Assignment -4

Assignment Date	02 November 2022
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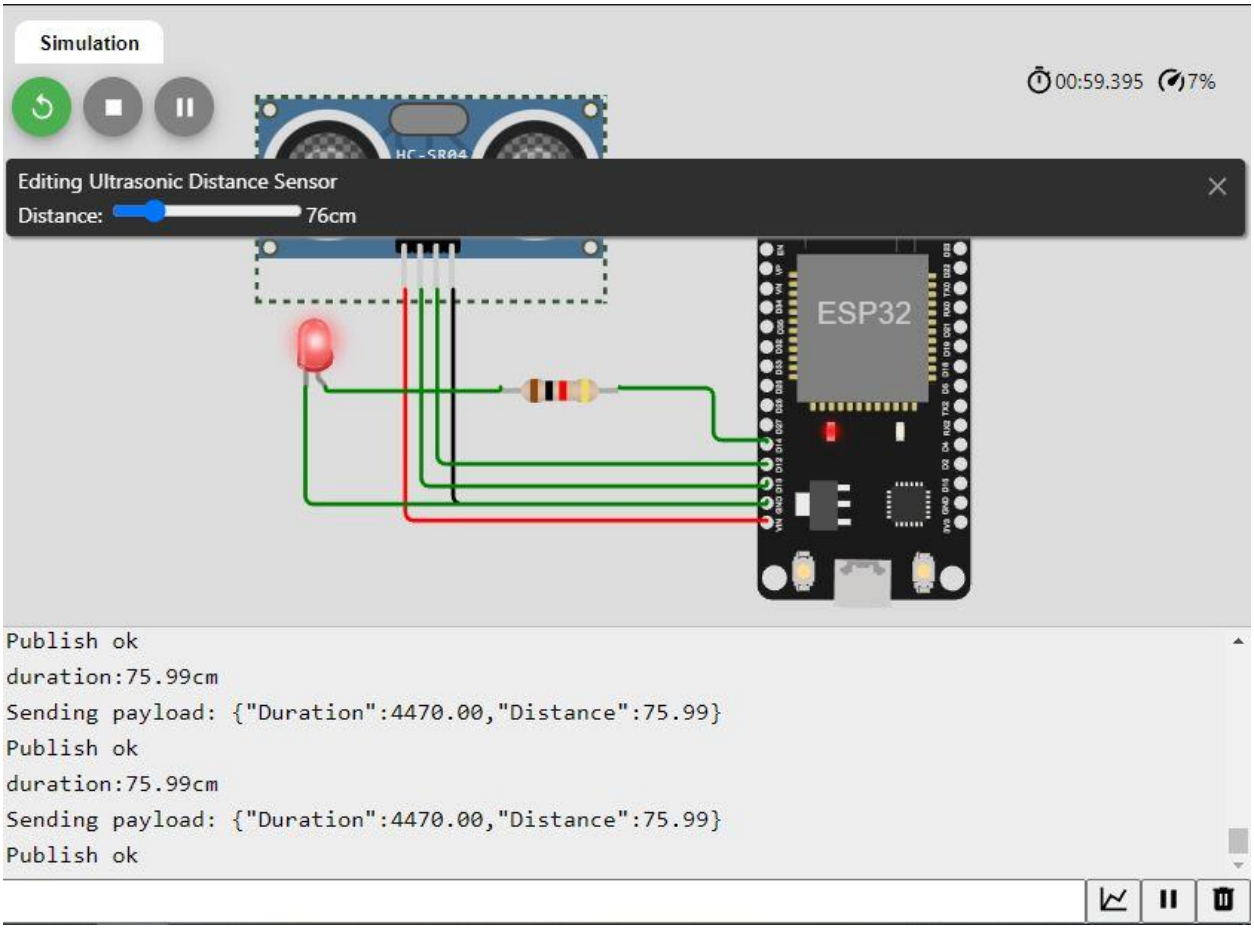
Question:

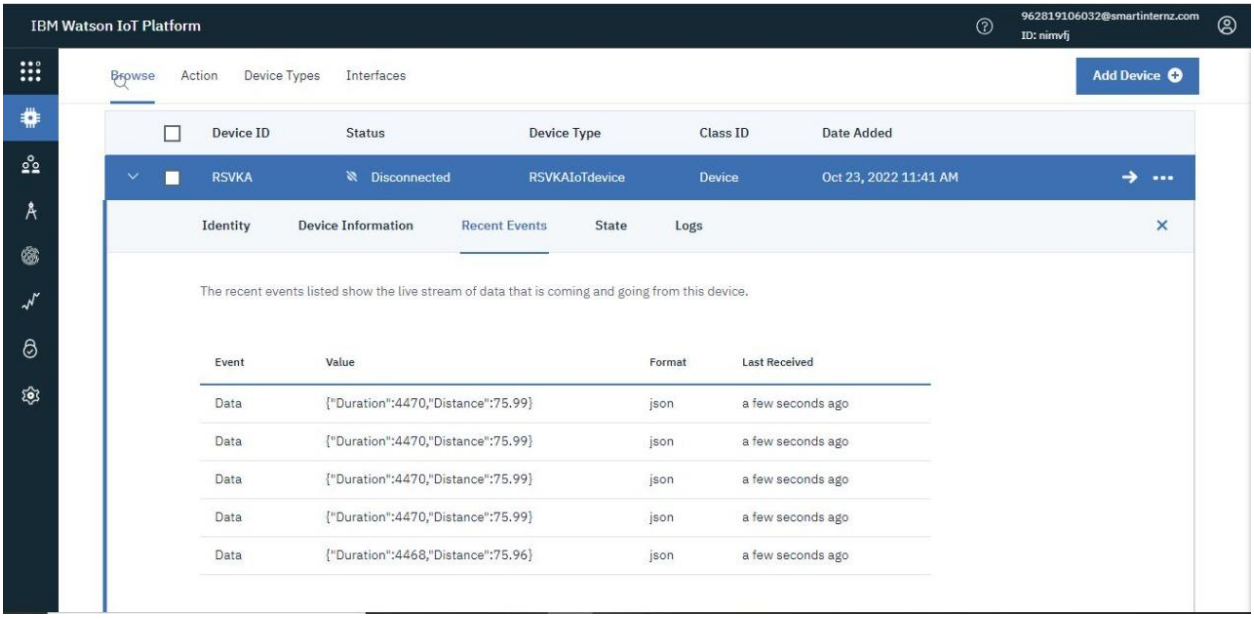
1. Write code and connections in wokwi for the ultrasonic sensor.
2. Whenever the distance is less than 100 cms send an "alert" to the ibm cloud and display in the device recent events.
3. Upload document with wokwi share link and images of ibm cloud.

Program:

```
#include <WiFi.h>
#include <PubSubClient.h>
#include <ArduinoJson.h>
#define echoPin 12
#define trigPin 13
#define led1 14
void callback(char* subscribetopic, byte* payload, unsigned int payloadLength);

//-------credentials of IBM Accounts------

#define ORG "nimvfj"//IBM ORGANITION ID
#define DEVICE_TYPE "RSVKAIoTdevice"//Device type mentioned in ibm watson IOT Platform
#define DEVICE_ID "RSVKA"//Device ID mentioned in ibm watson IOT Platform
#define TOKEN "R23S20V04KA26"     //Token
String data3;
float duration,distance;


//-------- Customise the above values --------
char server[] = ORG ".messaging.internetofthings.ibmcloud.com";// Server Name
char publishTopic[] = "iot-2/evt/Data/fmt/json";// topic name and type of event perform and format in
which data to be send
char subscribetopic[] = "iot-2/cmd/command/fmt/String";// cmd  REPRESENT command type AND
COMMAND IS TEST OF FORMAT STRING
char authMethod[] = "use-token-auth";
char token[] = TOKEN;
char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID;//client id


//-----------------------------------------
WiFiClient wifiClient;
```

```
PubSubClient client(server, 1883, callback ,wifiClient);
//----------------------------------------
void setup()// configureing the ESP32
{
 pinMode(trigPin,OUTPUT); // Sets the trigPin as an OUTPUT
 pinMode(echoPin, INPUT);
 pinMode(led1,OUTPUT); // Sets the echoPin as an INPUT
 Serial.begin(115200); // // Serial Communication is starting with 9600 of baudrate speed
 wificonnect();
 mqttconnect();
}

void loop()// Recursive Function
{

 digitalWrite(trigPin, LOW);
 delayMicroseconds(2);
 digitalWrite(trigPin, HIGH);
 delayMicroseconds(10);
 digitalWrite(trigPin, LOW);
 // Reads the echoPin, returns the sound wave travel time in microseconds
 duration = pulseIn(echoPin, HIGH);
 distance=duration*0.034/2;
 Serial.println("duration:"+String(distance)+ "cm");
 if (distance<=100)
 {
  digitalWrite(led1,HIGH);
  PublishData(duration,distance);
 delay(1000);
 if (!client.loop()) {
  mqttconnect();
 }
 else{
  digitalWrite(led1,LOW);
 }

 }
}
```


Simulation
00:59.395
7%
HC-SR04
Editing Ultrasonic Distance Sensor
Distance:
76cm
ESP32
Publish ok
duration:75.99cm
Sending payload: {"Duration":4470.00,"Distance":75.99}
Publish ok
duration:75.99cm
Sending payload: {"Duration":4470.00,"Distance":75.99}
Publish ok


IBM Watson IoT Platform
962819106032@smartinternz.com
ID: nimvfj
Browse
Action
Device Types
Interfaces
Add Device
Device ID
Status
Device Type
Class ID
Date Added
RSVKA
Disconnected
RSVKAIoTdevice
Device
Oct 23, 2022 11:41 AM
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
Data
{"Duration":4470,"Distance":75.99}
json
a few seconds ago
Data
{"Duration":4470,"Distance":75.99}
json
a few seconds ago
Data
{"Duration":4470,"Distance":75.99}
json
a few seconds ago
Data
{"Duration":4470,"Distance":75.99}
json
a few seconds ago
Data
{"Duration":4468,"Distance":75.96}
json
a few seconds ago

WOWKI share link:

https://wokwi.com/projects/347235514013712978