

**Assignment -4**  
Python Programming

Assignment Date	21 OCTOBER 2022
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Maximum Marks	2

Question

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

CODE :

```
#include <WiFi.h>
#include <PubSubClient.h>
WiFiClient wifiClient;
String data3;
#define ORG "udeo3r"
#define DEVICE_TYPE "abi"
#define DEVICE_ID "131313"
#define TOKEN "Wja?4cr1fbZIxqT2JY"
#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=2; 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())) {
```

```

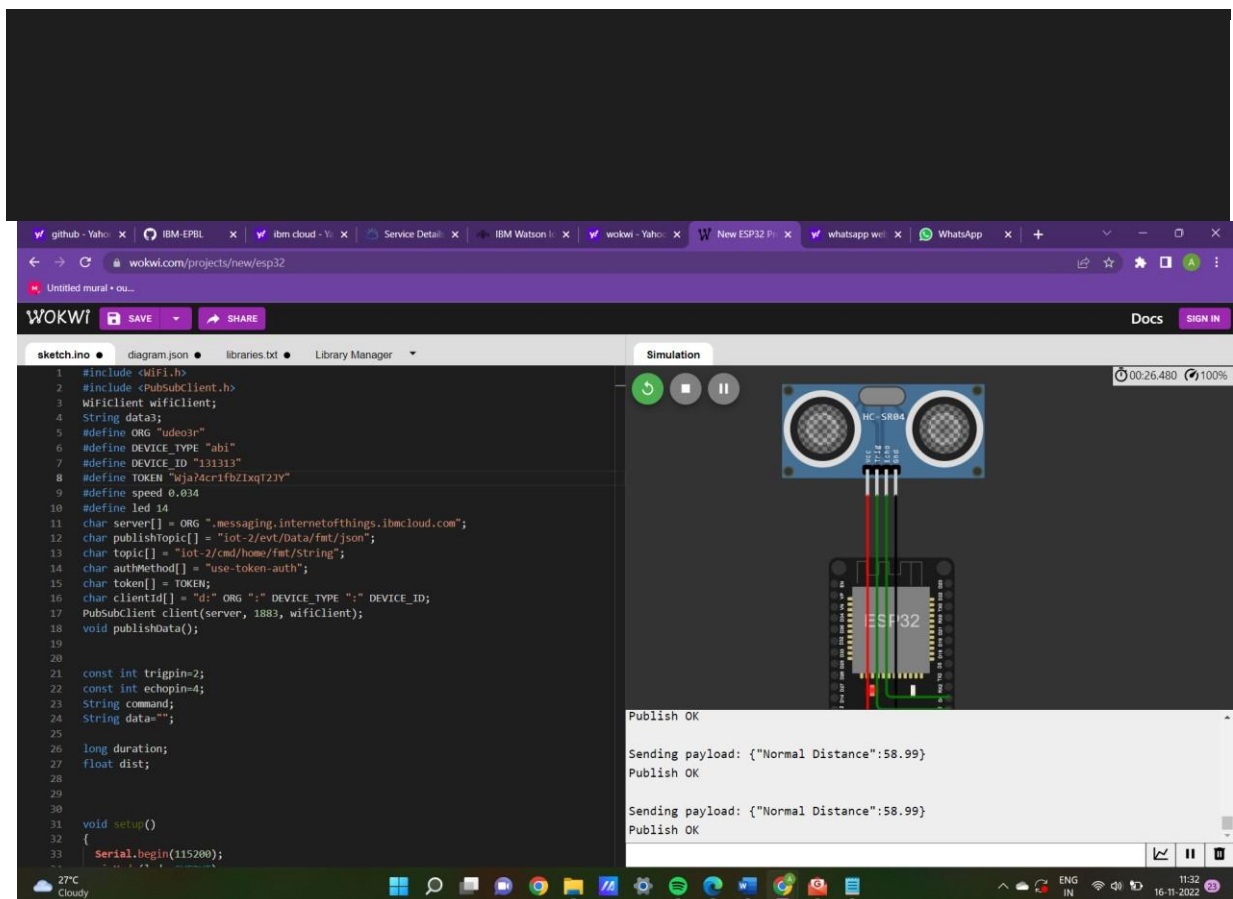
        Serial.println("Warning crosses 110cm -- it automatically of the loop");
digitalWrite(led,HIGH);
    }else {
        Serial.println("Publish FAILED");
    }

}

} 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="";
}

```





github - Yahoo x IBM-EPBL x IBM cloud - Y x Service Detail x IBM Watson I x wokwi - Yahoo x New ESP32 P x whatsapp w WhatsApp x

udeo3r.internetofthings.ibmcloud.com/dashboard/devices/browse

Untitled mural - ou...

IBM Watson IoT Platform

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Browse Action Device Types Interfaces

Add Device

131313 Connected abi Device 16 Nov 2022 11:20

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	{"Normal Distance":58.99}	json	a few seconds ago
Data	{"Normal Distance":58.99}	json	a few seconds ago
Data	{"Normal Distance":58.92}	json	a few seconds ago
Data	{"Normal Distance":58.99}	json	a few seconds ago
Data	{"Normal Distance":58.99}	json	a few seconds ago

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0 Simulations running

27°C Cloudy

ENG IN 11:32 16-11-2022