Assignment -4

Assignment Date	28 Oct 2022
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Project Name	Smart Waste Management System for Metropolitan Cities.

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>//library for wifi
#include <PubSubClient.h>//library for MQtt
WiFiClient wifiClient;
String data3;
#define ORG "g05aq3"
#define DEVICE_TYPE "selva"
#define DEVICE_ID "selva_assignment_4"
#define TOKEN "qwertyuio"
#define speed 0.034  #define led 14 char server[] = ORG
".messaging.internetofthings.ibmcloud.com"; char publishTopic[]
= "iot-2/evt/selva/fmt/json"; char topic[] = "iot-
```

```
2/cmd/status/fmt/String";   char authMethod[] = "use-tokenauth";
char token[] = TOKEN;
char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID;
PubSubClient client(server, 1883, wifiClient);


const int trigpin=19;
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()
 {
```

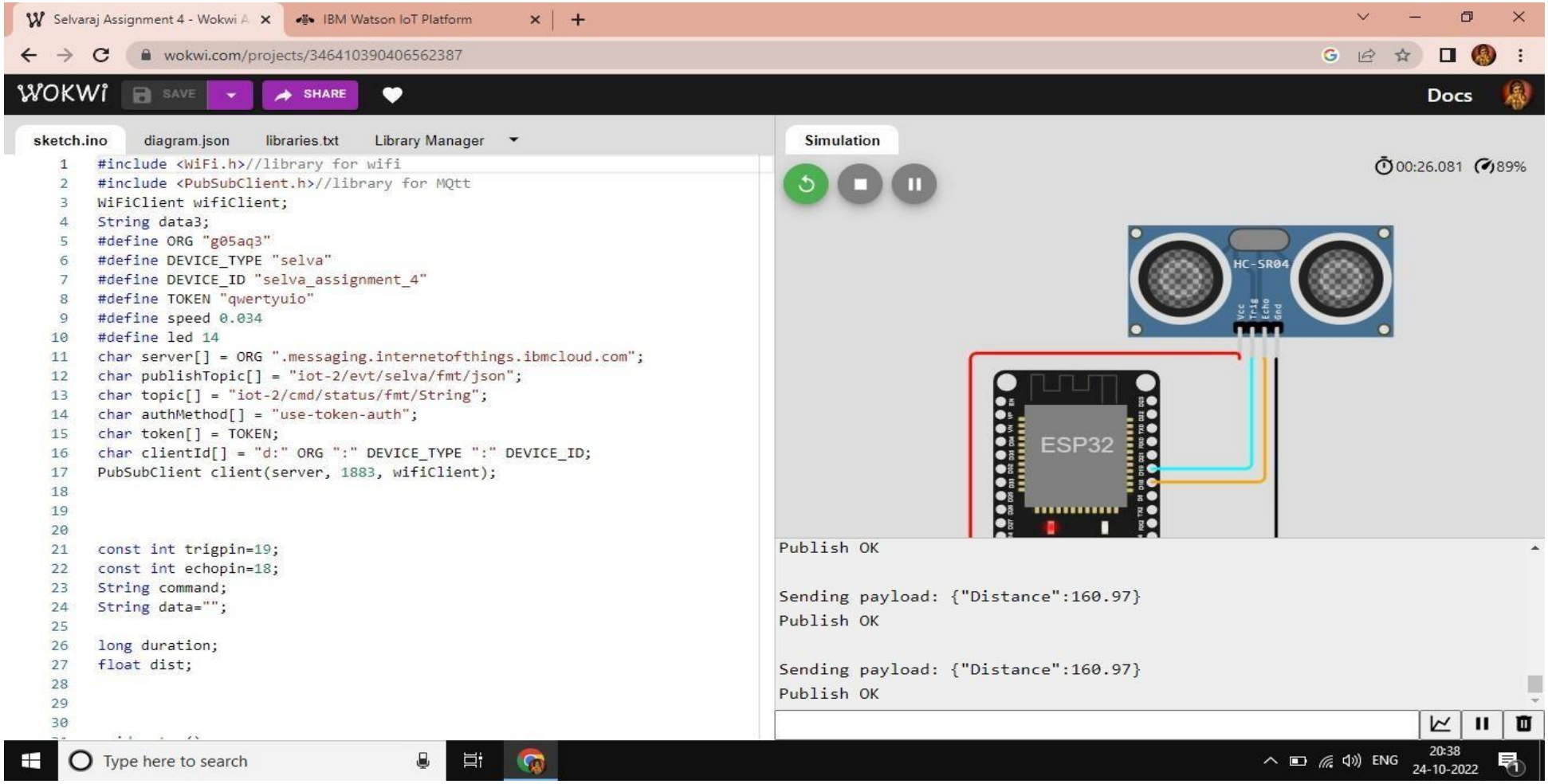
```
  Serial.print("Connecting to "); Serial.print("Wifi");
WiFi.begin("Wokwi-GUEST", "", 6);   while
(WiFi.status() != WL_CONNECTED)
  {     delay(500);
    Serial.print(".");
  }
  Serial.print("WiFi connected, IP address: "); Serial.println(WiFi.localIP());
 }
void mqttConnect()
{   if
(!client.connected())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

   }
```

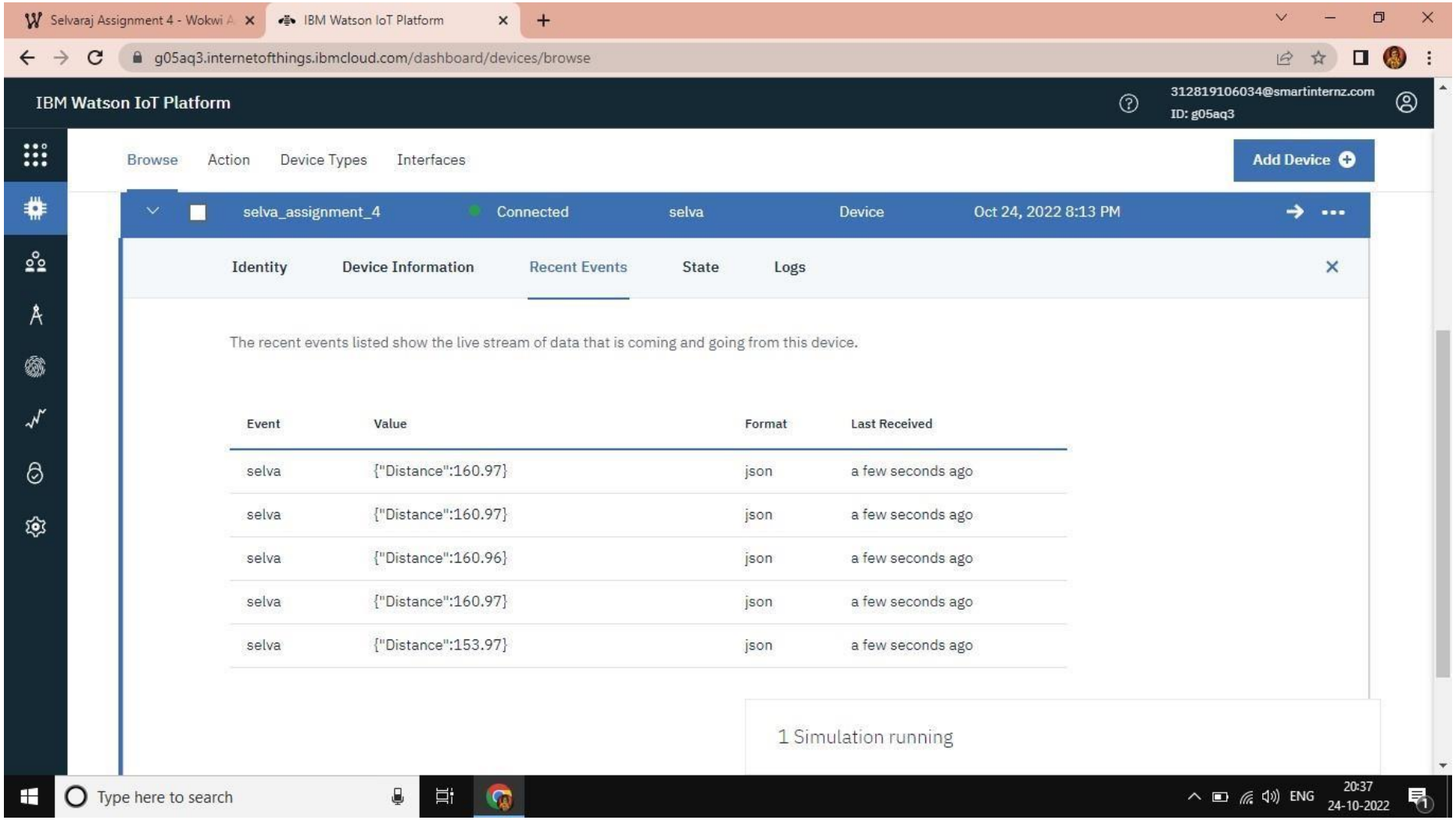
```
}
```

Output:

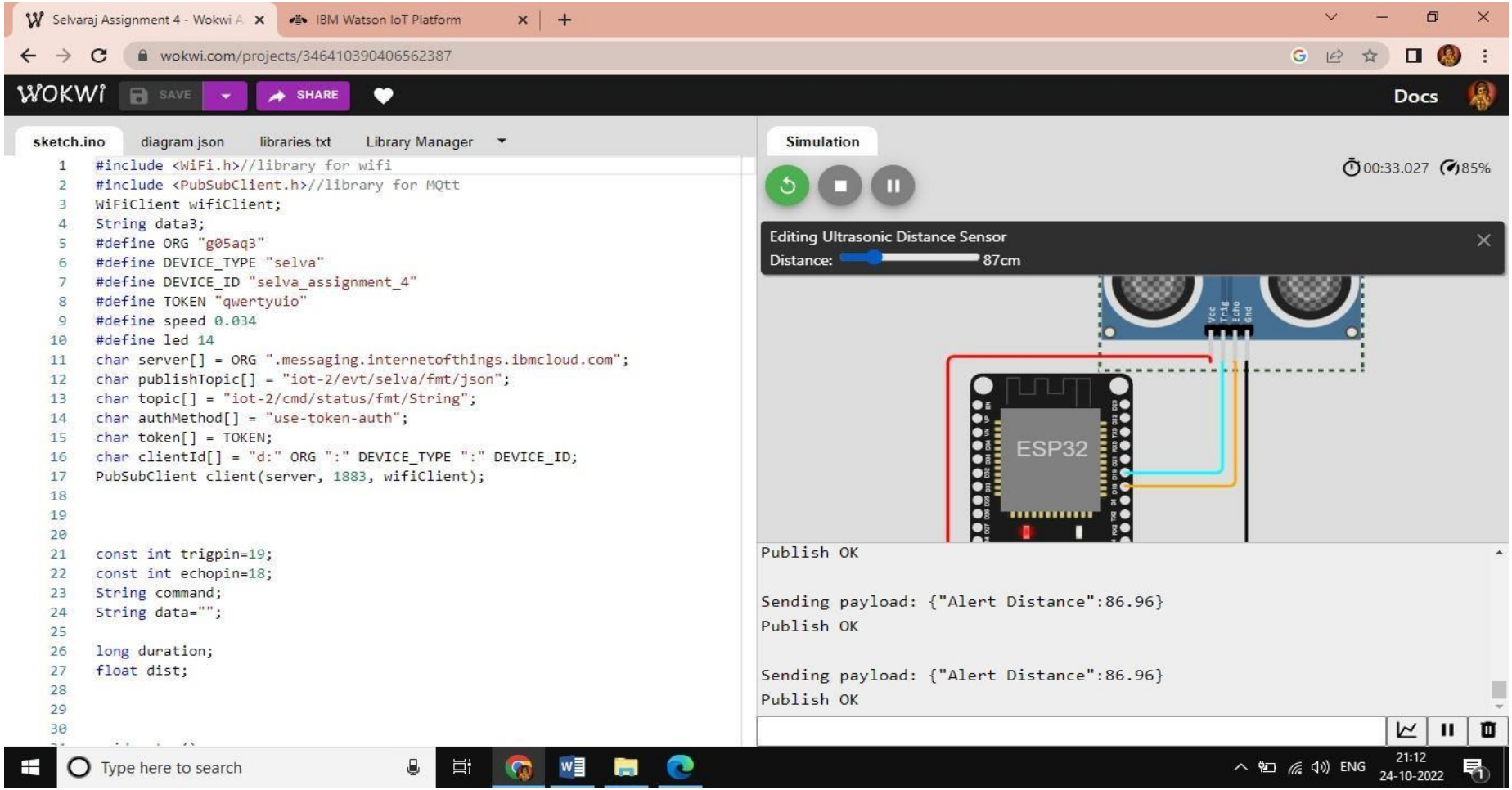
1.When distance greater than 100 cm



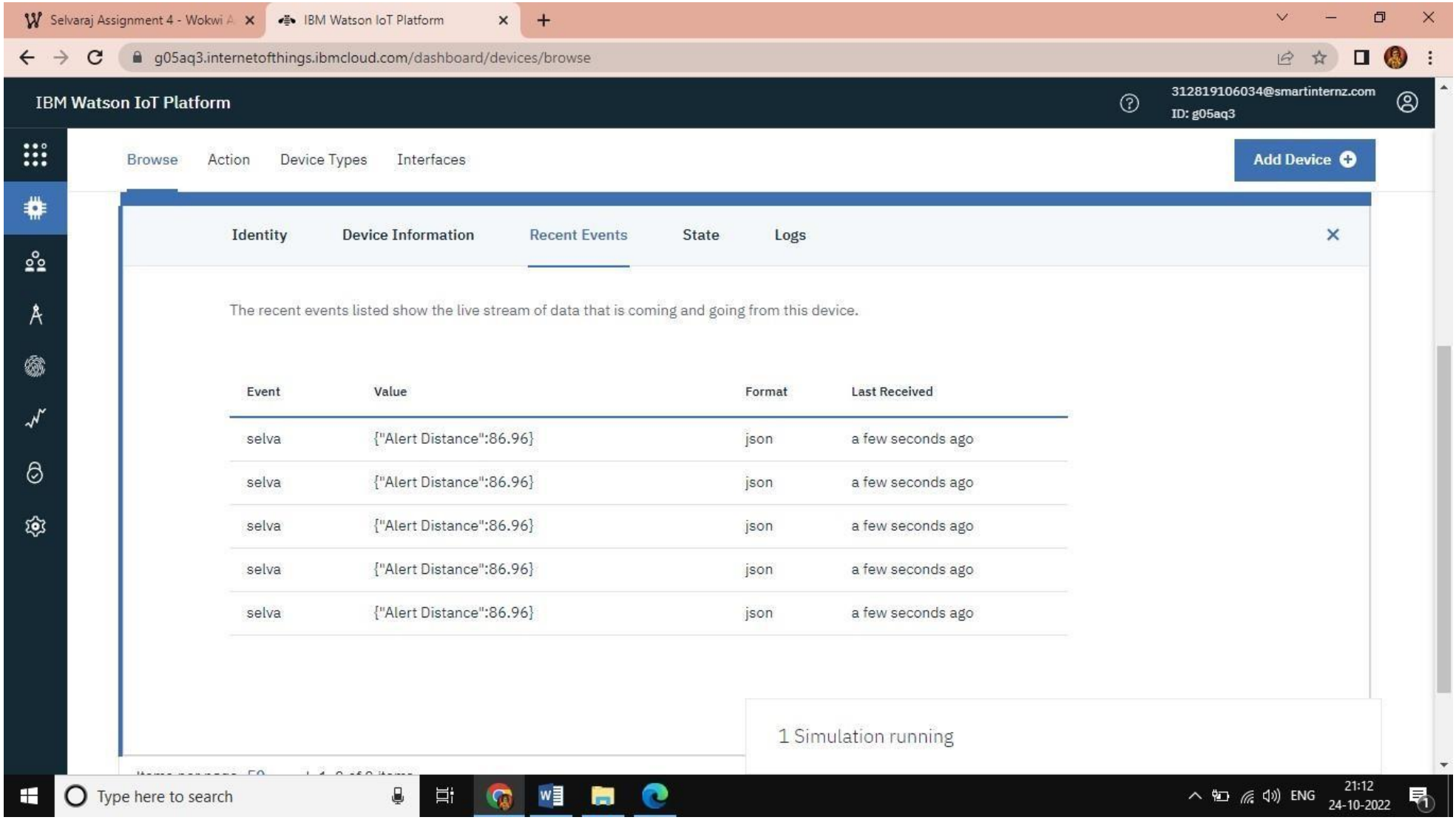
IBM RECENT EVENTS:



2.When distance less than 100 cm



IBM RECENT EVENTS:


Selvaraj Assignment 4 - Wokwi A
IBM Watson IoT Platform
g05aq3.internetofthings.ibmcloud.com/dashboard/devices/browse
IBM Watson IoT Platform
312819106034@smartinternz.com
ID: g05aq3
Browse
Action
Device Types
Interfaces
Add Device
Identity
Device Information
Recent Events
State
Logs
The recent events listed show the live stream of data that is coming and going from this device.
Event
Value
Format
Last Received
selva
{"Alert Distance":86.96}
json
a few seconds ago
selva
{"Alert Distance":86.96}
json
a few seconds ago
selva
{"Alert Distance":86.96}
json
a few seconds ago
selva
{"Alert Distance":86.96}
json
a few seconds ago
selva
{"Alert Distance":86.96}
json
a few seconds ago
1 Simulation running
Type here to search
ENG
21:12
24-10-2022