Assignment-4

Assignment Date	25 October 2022
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Student Roll Number	731719106008
Maximum Marks	2 Marks

Question-4:

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

PROGRAM:

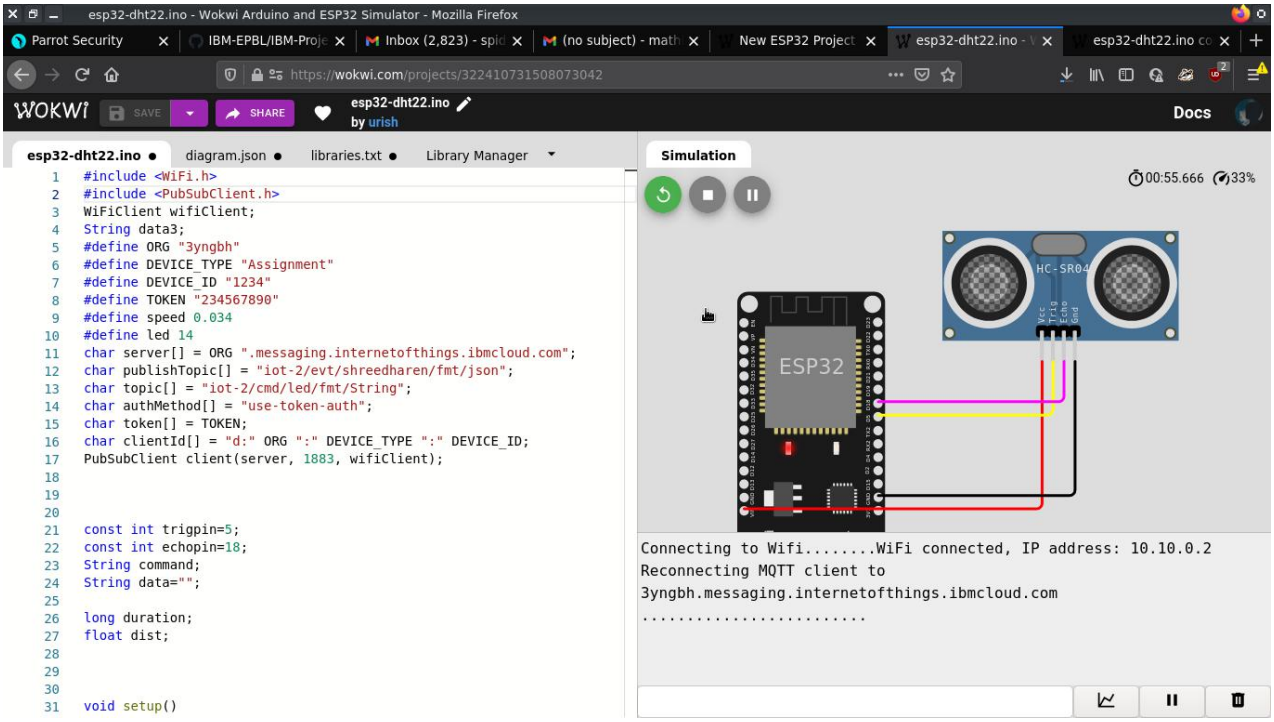
```
#include <WiFi.h>
#include <PubSubClient.h>
WiFiClient wifiClient;
String data3;
#define ORG "948e13"
#define DEVICE_TYPE "NodeMCU"
#define DEVICE_ID "502645"
#define TOKEN "F1eqrGOoNLaTFjk?Sz"
#define speed 0.034
  #defineled 14
  char server[] = ORG
  ".messaging.internetofthings.ibmcloud.com";char
  publishTopic[] = "iot-2/evt/shreedharen/fmt/json"; char
  topic[] = "iot-2/cmd/led/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=5;
```

```
const int echopin=18;
Stringcommand;
String data="";

long duration;
floatdist;



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,LO
 W);
 digitalWrite(trigpin,HIG
 H);
 delayMicroseconds(10);
```

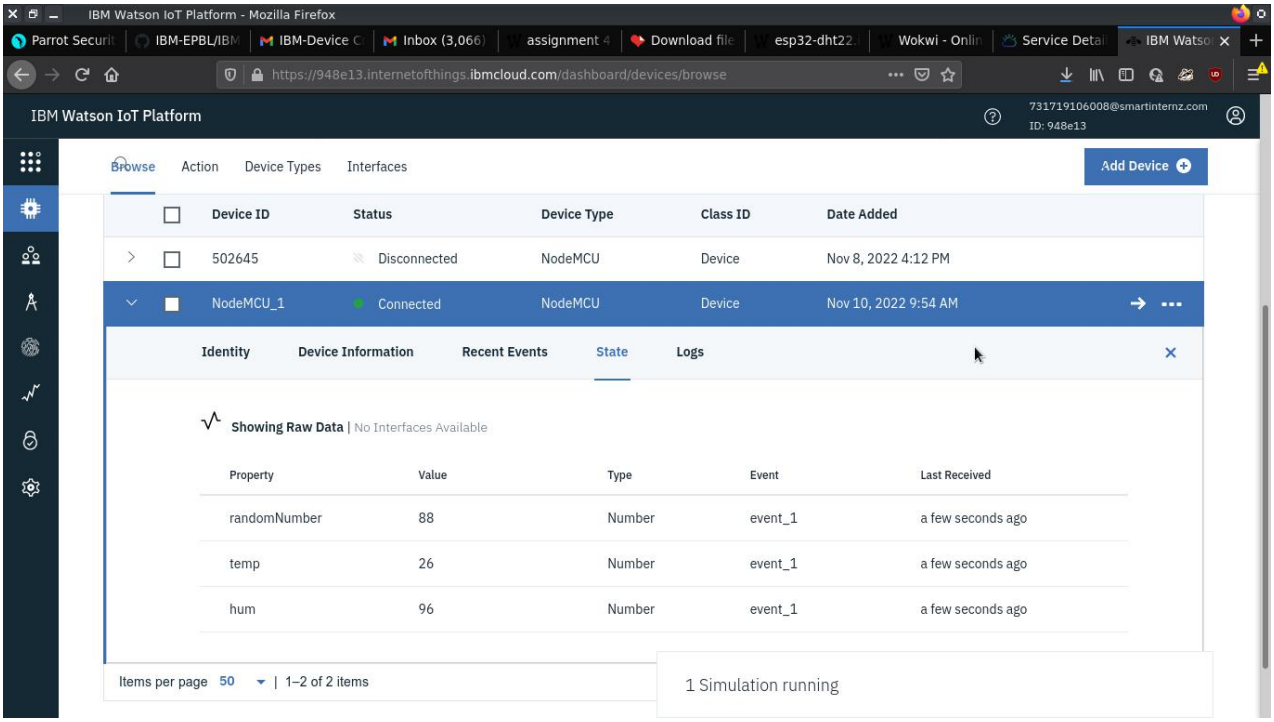
```
 digitalWrite(trigpin,LOW);
duration=pulseIn(echopin,HIGH);
dist=duration*speed/2;  if(dist<100){
  String payload = "{\"Alert
Distance\":";payload += dist;
                    payload += "}";

  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(publishT
opic, (char*) payload.c_str())) {
    Serial.println("Publish OK");
  }else {
    Serial.println("Publish FAILED");
  }

 }

 }
```

Connection:


esp32-dht22.ino - Wokwi Arduino and ESP32 Simulator - Mozilla Firefox
Parrot Security
IBM-EPBL/IBM-Proje
Inbox (2,823) - spid
(no subject) - math
New ESP32 Project
esp32-dht22.ino -
esp32-dht22.ino co
https://wokwi.com/projects/322410731508073042
WOKWI
SAVE
SHARE
esp32-dht22.ino
by urish
Docs
esp32-dht22.ino
diagram.json
libraries.txt
Library Manager
1 #include <WiFi.h>
2 #include <PubSubClient.h>
3 WiFiClient wifiClient;
4 String data3;
5 #define ORG "3yngbh"
6 #define DEVICE_TYPE "Assignment"
7 #define DEVICE_ID "1234"
8 #define TOKEN "234567890"
9 #define speed 0.034
10 #define led 14
11 char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
12 char publishTopic[] = "iot-2/evt/shreedharen/fmt/json";
13 char topic[] = "iot-2/cmd/led/fmt/String";
14 char authMethod[] = "use-token-auth";
15 char token[] = TOKEN;
16 char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID;
17 PubSubClient client(server, 1883, wifiClient);
18
19
20
21 const int trigpin=5;
22 const int echopin=18;
23 String command;
24 String data="";
25
26 long duration;
27 float dist;
28
29
30
31 void setup()
Simulation
00:55.666
33%
HC-SR04
Vcc
Trig
Echo
Gnd
ESP32
Connecting to Wifi........WiFi connected, IP address: 10.10.0.2
Reconnecting MQTT client to
3yngbh.messaging.internetofthings.ibmcloud.com
.....

Output:

Output:(IBM Cloud)



Link: https://wokwi.com/projects/347932864457736788