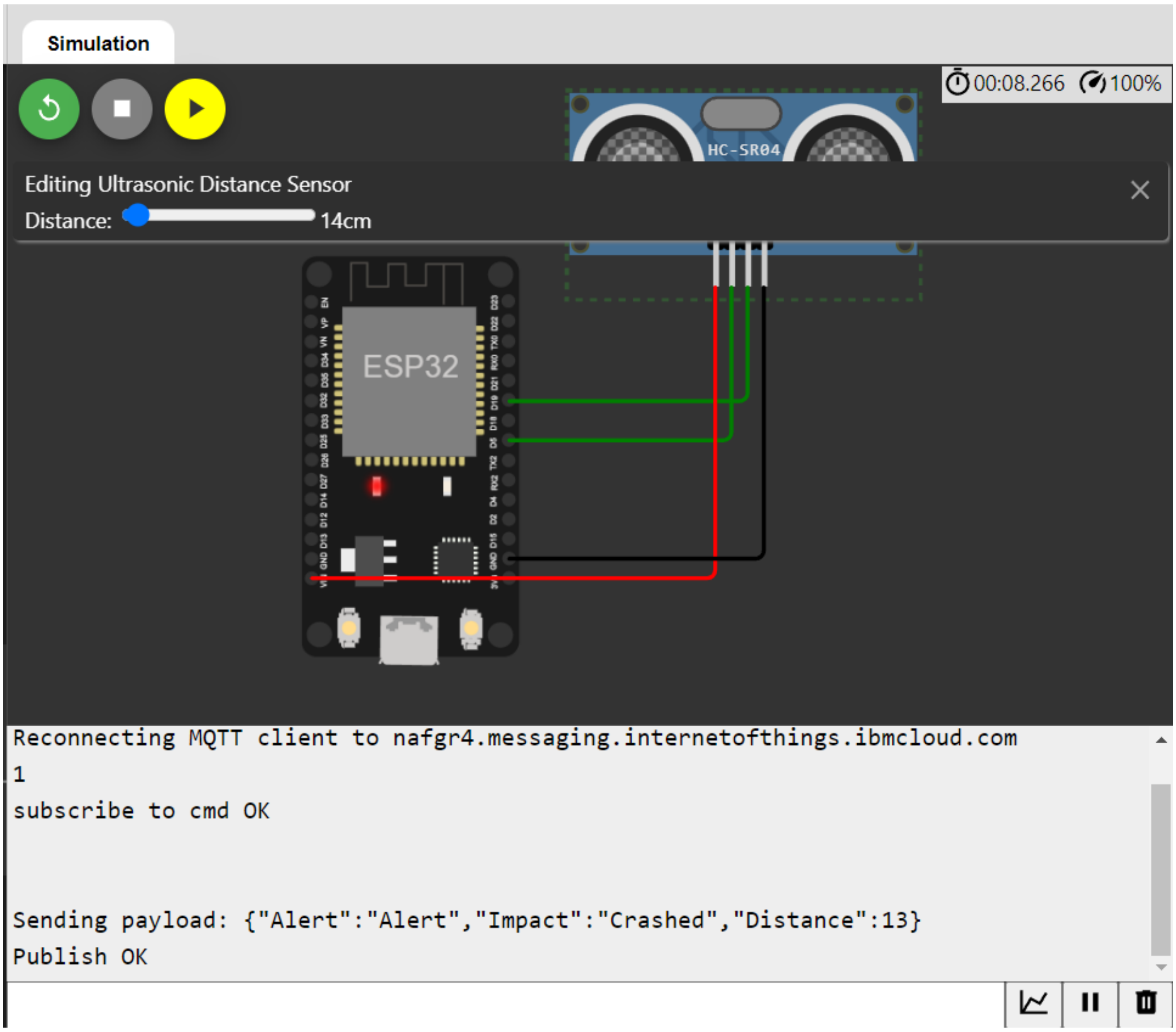


```
icon="Crashed";
}
else{
icon="Not-Crashed";
}
DynamicJsonDocument doc(1024);
String payload;
doc["Alert"]=name;
doc["Impact"]=icon;
doc["Distance"]=dist;
serializeJson(doc, payload);
delay(3000);
Serial.print("\n");
Serial.print("Sending payload: ");
Serial.println(payload);
if (client.publish(publishTopic, (char*) payload.c_str())) {
Serial.println("Publish OK");
}
else {
Serial.println("Publish FAILED");
}
}
```

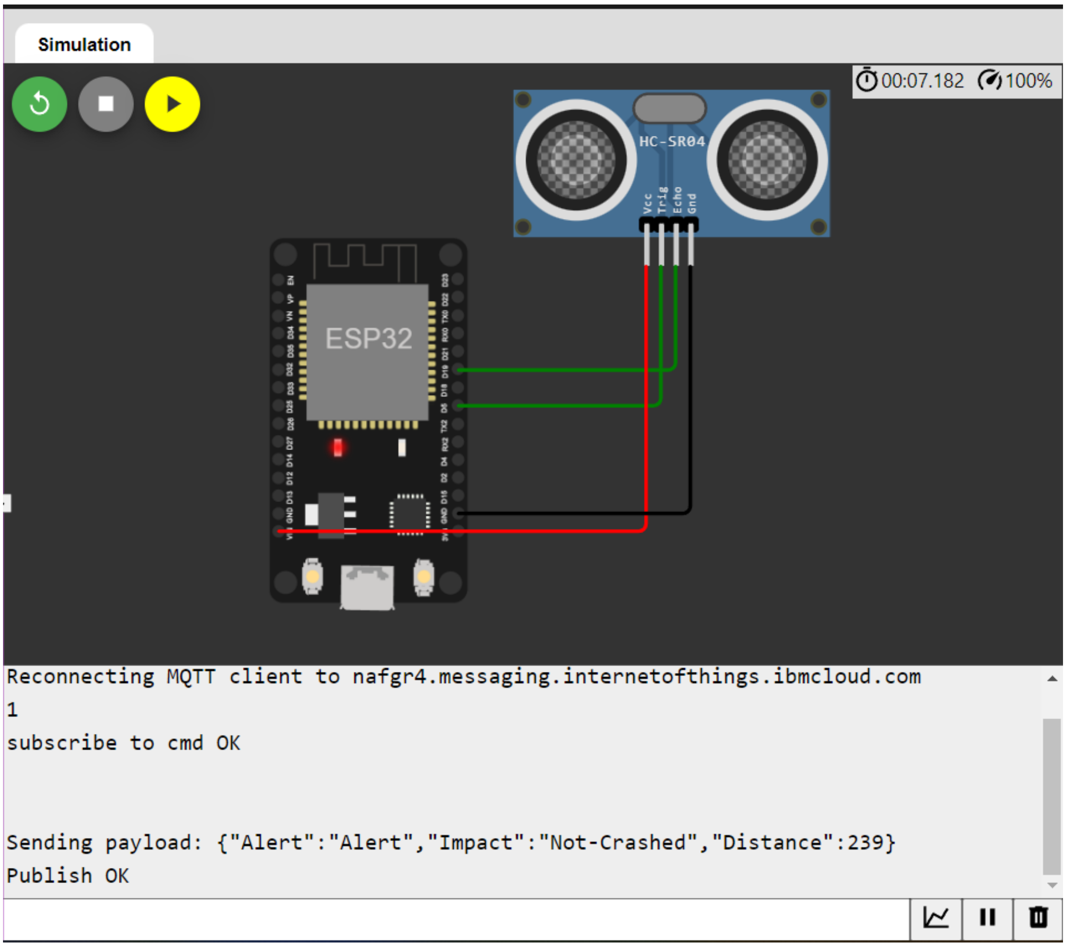
CIRCUIT



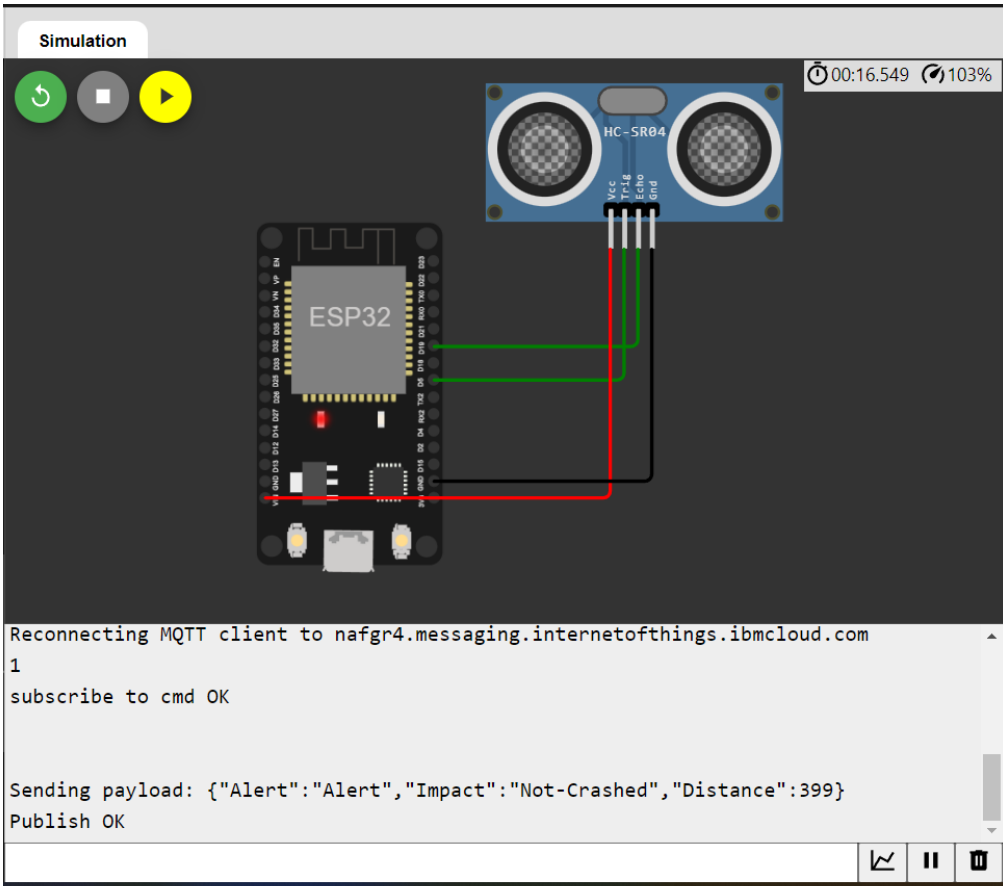
OUTPUT



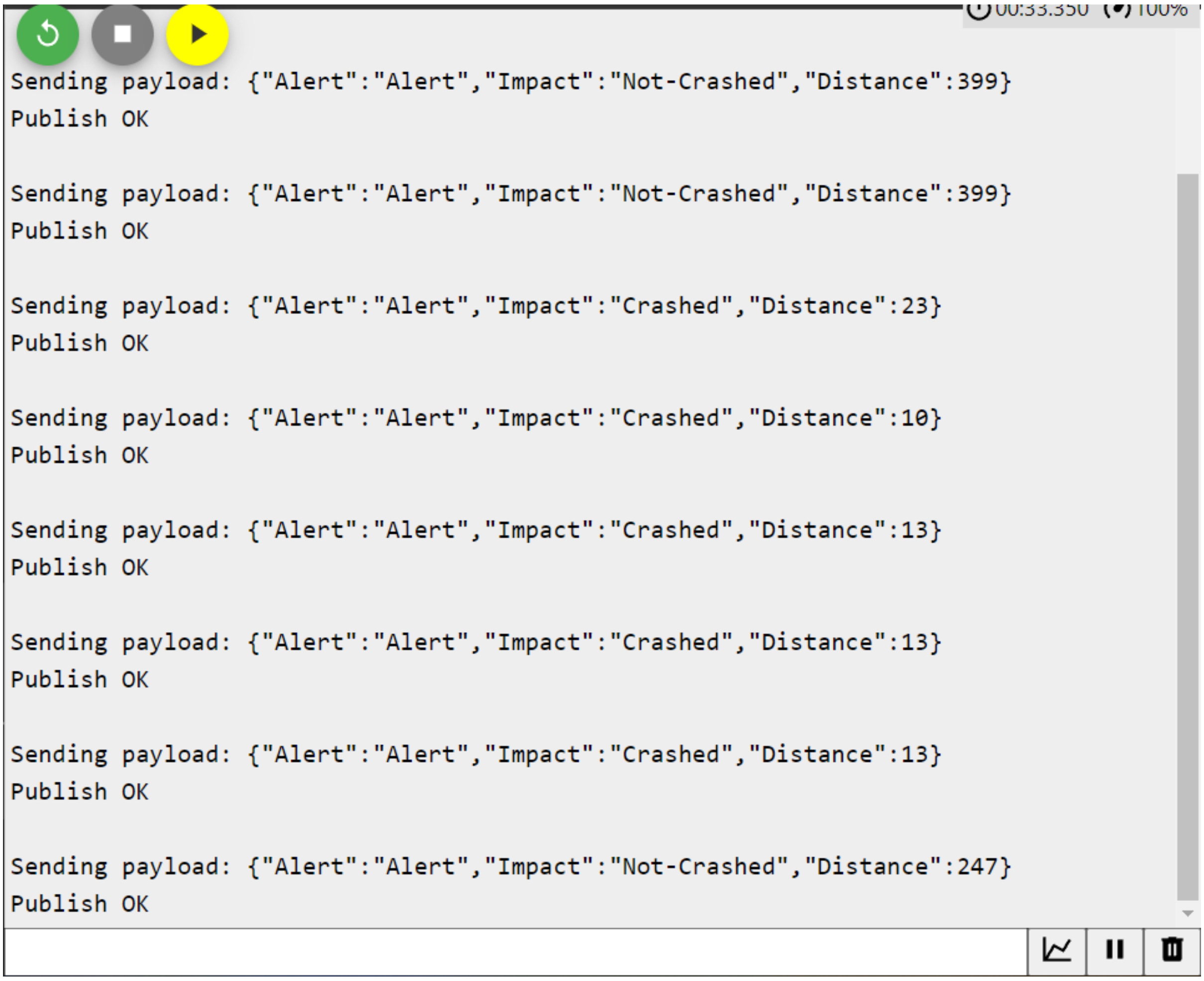
```
Reconnecting MQTT client to nafgr4.messaging.internetofthings.ibmcloud.com
1
subscribe to cmd OK


Sending payload: {"Alert":"Alert","Impact":"Crashed","Distance":13}
Publish OK
```



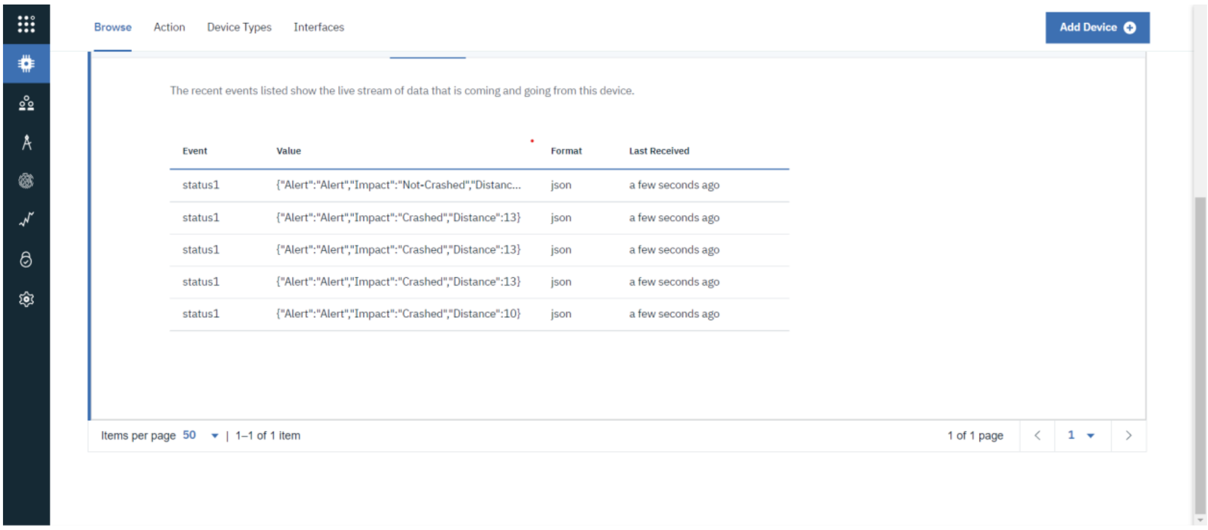
```
Reconnecting MQTT client to nafgr4.messaging.internetofthings.ibmcloud.com
1
subscribe to cmd OK


Sending payload: {"Alert":"Alert","Impact":"Not-Crashed","Distance":239}
Publish OK
```



```
Reconnecting MQTT client to nafgr4.messaging.internetofthings.ibmcloud.com
1
subscribe to cmd OK


Sending payload: {"Alert":"Alert","Impact":"Not-Crashed","Distance":399}
Publish OK
```

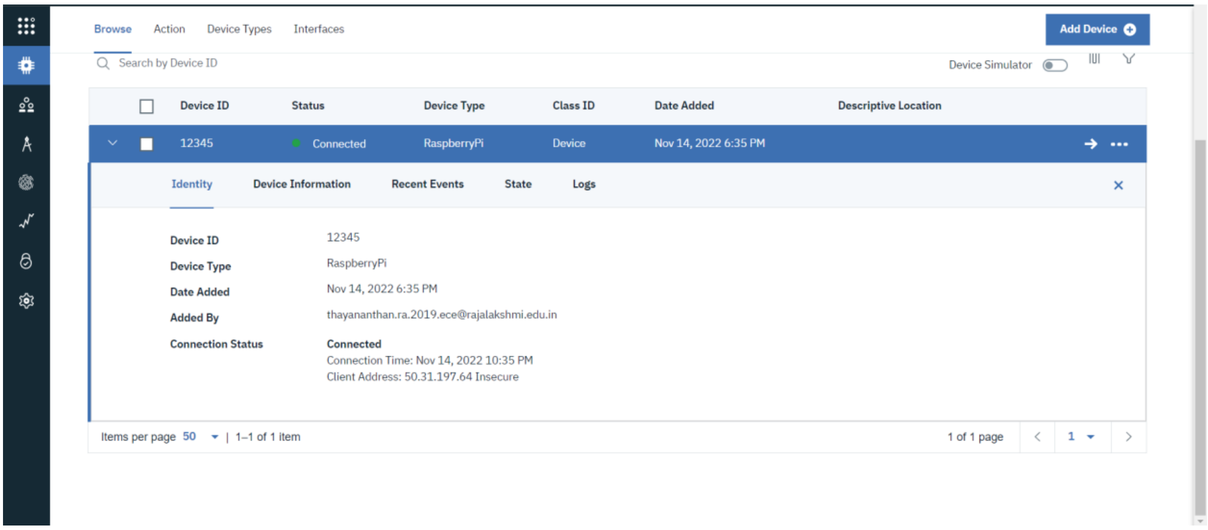


```
Sending payload: {"Alert":"Alert","Impact":"Not-Crashed","Distance":399}
Publish OK

Sending payload: {"Alert":"Alert","Impact":"Not-Crashed","Distance":399}
Publish OK

Sending payload: {"Alert":"Alert","Impact":"Crashed","Distance":23}
Publish OK

Sending payload: {"Alert":"Alert","Impact":"Crashed","Distance":10}
Publish OK

Sending payload: {"Alert":"Alert","Impact":"Crashed","Distance":13}
Publish OK

Sending payload: {"Alert":"Alert","Impact":"Crashed","Distance":13}
Publish OK

Sending payload: {"Alert":"Alert","Impact":"Crashed","Distance":13}
Publish OK

Sending payload: {"Alert":"Alert","Impact":"Not-Crashed","Distance":247}
Publish OK
```



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

Event	Value	Format	Last Received
status1	{"Alert":"Alert","Impact":"Not-Crashed","Distanc...	json	a few seconds ago
status1	{"Alert":"Alert","Impact":"Crashed","Distance":13}	json	a few seconds ago
status1	{"Alert":"Alert","Impact":"Crashed","Distance":13}	json	a few seconds ago
status1	{"Alert":"Alert","Impact":"Crashed","Distance":13}	json	a few seconds ago
status1	{"Alert":"Alert","Impact":"Crashed","Distance":10}	json	a few seconds ago



Device ID	Status	Device Type	Class ID	Date Added	Descriptive Location
12345	Connected	RaspberryPi	Device	Nov 14, 2022 6:35 PM	

Device ID	12345
Device Type	RaspberryPi
Date Added	Nov 14, 2022 6:35 PM
Added By	thayananthan.ra.2019.ece@rajalakshmi.edu.in
Connection Status	Connected Connection Time: Nov 14, 2022 10:35 PM Client Address: 50.31.197.64 Insecure

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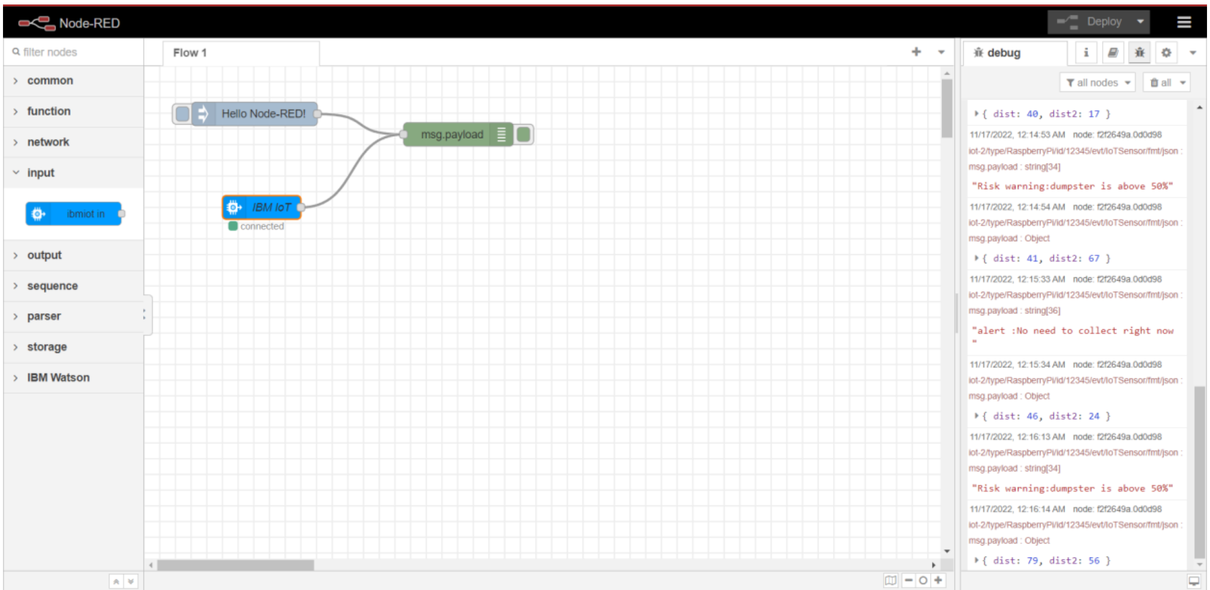

```
{ dist: 40, dist2: 17 }
11/17/2022, 12:14:53 AM   node: f2f2649a.0d0d98
iot-2/type/RaspberryPi/id/12345/evt/IoTSensor/fmt/json :
msg.payload : string[34]
"Risk warning:dumpster is above 50%"
11/17/2022, 12:14:54 AM   node: f2f2649a.0d0d98
iot-2/type/RaspberryPi/id/12345/evt/IoTSensor/fmt/json :
msg.payload : Object
{ dist: 41, dist2: 67 }
11/17/2022, 12:15:33 AM   node: f2f2649a.0d0d98
iot-2/type/RaspberryPi/id/12345/evt/IoTSensor/fmt/json :
msg.payload : string[36]
"alert :No need to collect right now
"
11/17/2022, 12:15:34 AM   node: f2f2649a.0d0d98
iot-2/type/RaspberryPi/id/12345/evt/IoTSensor/fmt/json :
msg.payload : Object
{ dist: 46, dist2: 24 }
11/17/2022, 12:16:13 AM   node: f2f2649a.0d0d98
iot-2/type/RaspberryPi/id/12345/evt/IoTSensor/fmt/json :
msg.payload : string[34]
"Risk warning:dumpster is above 50%"
11/17/2022, 12:16:14 AM   node: f2f2649a.0d0d98
iot-2/type/RaspberryPi/id/12345/evt/IoTSensor/fmt/json :
msg.payload : Object
{ dist: 79, dist2: 56 }
```

Link:

https://wokwi.com/projects/348322336437437012