Assignment -4
IoT Based Safety Gadget for Child Safety Monitoring and Notification

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

Code 1: File Name : sketch.ino

sketch.ino | diagram.json | libraries.txt | Library Manager

```
#include <WiFi.h>
#include <PubSubClient.h>
void callback(char* subscribetopic, byte* payload, unsigned int payloadLength);


```

sketch.ino | diagram.json | libraries.txt | Library Manager

```
#define ORG "rzitd9"//IBM ORGANITION ID
#define DEVICE_TYPE "sensors"//Device type mentioned in ibm watson IOT Platform
#define DEVICE_ID "5432"//Device ID mentioned in ibm watson IOT Platform
#define TOKEN "09876543"     //Token
String data3;



//-------- Customise the above values --------
char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
char publishTopic[] = "iot-2/evt/Event_1/fmt/json";
char subscribetopic[] = "iot-2/cmd/command/fmt/String";
char authMethod[] = "use-token-auth";
char token[] = TOKEN;
char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID;



//-----------------------------------------
WiFiClient wifiClient;
PubSubClient client(server, 1883, callback ,wifiClient);

const int trigPin = 5;
const int echoPin = 19;
#define SOUND_SPEED 0.034
long duration;
float distance;




void setup()
```

sketch.ino | diagram.json | libraries.txt | Library Manager

```
void setup()
{
  Serial.begin(115200);
  pinMode(trigPin,OUTPUT);
  pinMode(echoPin,OUTPUT);
  wificonnect();
  mqttconnect();
}


void loop()
{
  digitalWrite(trigPin,LOW);
  delayMicroseconds(2);
  digitalWrite(trigPin,HIGH);
  delayMicroseconds(10);
  digitalWrite(trigPin,LOW);
  duration = pulseIn(echoPin,HIGH);
 distance = duration*SOUND_SPEED/2;
  Serial.print("Distance(cm):");
  Serial.println(distance);
  if (distance < 100)
{
  Serial.println("ALERT");
  delay(1000);
  if(!client.loop()){
    mqttconnect();
  }
}
delay(1000);
}


```

sketch.ino | diagram.json | libraries.txt | Library Manager

```
/*.....................................retrieving to Cloud.............................

void PublishData(float distance) {
  mqttconnect();

  String payload = "{\"Distance\":";
  payload += distance;
  payload += ",\"ALERT!!\":""\"Distance less than 100cms\"";
  payload += "}";

  Serial.print("Sending payload: ");
  Serial.println(payload);


  if (client.publish(publishTopic, (char*) payload.c_str()))
  {
    Serial.println("Publish ok");
  } else
  {
    Serial.println("Publish failed");
  }
  }



void mqttconnect() {
  if (!client.connected()) {
    Serial.print("Reconnecting client to ");
    Serial.println(server);
    while (!!!client.connect(clientId, authMethod, token)) {
      Serial.print(".");
      delay(500);
    }
```

sketch.ino diagram.json libraries.txt Library Manager

```
      initManagedDevice();
      Serial.println();
    }
  }


  void wificonnect()
  {
    Serial.println();
    Serial.print("Connecting to ");

    WiFi.begin("Wokwi-GUEST", "", 6);
    while (WiFi.status() != WL_CONNECTED) {
      delay(500);
      Serial.print(".");
    }
    Serial.println("");
    Serial.println("WiFi connected");
    Serial.println("IP address: ");
    Serial.println(WiFi.localIP());
  }

  void initManagedDevice() {
    if (client.subscribe(subscribetopic)) {
      Serial.println((subscribetopic));
      Serial.println("subscribe to cmd OK");
    } else {
      Serial.println("subscribe to cmd FAILED");
    }
  }

  void callback(char* subscribetopic, byte* payload, unsigned int payloadLength)
  {
```

sketch.ino diagram.json libraries.txt Library Manager

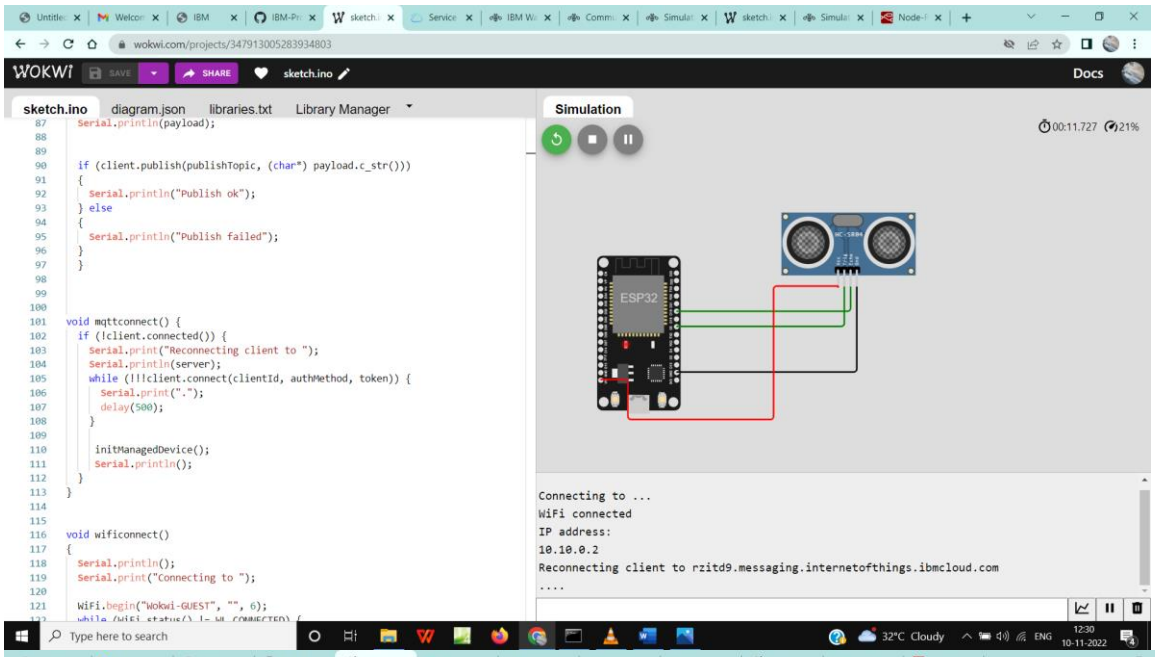
```
    Serial.println(WiFi.localIP());
  }

  void initManagedDevice() {
    if (client.subscribe(subscribetopic)) {
      Serial.println((subscribetopic));
      Serial.println("subscribe to cmd OK");
    } else {
      Serial.println("subscribe to cmd FAILED");
    }
  }

  void callback(char* subscribetopic, byte* payload, unsigned int payloadLength)
  {

    Serial.print("callback invoked for topic: ");
    Serial.println(subscribetopic);
    for (int i = 0; i < payloadLength; i++) {
      data3 += (char)payload[i];
    }
    Serial.println("data: "+ data3);
    data3=="";
  }
```

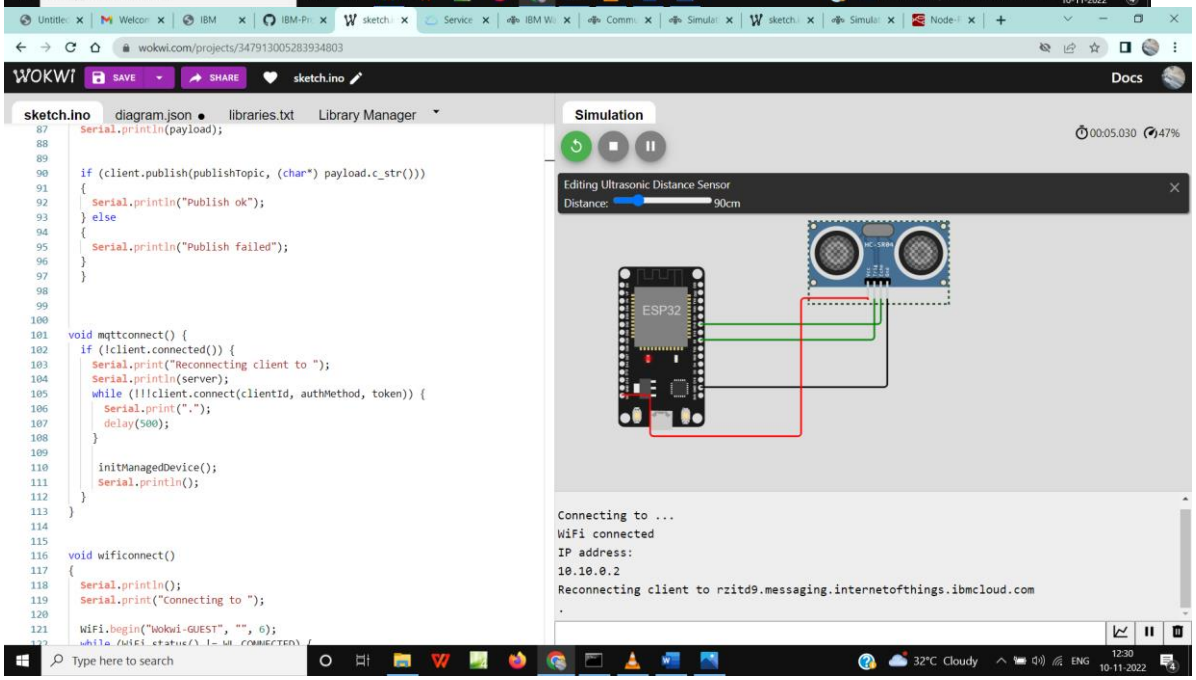
Wokwi Link :

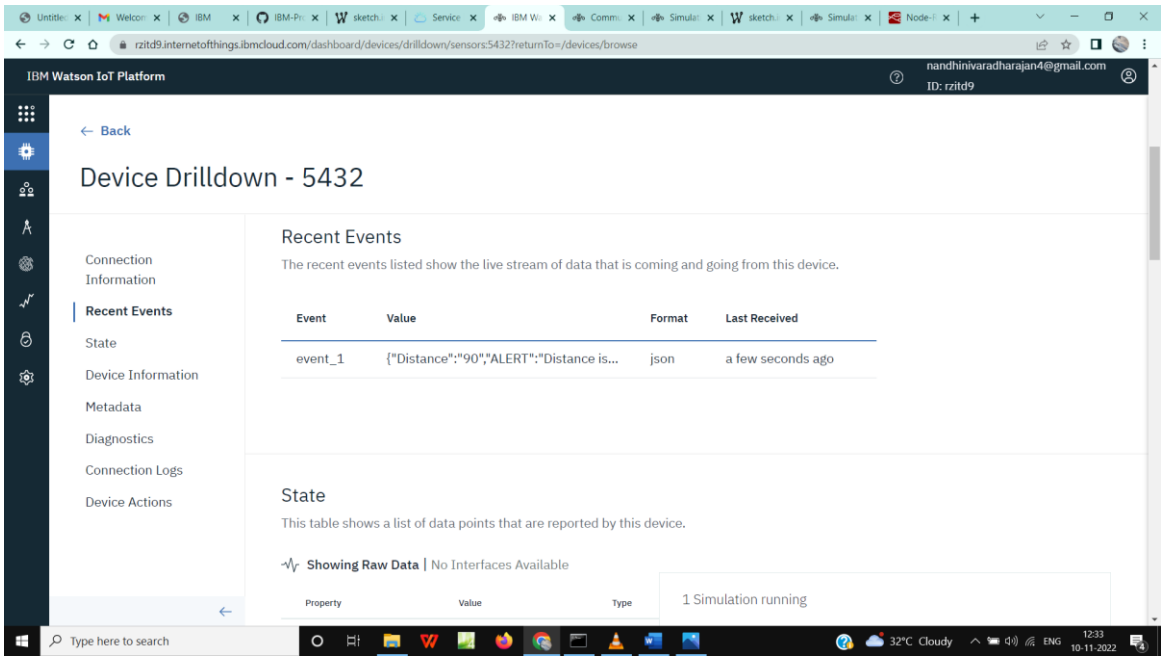
https://wokwi.com/projects/347913005283934803

Output and Simulation :

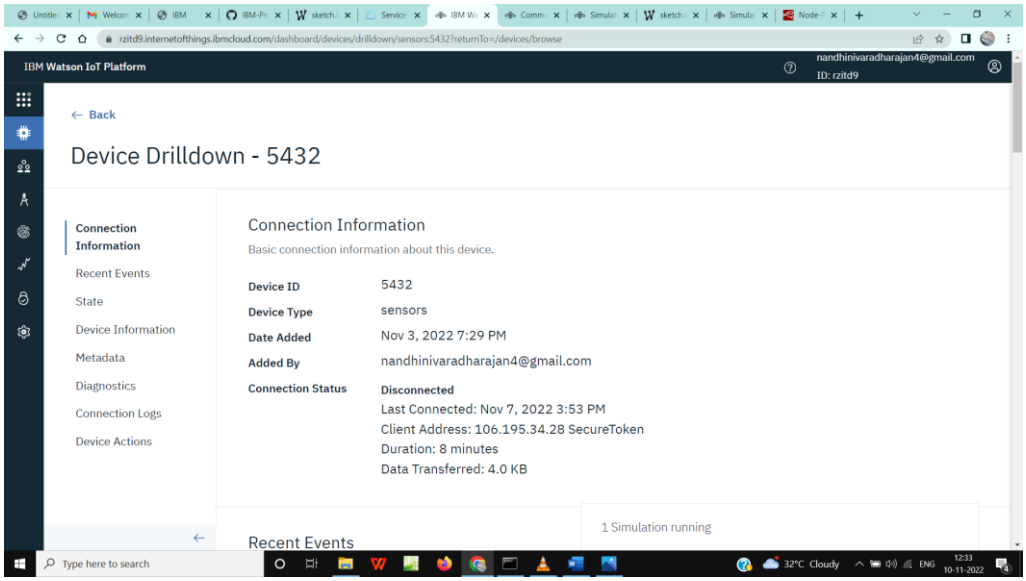
Whenever the distance is less than 100 cms send an "alert" to the IBM cloud and display in the device recent events. ButI don’t Know Why it is Not Working. I thing did a Mistake something. I don’t Know where it is . So thatbwhy I Submit it as it is . Sorry For that.Sir.I tried my best .

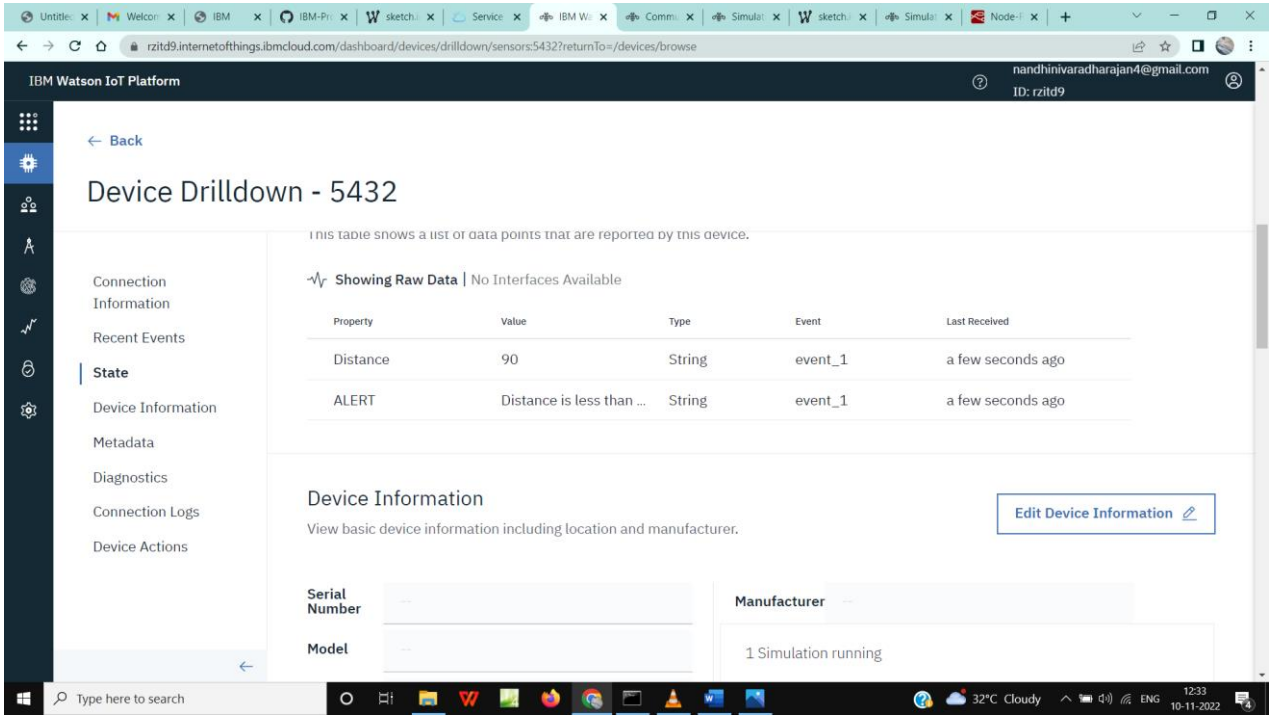

wokwi.com/projects/347913005283934803
WOKWI
SAVE
SHARE
sketch.ino
Docs
sketch.ino
diagram.json
libraries.txt
Library Manager
Simulation
00:11.727
21%
ESP32
HC-SR04
Connecting to ...
WiFi connected
IP address:
10.10.0.2
Reconnecting client to rzitd9.messaging.internetofthings.ibmcloud.com
....
Type here to search
32°C Cloudy
ENG
12:30
10-11-2022


wokwi.com/projects/347913005283934803
WOKWI
SAVE
SHARE
sketch.ino
Docs
sketch.ino
diagram.json
libraries.txt
Library Manager
Simulation
00:05.030
47%
Editing Ultrasonic Distance Sensor
Distance:
90cm
ESP32
HC-SR04
Connecting to ...
WiFi connected
IP address:
10.10.0.2
Reconnecting client to rzitd9.messaging.internetofthings.ibmcloud.com
.
Type here to search
32°C Cloudy
ENG
12:30
10-11-2022



Here Also I Don’t Know Why My Device is Disconnected. I Tried a Lot by Refreshing the Page. But it is Still Disconnected.




rzitd9.internetofthings.ibmcloud.com/dashboard/devices/drilldown/sensors/5432?returnTo=/devices/browse
IBM Watson IoT Platform
nandhinivaradharajan4@gmail.com
ID: rzitd9
Back
Device Drilldown - 5432
This table shows a list of data points that are reported by this device.
Showing Raw Data | No Interfaces Available
Property
Value
Type
Event
Last Received
Distance
90
String
event_1
a few seconds ago
ALERT
Distance is less than ...
String
event_1
a few seconds ago
Connection Information
Recent Events
State
Device Information
Metadata
Diagnostics
Connection Logs
Device Actions
Device Information
View basic device information including location and manufacturer.
Edit Device Information
Serial Number
Model
Manufacturer
1 Simulation running
Type here to search
32°C Cloudy
ENG
12:33
10-11-2022