ASSIGNMENT: ULTRASONIC ALARM SYSTEM USING LED, ULTRASONIC SENSOR(HC-SR04) AND A BUZZER

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CODE:

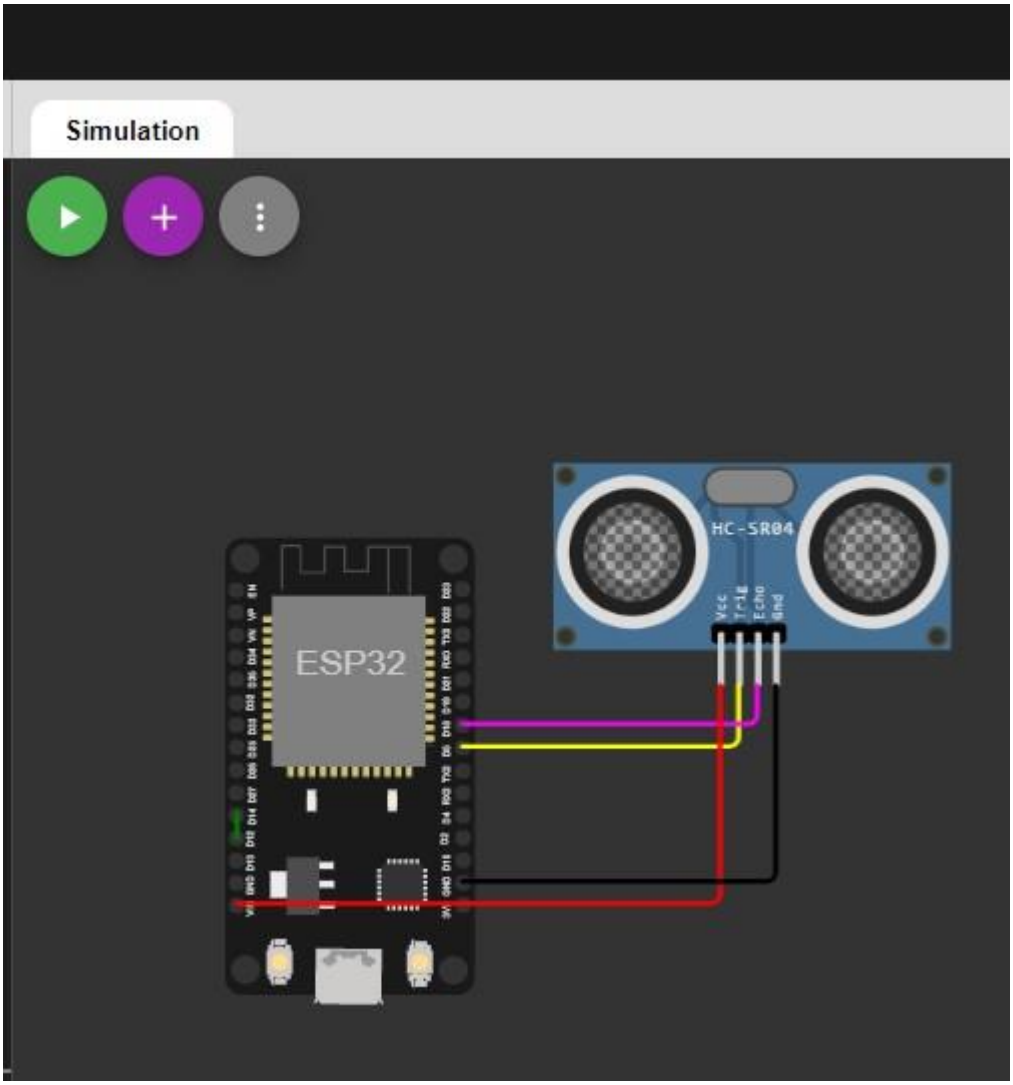
```
#include <WiFi.h>
#include <PubSubClient.h>
WiFiClient wifiClient;
String data3;
#define ORG "3yngbh"
#define DEVICE_TYPE "Assignment"
#define DEVICE_ID "1234"
#define TOKEN "234567890"
#define speed 0.034  #define led 14 char server[] = ORG
".messaging.internetofthings.ibmcloud.com"; char publishTopic[]
= "iot-2/evt/shreedharen/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=5; const int echopin=18;
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");
    } } }
```

OUTPUT:


Simulation
ESP32
HC-SR04
Vcc
Trig
Echo
Gnd