Assignment -4

Assignment Date	24 Oct 2022
Team ID	PNT2022TMID28615
Student Name	SARANRAJ.P
Project Name	GAS LEAKAGE MONITORING AND ALERTING SYSTEMS FOR INDUSTRIES

Question:

Write a Code and Connections in wokwi for **ultrasonic sensor**.Whenever distance is less than 100 cms send **"alert"** to ibm cloud and display in device recent events **Code:**

```
#include <WiFi.h>
#include <PubSubClient.h>
WiFiClient wifiClient;
String data3;
#define ORG "z60lnd"
#define DEVICE_TYPE "Arduino"
#define DEVICE_ID "98765"
#define TOKEN "987654321"
#define speed 0.034  #define led 14 char server[] = ORG ".messaging.internetofthings.ibmcloud.com"; char publishTopic[] = "iot-
2/evt/karthi/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);
```

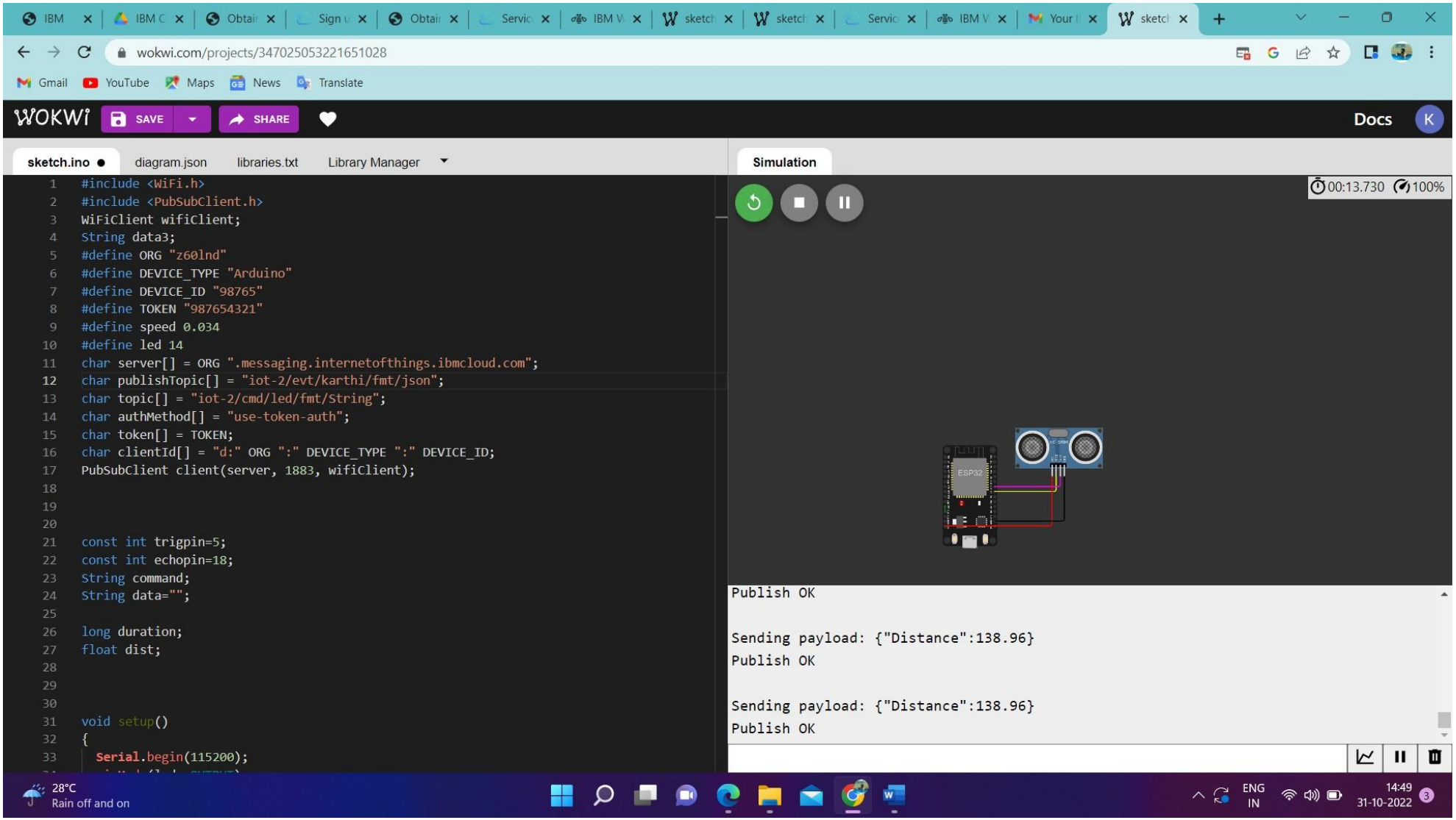
```
  publishData();
delay(500);
   if (!client.loop())
{     mqttConnect();
  }
}
void wifiConnect() {
  Serial.print("Connecting to ");
Serial.print("Wifi");   WiFi.begin("Wokwi-GUEST", "",
6);   while (WiFi.status() != WL_CONNECTED) {
delay(500);
    Serial.print(".");
  }
  Serial.print("WiFi connected, 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(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;
```

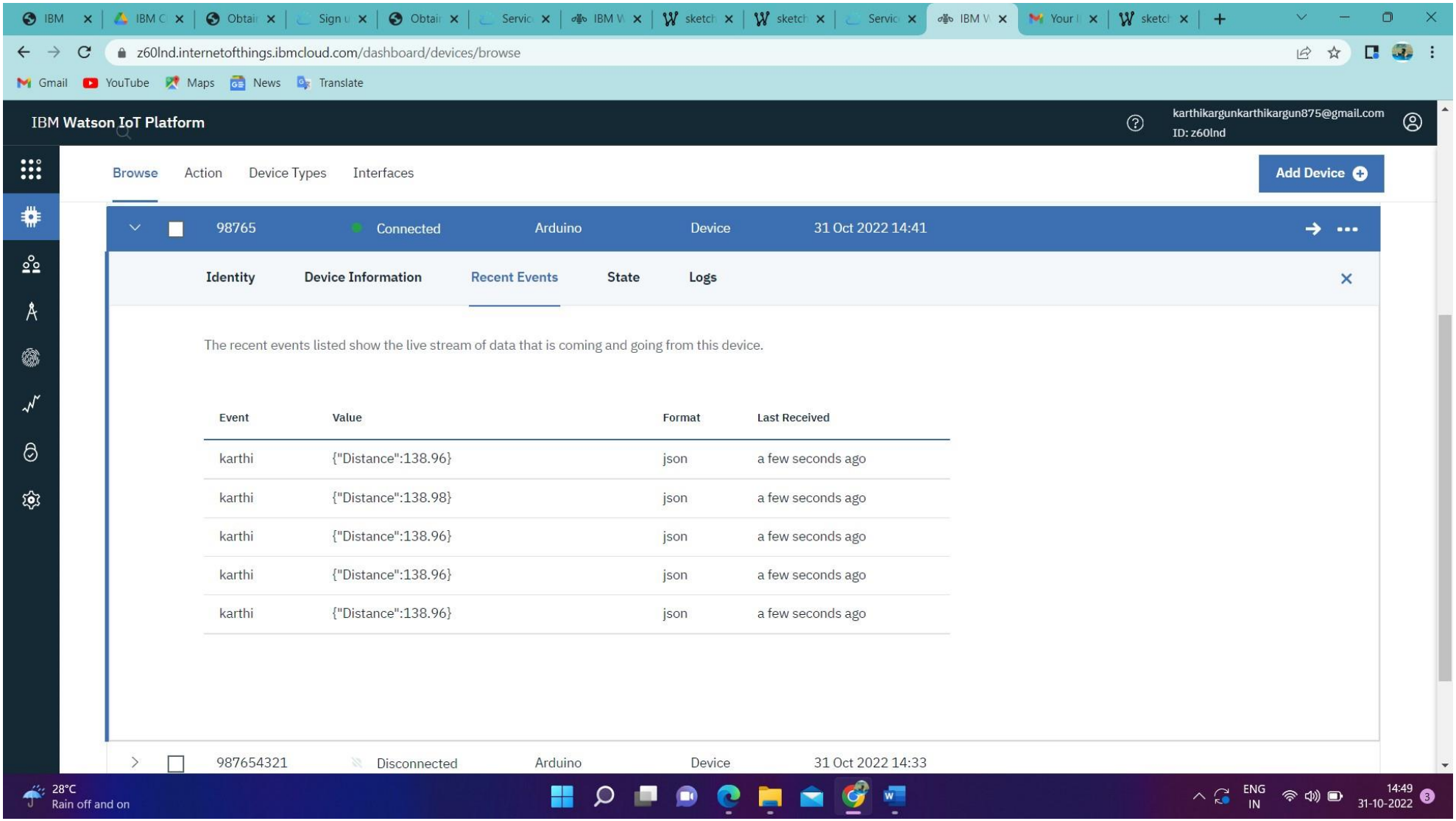
```
    payload += "}";

    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:

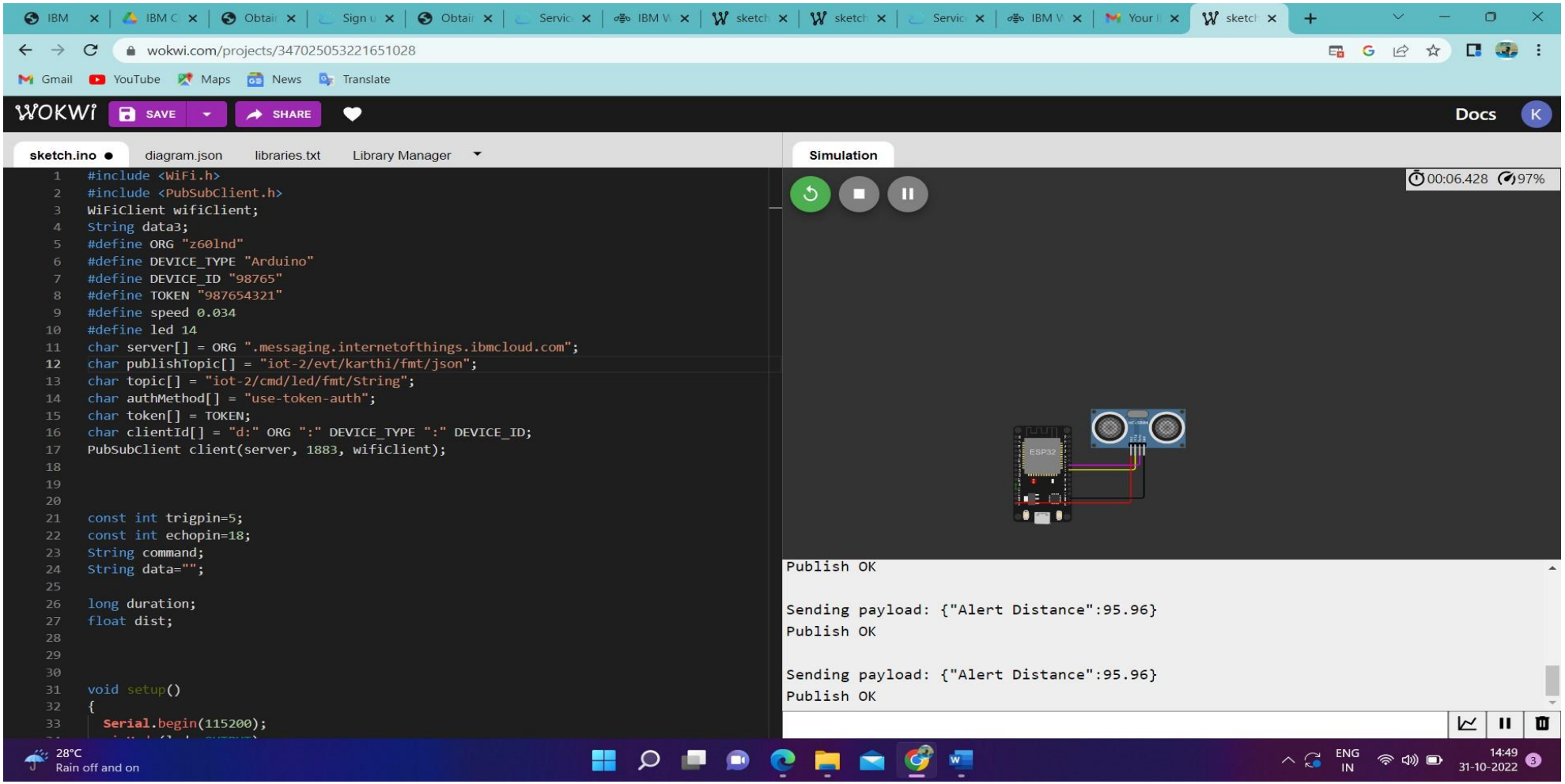
1.When distance greater than 100 cm


wokwi.com/projects/347025053221651028
WOKWI
SAVE
SHARE
Docs
sketch.ino
diagram.json
libraries.txt
Library Manager
Simulation
00:13.730
100%
#include <WiFi.h>
#include <PubSubClient.h>
WiFiClient wifiClient;
String data3;
#define ORG "z60lnd"
#define DEVICE_TYPE "Arduino"
#define DEVICE_ID "98765"
#define TOKEN "987654321"
#define speed 0.034
#define led 14
char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
char publishTopic[] = "iot-2/evt/karthi/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);
ESP32
Publish OK
Sending payload: {"Distance":138.96}
Publish OK
Sending payload: {"Distance":138.96}
Publish OK
28°C
Rain off and on
ENG
IN
14:49
31-10-2022

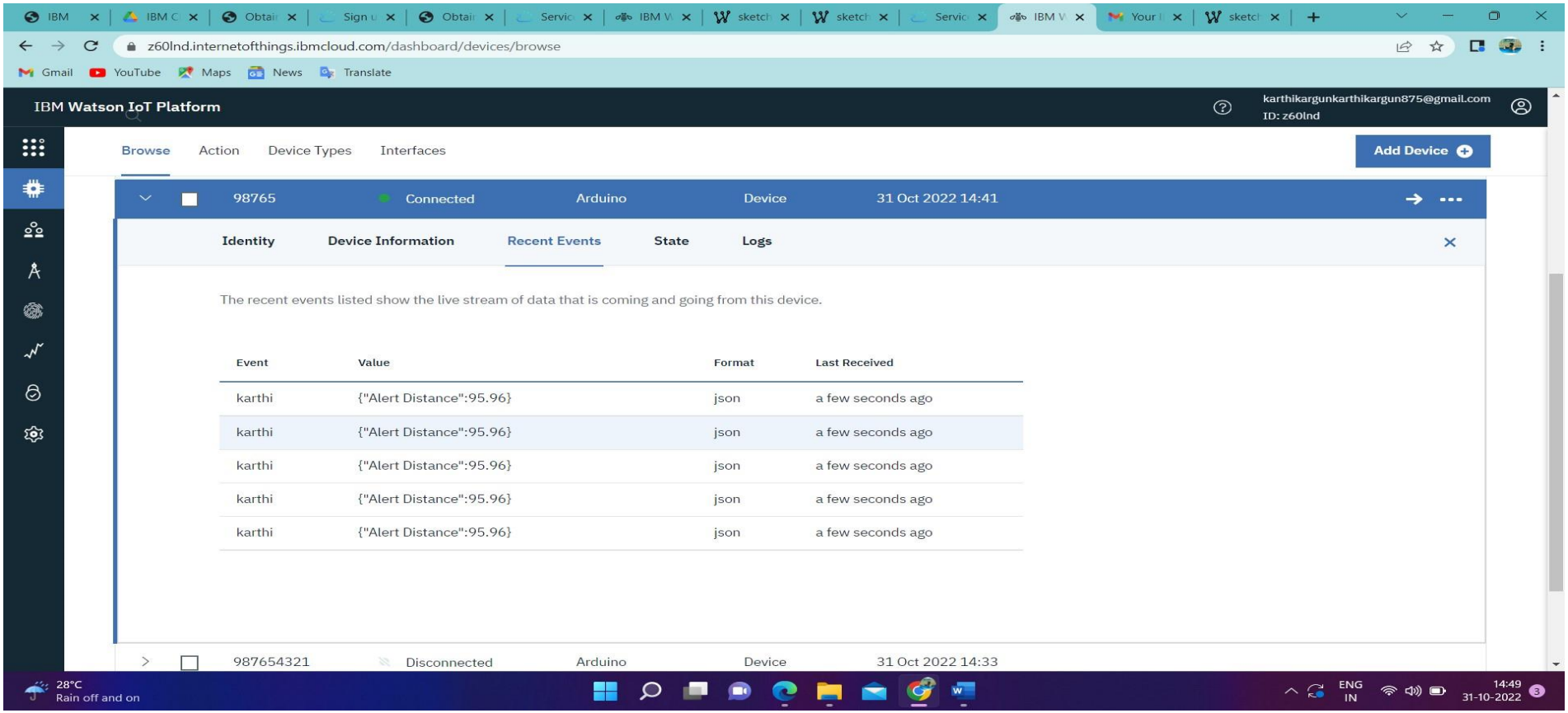
IBM RECENT EVENTS:



2.When distance less than 100 cm



IBM RECENT EVENTS:



LINK:

https://wokwi.com/projects/347025053221651028