Assignment -4

Assignment Date	20 OCTOBER 2022
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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

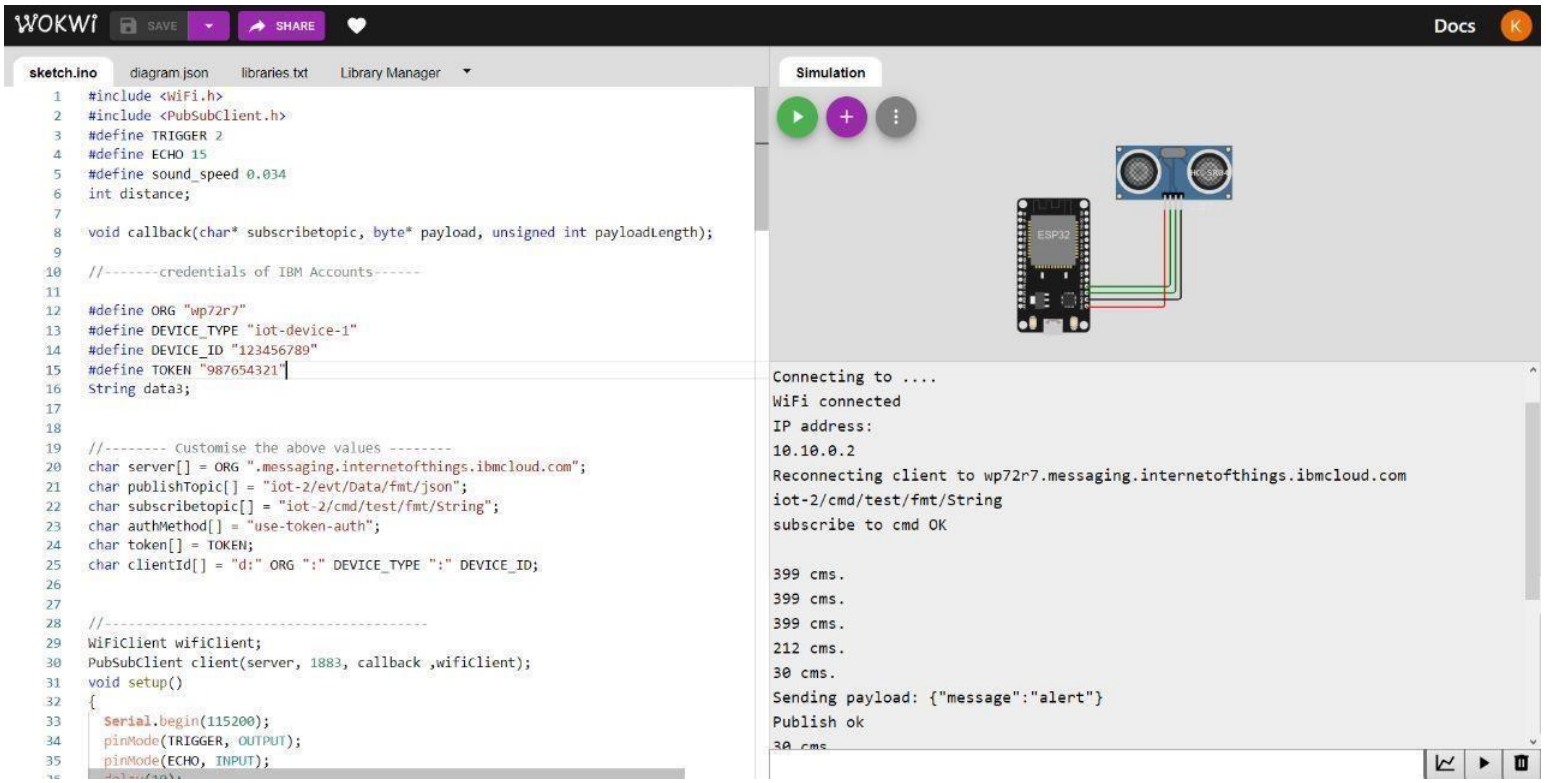
```
#include <WiFi.h>
#include <PubSubClient.h>
#define TRIGGER 2
#define ECHO 15
#define sound_speed 0.034
int distance;

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())
{
```

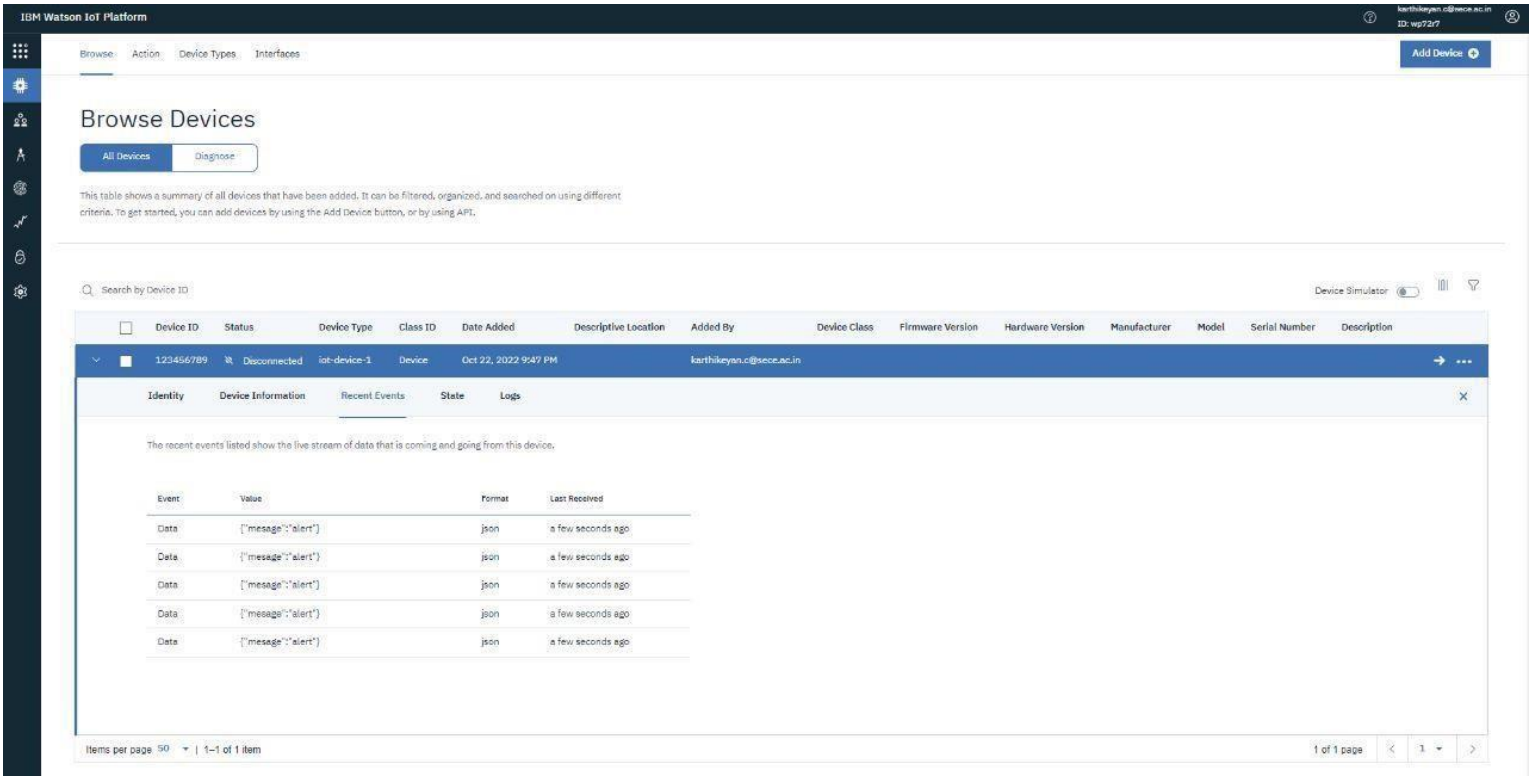
```
mqttconnect();
  }
}



/.....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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