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<b>Topic</b>	IOT based safety gadget for child safety monitoring and notification
<b>Assignment 4</b>	Write code and connections in wokwi for ultrasonic sensor. Whenever distance is less than 100cms send “alert” to IBM cloud and display in device recent events.

**Write code and connections in wokwi for ultrasonic sensor. Whenever distance is less than 100 cms send alert to ibm cloud and display in device recent events. Upload document with wokwi share link and images of ibmcloud**

### **Program Code :**

```
#include <WiFi.h> #include
<PubSubClient.h>WiFiClient
wifiClient; String data3;
#define ORG "ozyf7e"
#define DEVICE_TYPE "AnuESP"
#define DEVICE_ID "Anu123"
#define TOKEN "12345678"
#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/come/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()
```

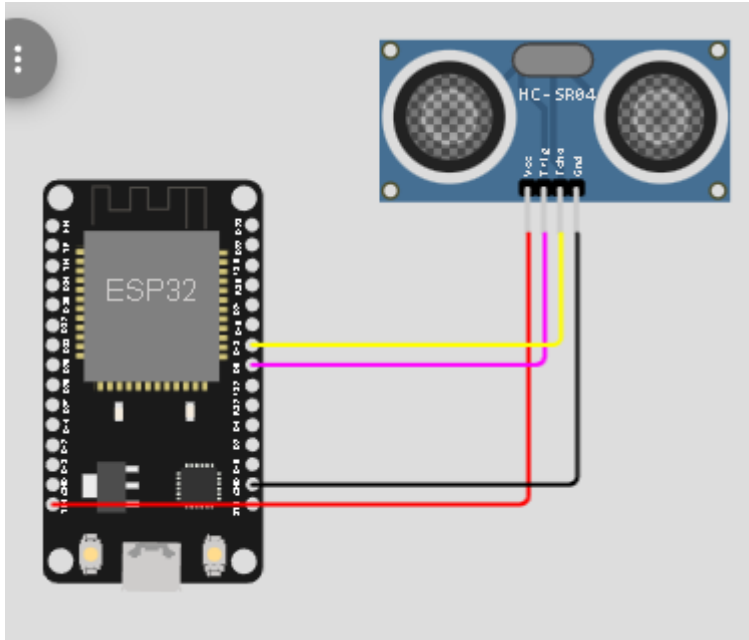
```

{
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");
}
}

```

}  
}

## Connections:



## OUTPUT:

Wokwi - Wokwi Arduino and

wokwi.com/projects/347386276523016786

WOKWI

sketch.ino

```
1 #include <WiFi.h>
2 #include <PubSubClient.h>
3 WiFiClient wificlient;
4 String data3;
5 #define ORG "ozyf7e"//IBM ORGANITION ID
6 #define DEVICE_TYPE "AnuESP"//Device type mentioned in ibm watson IOT Platf
7 #define DEVICE_ID "Anu123"//Device ID mentioned in ibm watson IOT Platform
8 #define TOKEN "12345678"
9 #define speed 0.034
10 #define led 14
11 char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
12 char publishTopic[] = "iot-2/evt/shreedharen/fmt/json";
13 char topic[] = "iot-2/cmd/led/fmt/String";
14 char authMethod[] = "use-token-auth";
15 char token[] = TOKEN;
16 char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID;
17 PubSubClient client(server, 1883, wificlient);
18 const int trigpin=5;
19 const int echopin=18;
20 String command;
21 String data="";
22 long duration;
23 float dist;
24 void setup()
25 {
26   Serial.begin(115200);
27   pinMode(led, OUTPUT);
28   pinMode(trigpin, OUTPUT);
29   pinMode(echopin, INPUT);
30 }
```

Simulation

00:41.226 85%

Sending payload: {"Distance":399.69}  
Publish OK

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

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

28°C Haze 08:35 06-11-2022

**COULD IMAGE :**

Device ID	Status	Device Type	Class ID	Date Added
Anu123	Connected	AnuESP	Device	Nov 2, 2022 11:20 AM
Identity    Device Information <u>Recent Events</u> 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	{"Distance":403.49,"object":"No Object"}	json	a few seconds ago	
Data	{"Distance":403.49,"object":"No Object"}	json	a few seconds ago	
Data	{"Distance":403.49,"object":"No Object"}	json	a few seconds ago	
Data	{"Distance":403.49,"object":"No Object"}	json	a few seconds ago	
Data	{"Distance":403.49,"object":"No Object"}			

**Wokwi link:**

**<https://wokwi.com/projects/347386276523016786>**

