ASSIGNMENT -4

Assignment Date	30 October 2022
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Student Roll Number	710419106023
Maximum Marks	2 Marks

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.

Wokwi link:

https://wokwi.com/projects/346906877709255252

CODE:

Code:

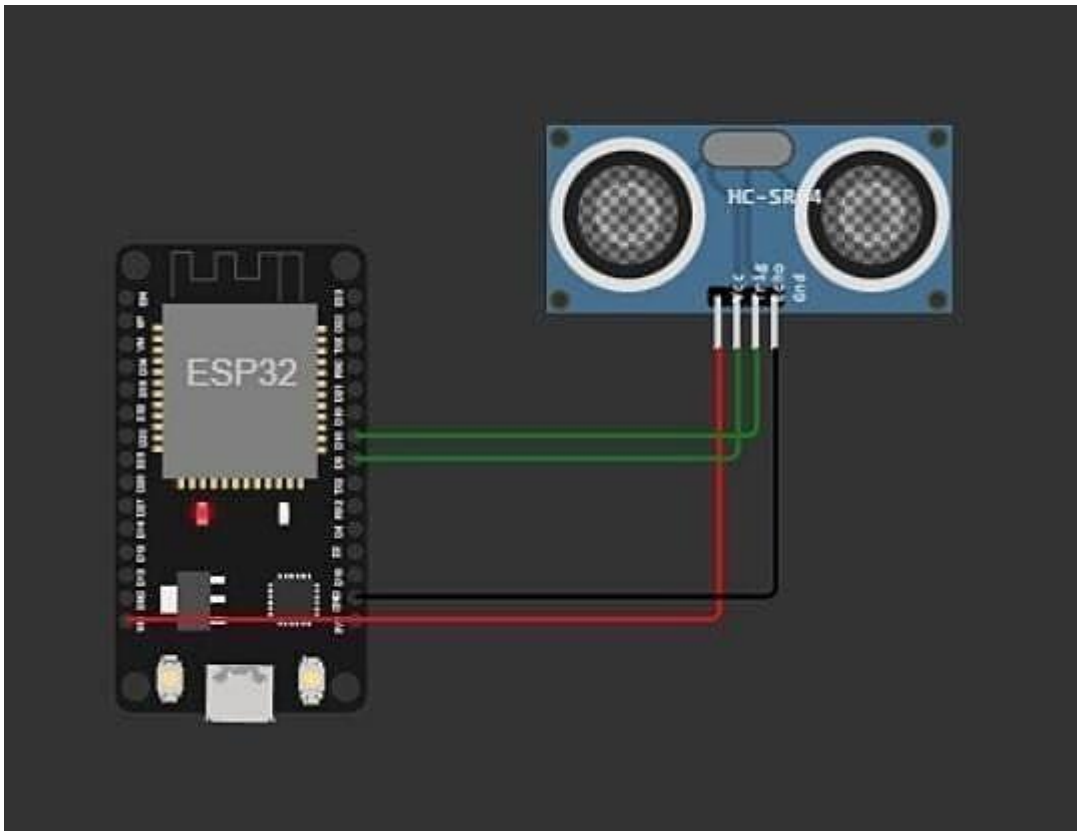
```
#include
<WiFi.h>
#include
<PubSubClient.h>
WiFiClient wififiClient;
String
data3;
#defifine
ORG
"3yngbh"
#defifine
DEVICE_TYPE
"Assignment"
#defifine
DEVICE_ID
"1234"
#defifine
TOKEN
"234567890"
```

```
#defifine
speed
0.034
#defifine
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, wififiClient)
const int trigpin=5;
const int echopin=18;
String command;
String data="";long duration;
flfloat dist;

void setup()
{
Serial.begin(115200);
pinMode(led, OUTPUT);
pinMode(trigpin, OUTPUT);
pinMode(echopin, INPUT);
wififiConnect();
mqttConnect();
}
void loop() {
```

```
bool isNearby = dist < 100;
digitalWrite(led, isNearby);
publishData();
delay(500);
if (!client.loop()) {
mqttConnect();
}
}
void wififiConnect() {
Serial.print("Connecting to "); Serial.print("Wififi");
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\":";
```

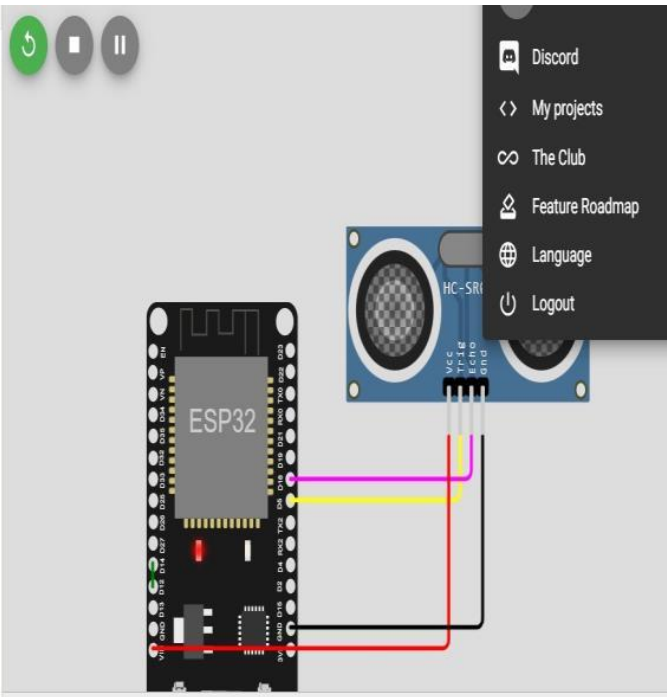
```
payload += dist;
payload += "}";
Serial.print("\n");
Serial.print("Sending payload: ");
Serial.println(payload)
if (client.publish(publishTopic, (char*) payload.c_str())) {
Serial.println("Publish OK");
}
}
if(dist>100){
String payload = "{\"Distance\":";
payload += dist;
payload += "}";
Serial.print("\n");
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:(wowki):

```
#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);
```




```
Connecting to Wifi.....WiFi connected, IP address: 10.10.0.2
Reconnecting MQTT client to 3yngbh.messaging.internetofthings.ibmcloud.com
IBM subscribe to cmd OK


Sending payload: {"Distance":138.98}
Publish OK
```

Output (IBM cloud):