ASSIGNMENT 4

Date	**25 October 2022**
Team ID	**PNT2022TMID06942**
Project Name	**Project -**Real time river water quality monitoring and Control System
Maximum Marks	**4 Marks**

Project Title**:** Real Time River water quality monitoring and Control system

Team ID: PNT2022TMID06942

Team Members:

1. **Vinupriya K P- Team Leader**
2. **Jeevitha K -Team Member**
3. **Anne Shifana S R- Team Member**
4. **Vishnupriya E – Team Member**
5. **Monisha R - Team Member**

QUESTION:

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.

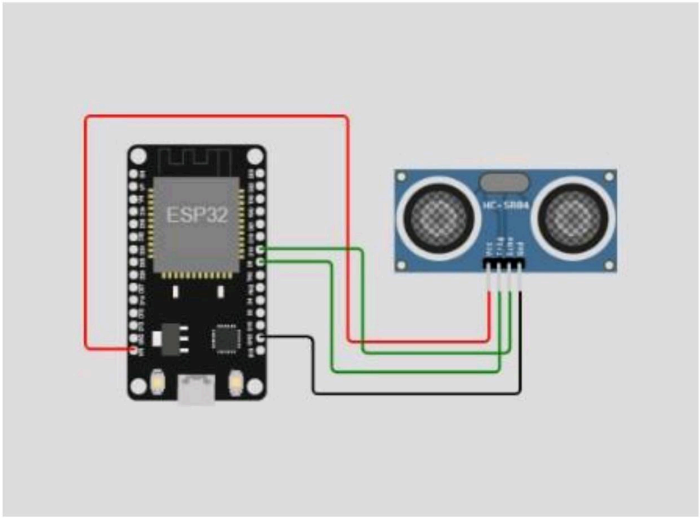
CODE:

```
#include <WiFi.h>
#include
<PubSubClient.h>
void callback(char* subscribetopic, byte* payload, unsigned int
payloadLength);
//-------credentials of IBM Accounts------
#define ORG "Ashfaq1824"//IBM ORGANITION ID
#define DEVICE_TYPE "ESP32"//Device type mentioned in ibm watson IOT Platform
#define DEVICE_ID "12345"//Device ID mentioned in ibm watson IOT Platform
#define TOKEN "12345678" //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, callback ,wifiClient);
const int trigPin = 5;
const int echoPin = 18;
```

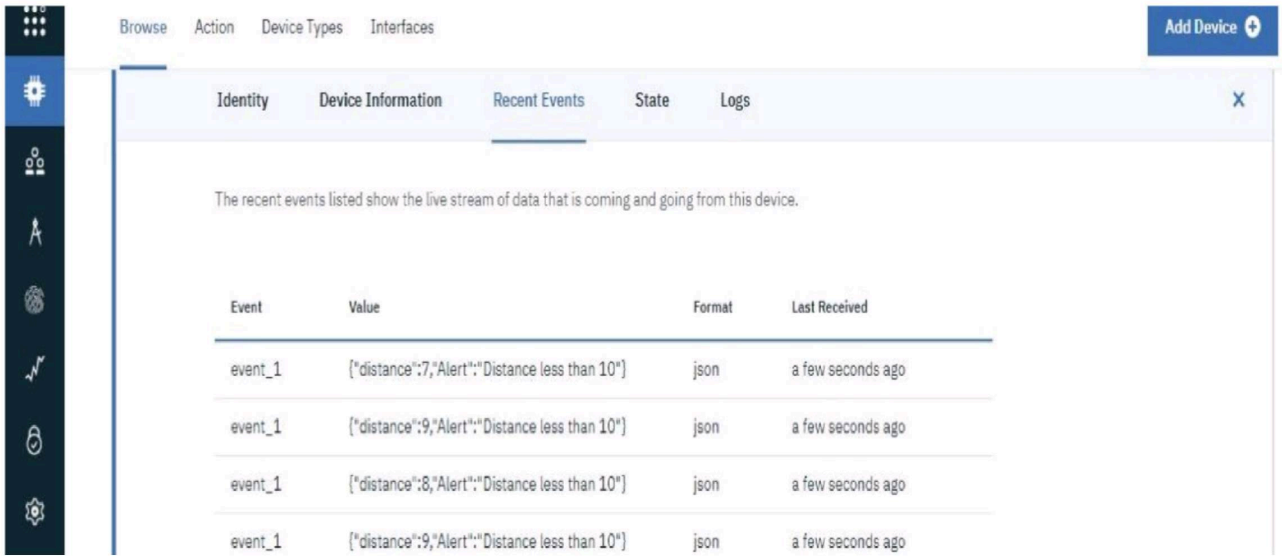
```
#define SOUND_SPEED 0.034 long duration; float distance; void setup() { Serial.begin(115200); pinMode(trigPin, OUTPUT); pinMode(echoPin, INPUT); wificonnect(); mqttconnect(); } void loop() { digitalWrite(trigPin, LOW); delayMicroseconds(2); digitalWrite(trigPin, HIGH); delayMicroseconds(10); digitalWrite(trigPin, 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: "); 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++) {
//Serial.print((char)payload[i]); data3 +=
(char)payload[i];
}
Serial.println("data: "+ data3);
data3="";
}
```

SCHEMATIC/CIRCUIT DIAGRAM:



IBM CLOUD OUTPUT:



WOKWI LINK:
https://wokwi.com/projects/346419220039336530