Assignment -4

Assignment Date	1 nov 2022
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Project Name	SmartFarmer-IoT Enabled Smart Farming Application

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-token-auth";
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()
 {
```

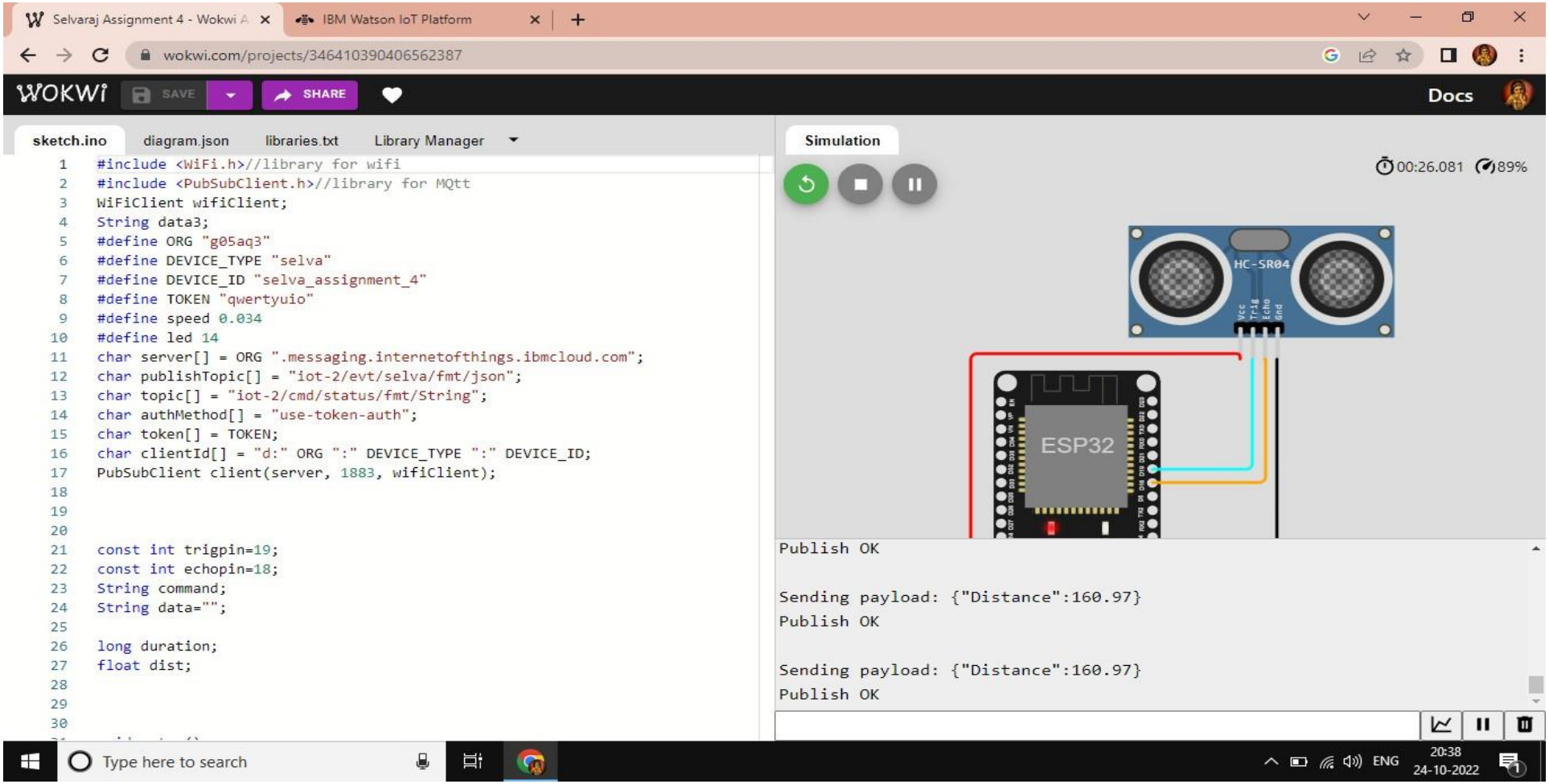
```
  bool isNearby = dist < 100;
  digitalWrite(led, isNearby);

  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;
```

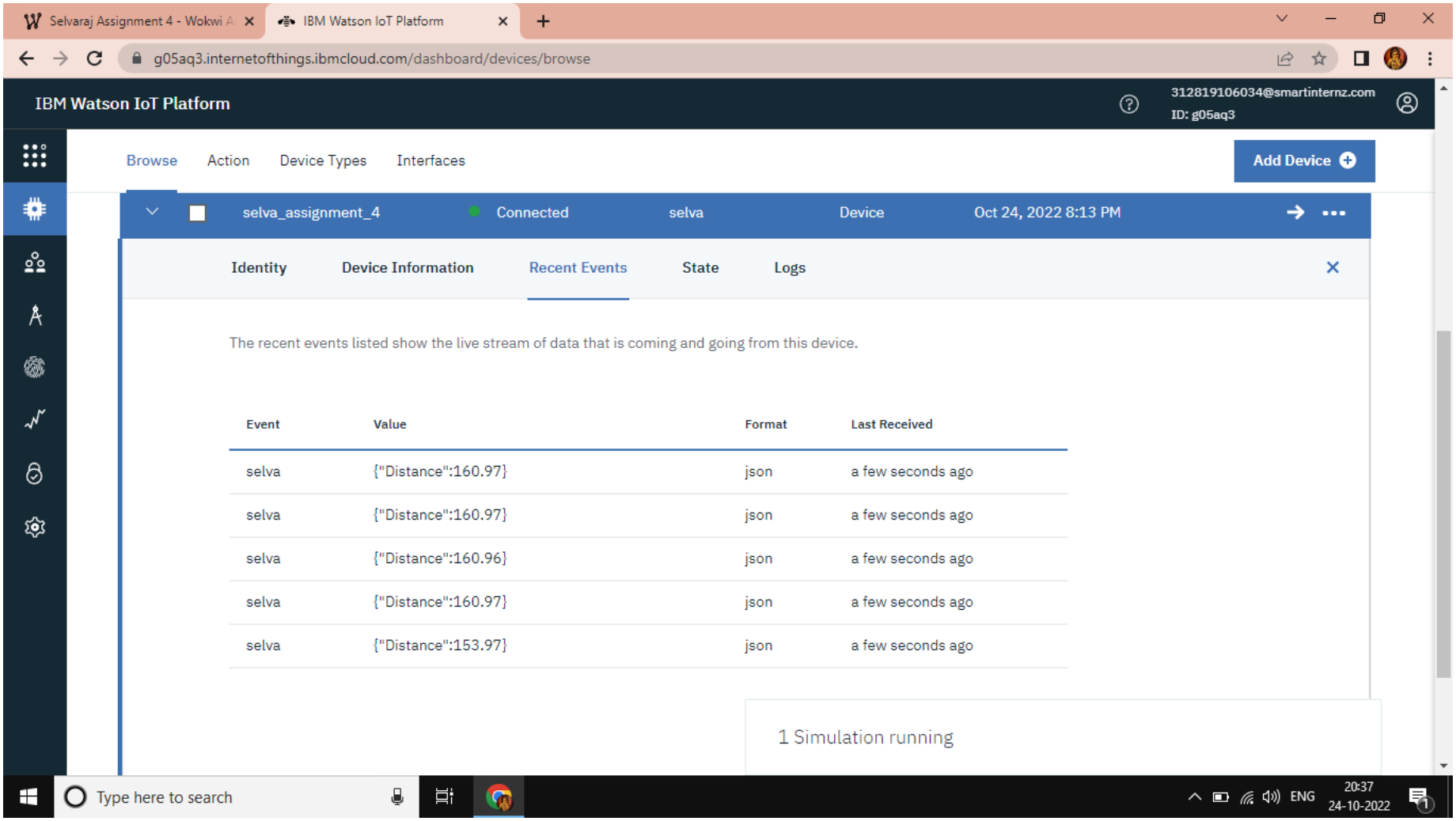
```
    payload += "}";

    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:

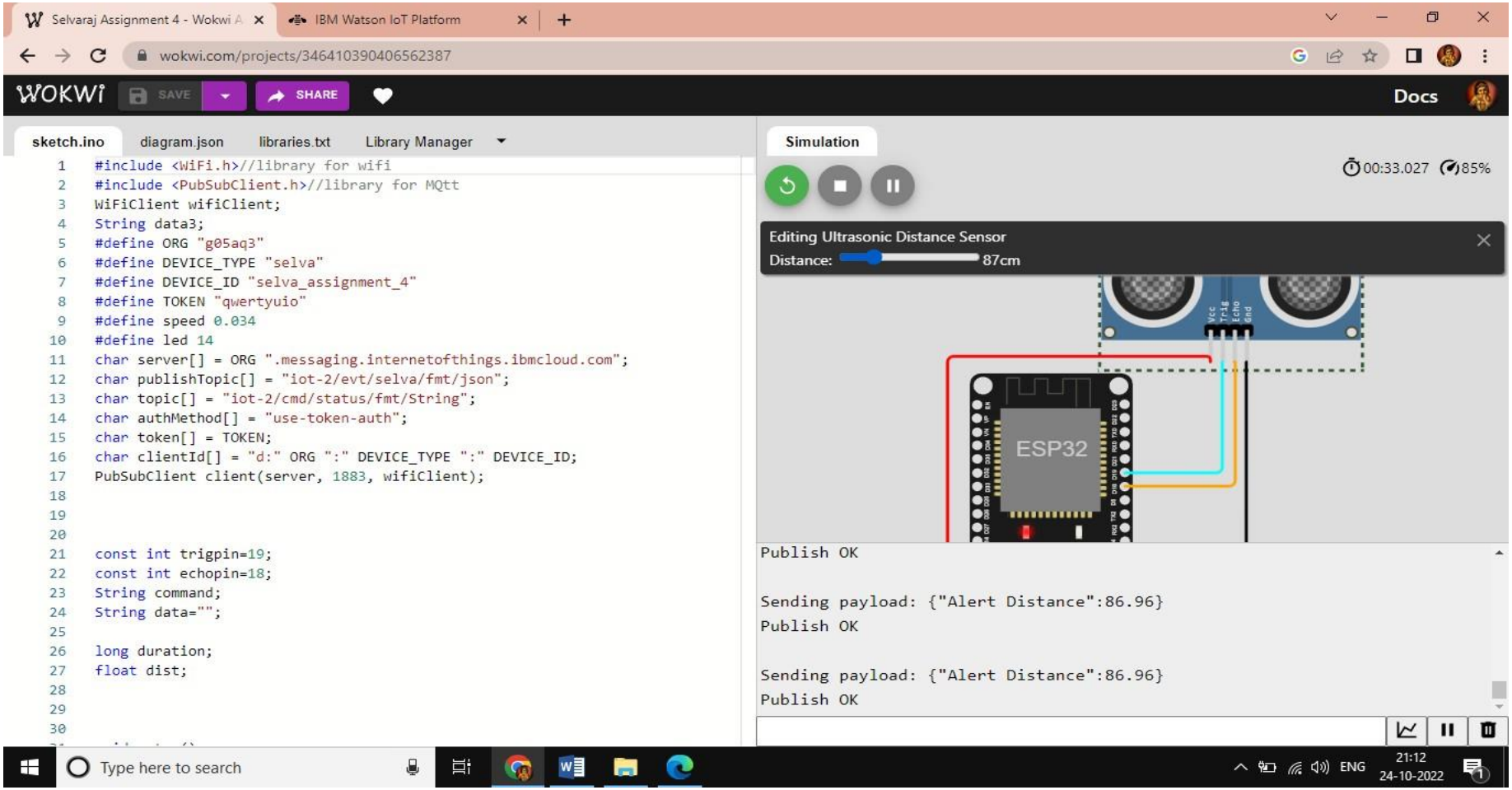
1. When distance greater than 100 cm



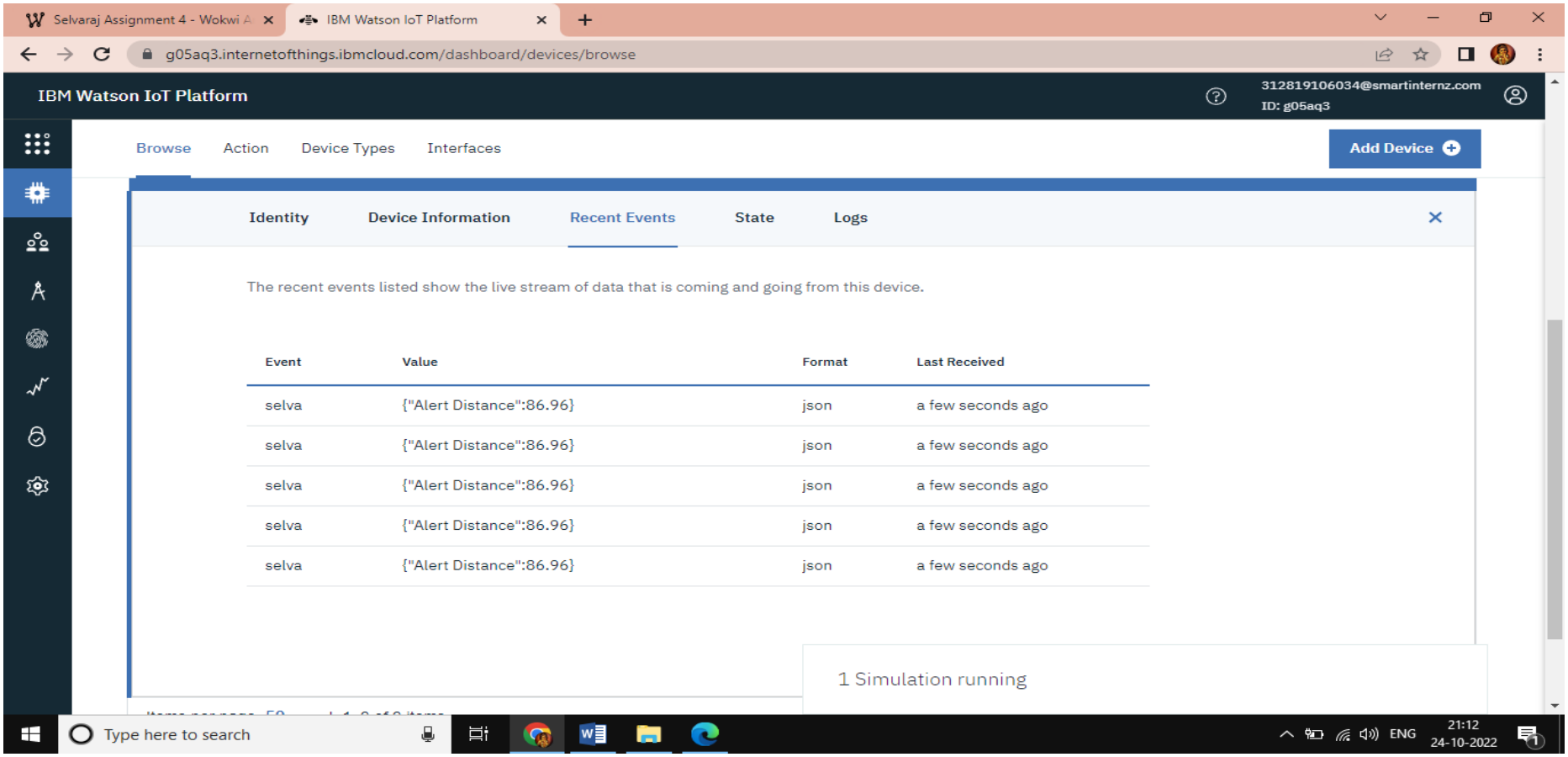
IBM RECENT EVENTS:



2. When distance less than 100 cm



IBM RECENT EVENTS:



WOKWI LINK :- https://wokwi.com/projects/346410390406562387