ASSIGNMENT 4

Date	**27 October 2022**
Team ID	**PNT2022TMID01880**
Project Name	**Smart Waste Management System for Metropolitan Cities**

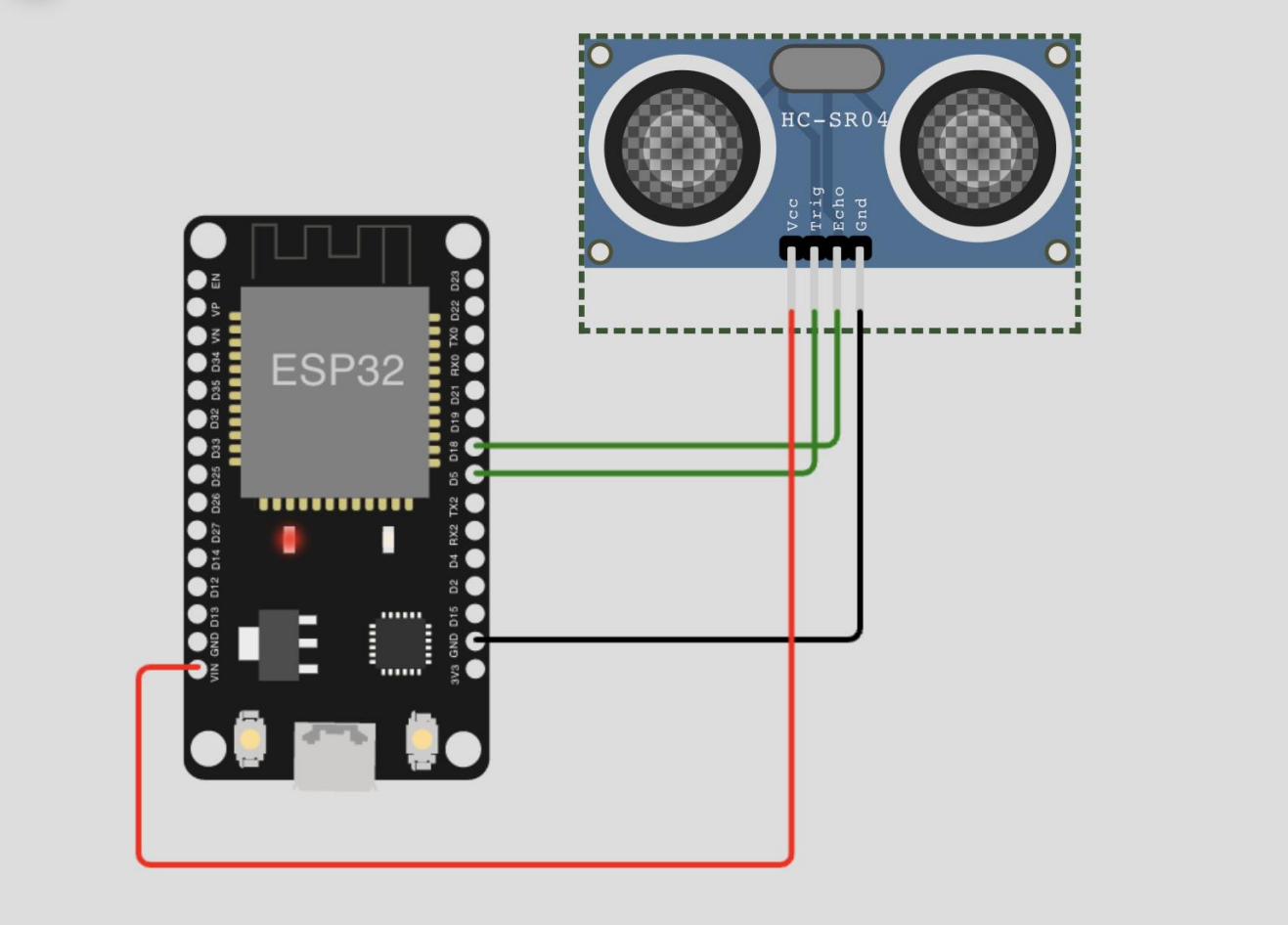
Write code and connections in wokwi for the ultrasonic sensor. Whenever the distance is less than 100 cms send an "alert" to the IBM cloud and display in the device recent events. Upload document with wokwi share link and images of IBM cloud.

```
#include <WiFi.h>
#include <PubSubClient.h>
void callback(char* subscribetopic, byte* payload, unsigned
int payloadLength);
//-------credentials of IBM Accounts------
#define SOUND_SPEED 0.034
#define ORG "d8ah46"//IBM ORGANITION ID #define
#define DEVICE_TYPE "ESP"//Device type mentioned in ibm watson
IOT Platform
#define DEVICE_ID "BIN-1"//Device ID mentioned in ibm watson IOT
Platform
#define TOKEN "dQxN_xgKRoNs-r4(t8" //Token
String data3;
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, NULL ,wifiClient);
const int trigPin = 5;
const int echoPin = 18;
long duration;
float distance;
void setup() {
Serial.begin(115200);
pinMode(trigPin, OUTPUT);
pinMode(echoPin, INPUT);
wificonnect();
mqttconnect();
```

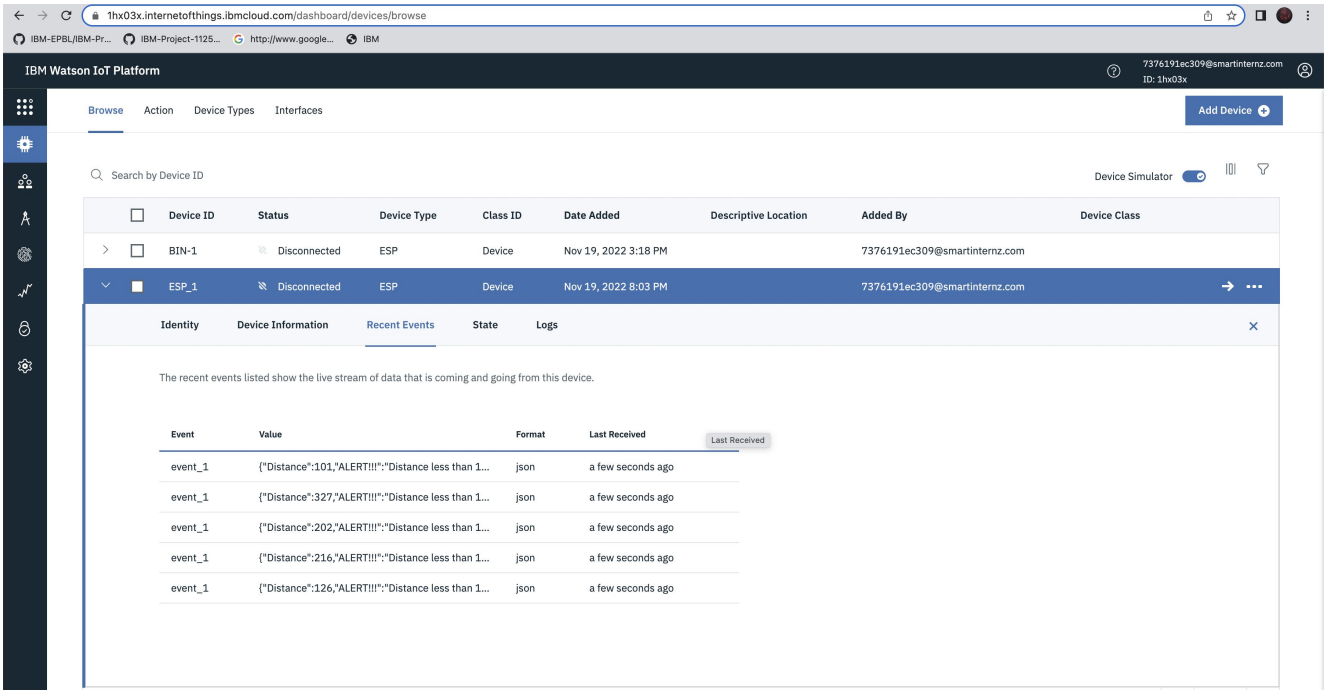
```
}
void loop()
{
digitalWrite(trigPin, LOW); delayMicroseconds(2);
digitalWrite(trigPin, HIGH); delayMicroseconds(10);
digitalWrite(trigPin, LOW); duration = pulseIn(echoPin, HIGH);
distance = duration * SOUND_SPEED/2;
Serial.print("Distance (cm): ");
Serial.println(distance);
if(distance<100)
{
Serial.println("ALERT!!");
delay(1000);
PublishData(distance);
delay(1000);
if (!client.loop()) {
mqttconnect();
}}
delay(1000);
}
void PublishData(float dist) { mqttconnect();
String payload = "{\"Distance\":";
payload += dist;
payload += ",\"ALERT!!\":""\"Distance less than 100cms\"";
payload += "}";
Serial.print("Sending payload to IOT: ");
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="";
}
```

SCHEMATIC/CIRCUIT DIAGRAM:



IBM CLOUD OUTPUT:



WOKWI LINK:

https://wokwi.com/projects/348746495234671186