

ASSIGNMENT-3

DATE	10 MAY 2023
TEAM ID	NM2023TMID11348
PROJECT TITLE	SMART BILLING SYSTEM FOR WATER SUPPLIES

PROBLEM STATEMENT :

Build wowki project,use ultrasonic sensor and detect the distance from the object.whenever distance is less than 100cms upload the value to ibm cloud.in recent device events upload the data from wokwi

CODE :

```

#include <WiFi.h>
#include
<PubSubClient.h>
void callback(char* subscribetopic, byte* payload, unsigned int
payloadLength);
//-----credentials of IBM Accounts---#define
ORG "kotoq5"//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);

```

```

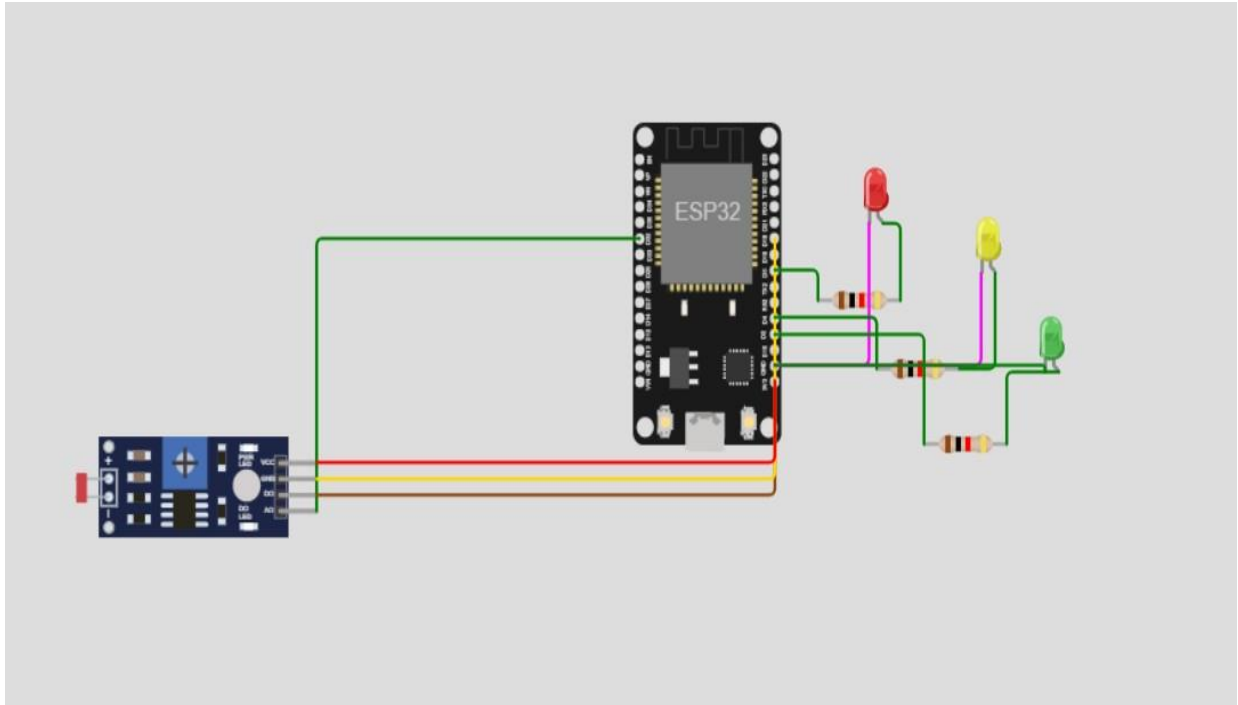
duration = pulseIn(echoPin, HIGH);
distance = duration *
SOUND_SPEED/2;
Serial.print("Distance (cm): ");
Serial.println(distance);
if(distance<100)
{
Serial.println("ALERT!!");
delay(1000);PublishData(distance);
delay(1000); if (!client.loop()) {
mqttconnect();
} }
delay(1000);
}
void PublishData(float 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)) {

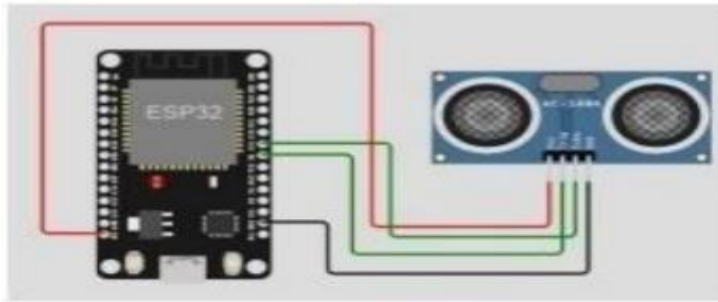
```

```

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="";
}
Diagram.json:
{
"version": 1,
"author": "sweetysharon",
"editor": "wokwi",
"parts": [
{ "type": "wokwi-esp32-devkit-v1", "id": "esp", "top": -4.67, "left": -
114.67, "attrs": {} },
{ "type": "wokwi-hc-sr04", "id": "ultrasonic1", "top": 15.96, "left":
89.17, "attrs": {} }
],
"connections": [
[ "esp:TX0", "$serialMonitor:RX", "", [ ] ],
[ "esp:RX0", "$serialMonitor:TX", "", [ ] ],
[
"esp:VIN",
"ultrasonic1:VCC",
"red",
[ "h-37.16", "v-178.79", "h200", "v173.33", "h100.67" ]
],
[ "esp:GND.1", "ultrasonic1:GND", "black", [ "h39.87", "v44.04",
"h170" ] ],
[ "esp:D5", "ultrasonic1:TRIG", "green", [ "h54.54", "v85.07",
"h130.67" ] ],
[ "esp:D18", "ultrasonic1:ECHO", "green", [ "h77.87", "v80.01",
"h110" ] ]
]
}

```



**Output:****Wokwi output:**

```
Connecting to ....  
WiFi connected  
IP address:  
10.10.0.2  
Reconnecting client to ytluss.messaging.internetofthings.ibecloud.com  
Set-2/cmd/test/fmt/String  
subscribe to cmd OK  
  
Distance (cm): 399.92  
Distance (cm): 399.96  
Distance (cm): 399.94  
Distance (cm): 399.98  
Distance (cm): 399.94  
Distance (cm): 399.92  
Distance (cm): 399.94
```