Assignment -4

Assignment Date	20 OCTOBER 2022
Student Name	ABINATH M
Student Roll Number	722819106002
Maximum Marks	2 Marks

Question-1:

Write code and connections in wowki for ultrasonic sensor.

Whenever distance is less than 100 cms send “alert” to IBM cloud and display in device recent events.

Solution:

WOWKI LINK: https://wokwi.com/projects/346235465961046612

```
#include <WiFi.h>
#include <PubSubClient.h>
#define TRIGGER 2
#define ECHO 15
#define sound_speed 0.034
int distance;

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

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

#define ORG "wp72r7"
#define DEVICE_TYPE "iot-device-1"
#define DEVICE_ID "123456789"
#define TOKEN "987654321"
String data3;


//-------- Customise the above values --------
```

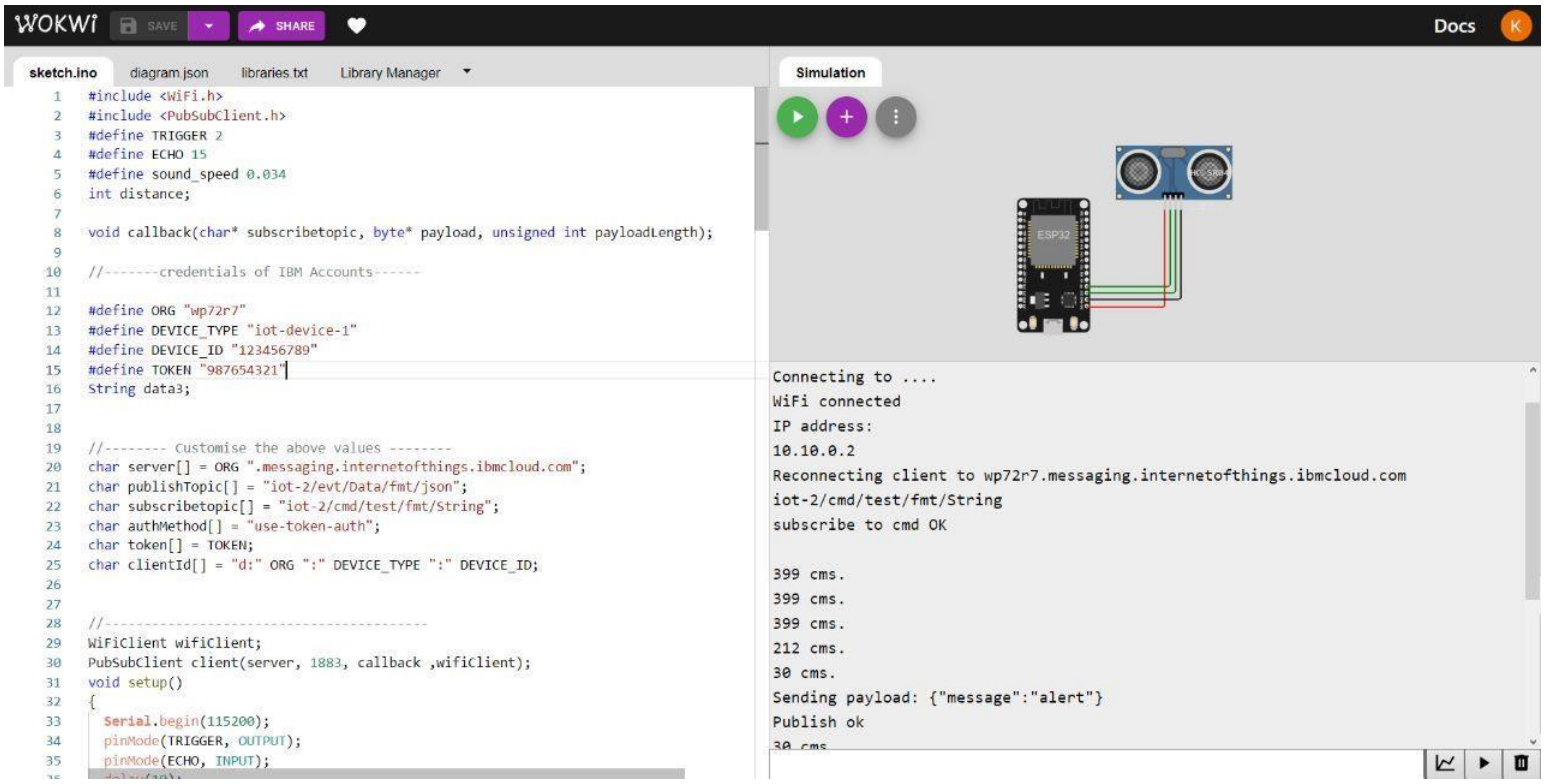
```
char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
char publishTopic[] = "iot-2/evt/Data/fmt/json"; char
subscribetopic[] = "iot-2/cmd/test/fmt/String"; char
authMethod[] = "use-token-auth"; char token[] = TOKEN;
char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID;


//---------------------------------------- WiFiClient
wifiClient;
PubSubClient client(server, 1883, callback ,wifiClient); void
setup()
{
  Serial.begin(115200);
pinMode(TRIGGER, OUTPUT);
pinMode(ECHO, INPUT);
  delay(10);
Serial.println();
wificonnect();
  mqttconnect();
}

void loop()
{

  digitalWrite(TRIGGER, HIGH);
delayMicroseconds(10);   digitalWrite(TRIGGER,
LOW);

  int duration=pulseIn(ECHO,HIGH);
distance=(duration*sound_speed)/2;
  Serial.print("Distance:");
  Serial.print(distance);
Serial.println("cms");   if(distance<100){
PublishData(distance);
  }
```

```
 delay(1000);   if
(!client.loop()) {
mqttconnect();
 }
}



/.....retrieving to Cloud...../

void PublishData(int d) {
mqttconnect();

 String payload = "{\"message\":alert}";

 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);
   }
    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)
{

  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="";
```

}

CIRCUIT DIAGRAM:

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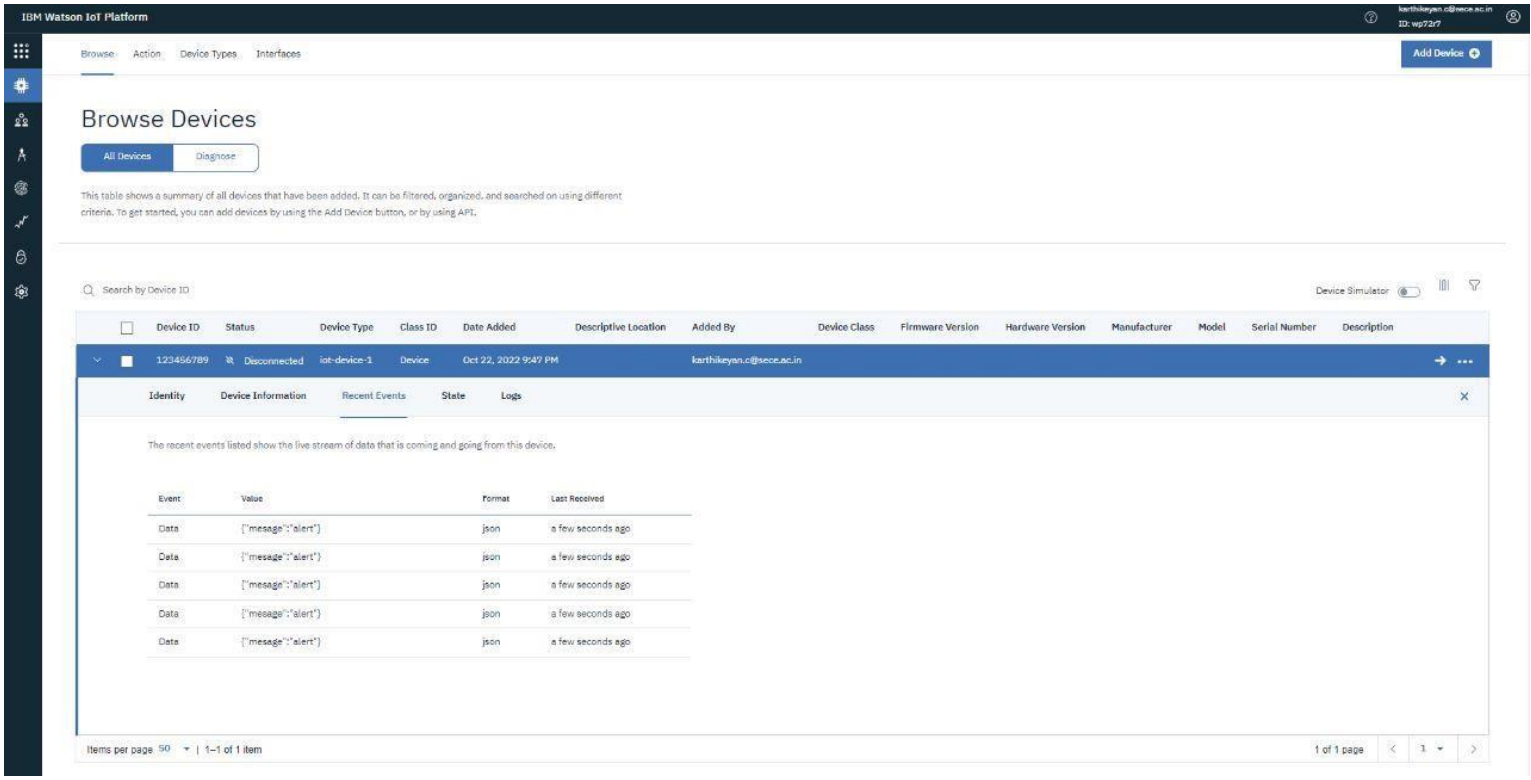
IBM CLOUD RECENT EVENTS:


IBM Watson IoT Platform
karthikeyan.c@sece.ac.in
ID: wp72r7
Browse
Action
Device Types
Interfaces
Add Device
Browse Devices
All Devices
Diagnose
This table shows a summary of all devices that have been added. It can be filtered, organized, and searched on using different criteria. To get started, you can add devices by using the Add Device button, or by using API.
Search by Device ID
Device Simulator
Device ID
Status
Device Type
Class ID
Date Added
Descriptive Location
Added By
Device Class
Firmware Version
Hardware Version
Manufacturer
Model
Serial Number
Description
123456789
Disconnected
iot-device-1
Device
Oct 22, 2022 9:47 PM
karthikeyan.c@sece.ac.in
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
{"mesage":"alert"}
json
a few seconds ago
Data
{"mesage":"alert"}
json
a few seconds ago
Data
{"mesage":"alert"}
json
a few seconds ago
Data
{"mesage":"alert"}
json
a few seconds ago
Data
{"mesage":"alert"}
json
a few seconds ago
Items per page: 50
1–1 of 1 item
1 of 1 page
1