ASSIGNMENT 4

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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.

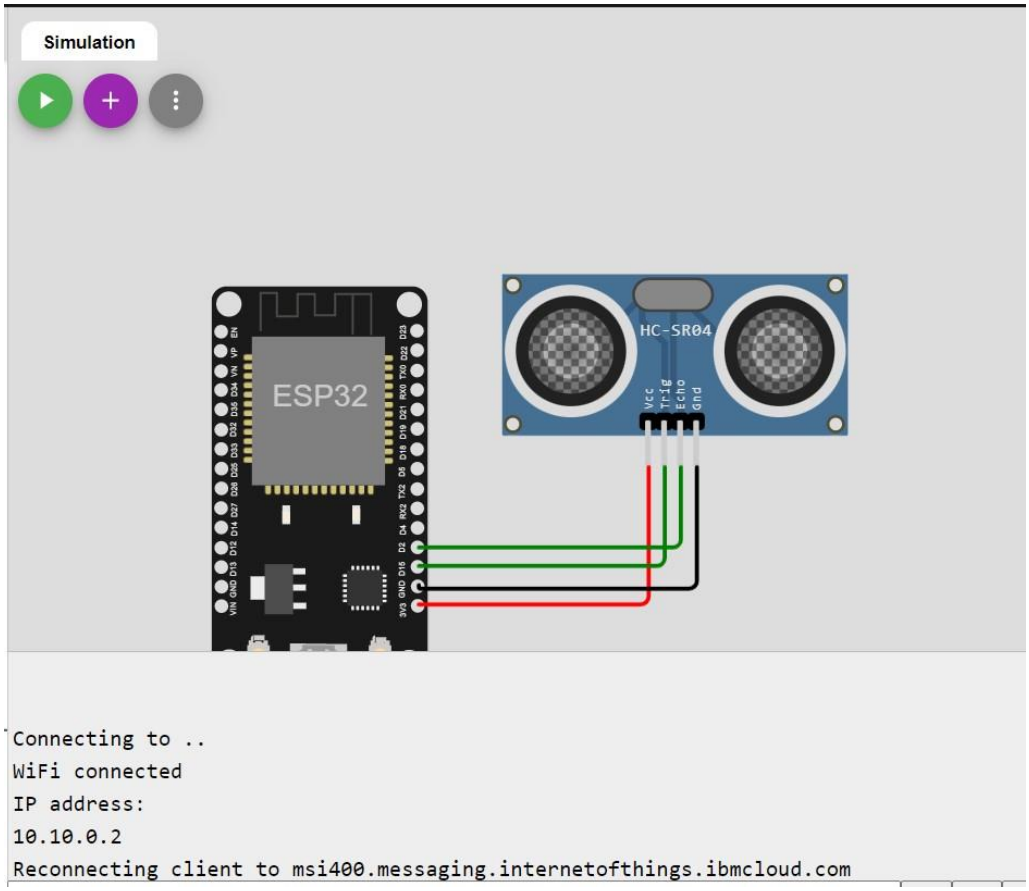
```
#include <WiFi.h>
#include <PubSubClient.h>

#define TRIGGER 2
#define    ECHO    15
#define sound 0.034
int distance;

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

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

#define ORG "msi400"
#define DEVICE_TYPE "abcd"
#define DEVICE_ID "12"
#define TOKEN "12345678"
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
time=pulseIn(ECHO,HIGH);
distance=(time*sound)/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="";
}
```

REFERENCE LINK: https://wokwi.com/projects/346306474865066580




```
Connecting to ..
WiFi connected
IP address:
10.10.0.2
Reconnecting client to msi400.messaging.internetofthings.ibmcloud.com
```