Assignment- 4

Date	26 October 2022
Team ID	PNT2022TMID06857
Project Name	IoT Based Safety Gadget for Child Safety Monitoring & Notification
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Write code and connections in wokwi for ultrasonic sensor. Whenever the distance is less than 100 cms send "alert" to IBM cloud and display in device recent events.

Code

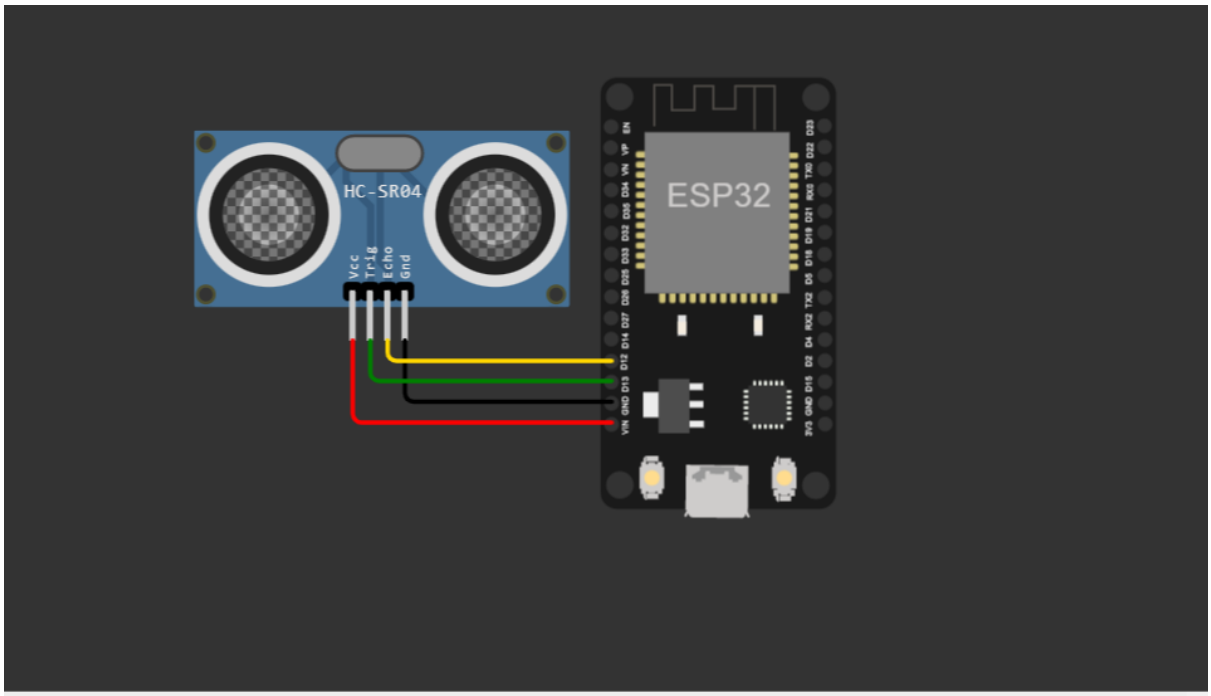
```
#include <WiFi.h>
#include <PubSubClient.h>
WiFiClient wifiClient;
String data3;
#define ORG "639ihg"
#define DEVICE_TYPE "jumli_assignment"
#define DEVICE_ID "1917124"
#define TOKEN "6eZCVnv?v9_H@E149y"
#define speed 0.034
#define led 14
char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
char publishTopic[] = "iot-2/evt/jumli_assignment/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=13;
const int echopin=12;
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 = "{\"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(publishTopic, (char*) payload.c_str())) {
      Serial.println("Publish OK");
    }else {
      Serial.println("Publish FAILED");
    }
  }
  }
```

Screenshots:

Wokwi




```
Connecting to Wifi..WiFi connected, IP address: 10.10.0.2
Reconnecting MQTT client to 639ihg.messaging.internetofthings.ibmcloud.com
IBM subscribe to cmd OK


Sending payload: {"Distance":400.01}
Publish OK

Sending payload: {"Distance":399.96}
Publish OK
```

IBM

1917124 Disconnected jumli_assignment Device Oct 30, 2022 12:57 AM juml.1917124@gct.ac.in

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
jumli_assign...	{"Alert Distance":79.97}	json	a few seconds ago
jumli_assign...	{"Alert Distance":79.97}	json	a few seconds ago
jumli_assign...	{"Alert Distance":79.97}	json	a few seconds ago
jumli_assign...	{"Alert Distance":79.97}	json	a few seconds ago
jumli_assign...	{"Alert Distance":79.97}	json	a few seconds ago