Assignment -4

Assignment Date	12 october 2022
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Maximum Marks	2 Marks

Question-1:

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

Solution:

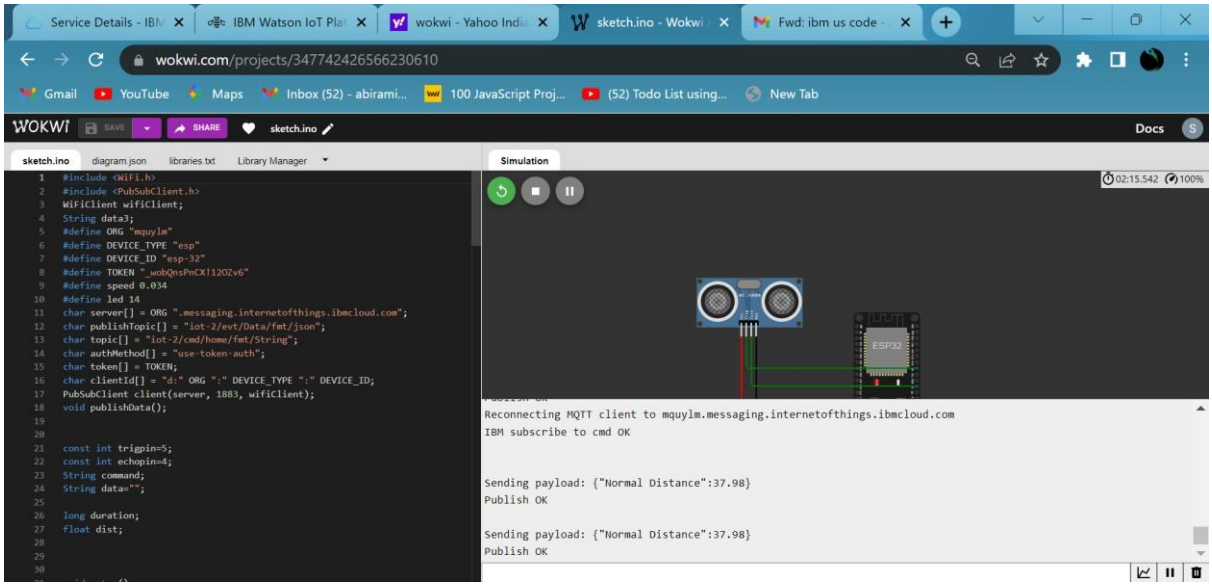
```
#include <WiFi.h>
#include <PubSubClient.h>
WiFiClient wifiClient;
String data3;
#define ORG "mquylm"
#define DEVICE_TYPE "esp"
#define DEVICE_ID "esp-32"
#define TOKEN "_wobQnsPnCX!12OZv6"
#define speed 0.034  #define led 14 char server[] = ORG
".messaging.internetofthings.ibmcloud.com"; char
publishTopic[] = "iot-2/evt/Data/fmt/json"; char topic[] =
"iot-2/cmd/home/fmt/String";   char authMethod[] = "use-token-
auth"; char token[] = TOKEN;
char clientId[] = "d:" ORG ":" DEVICE_TYPE ":"
DEVICE_ID; PubSubClient client(server, 1883,
wifiClient); void publishData();


const int trigpin=5; const
int echopin=4;
String command;
String data="";

long duration; float
dist;


void setup()
{
```

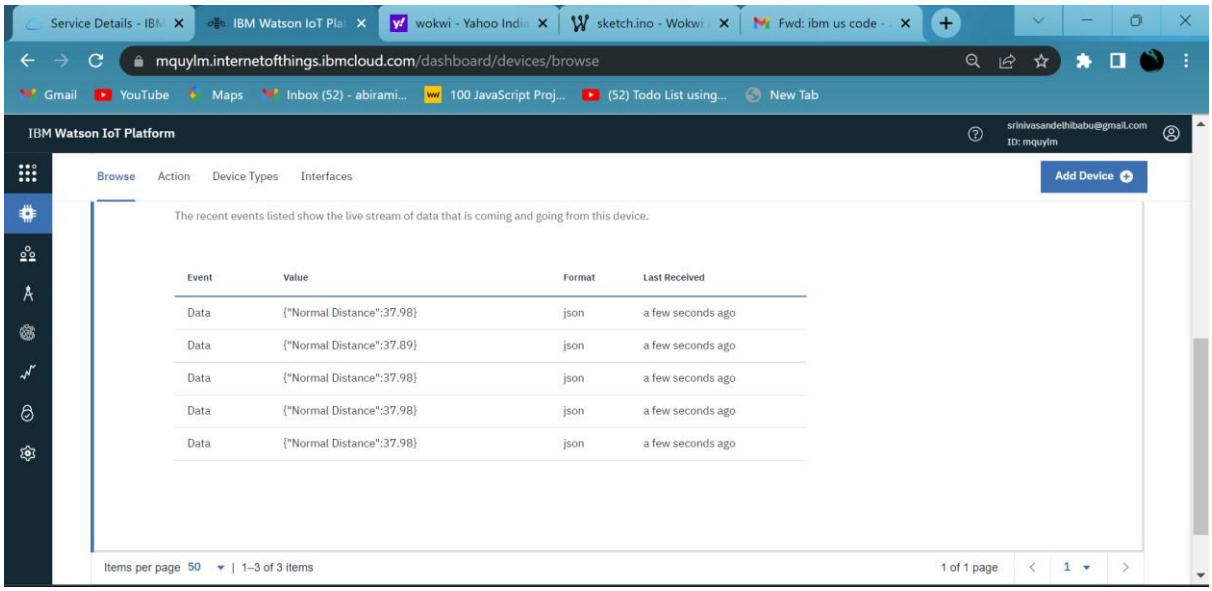
```
  Serial.begin(115200);
pinMode(led, OUTPUT);
pinMode(trigpin, OUTPUT);
pinMode(echopin, INPUT);
wifiConnect();   mqttConnect();
}  void loop() {   bool
isNearby = dist < 100;
digitalWrite(led, isNearby);

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,LOW);
digitalWrite(trigpin,HIGH);
delayMicroseconds(10);
digitalWrite(trigpin,LOW);
duration=pulseIn(echopin,HIGH);
dist=duration*speed/2;
if(dist<100){
    String payload = "{\"Normal
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>101 && dist<111){
    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("Warning crosses 110cm -- it automaticaly of the loop");
digitalWrite(led,HIGH);
    }else {
      Serial.println("Publish 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++){
```

```
    dist += (char)payload[i];
  }
  Serial.println("data:"+ data3);   if(data3=="lighton"){
Serial.println(data3);     digitalWrite(led,HIGH);
  }   data3="";
}
```

Output:





Wokwi link:

https://wokwi.com/projects/347742426566230610