Smart Waste Management System for Metropolitan Cities

ASSIGNMENT 4 TEAM ID : PNT2022TMID14336

Write code and connections in wokwi for ultrasonic sensors.

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 ibm cloud

CODE

```
#include <WiFi.h>

#include <PubSubClient.h>

WiFiClient wifiClient;

String data3;

#define ORG "4yi0vc"

#define DEVICE TYPE "nodeMcu"

#define DEVICE_ID "Assignment4"

#define TOKEN "123456789"

#define speed 0.034

#define led 14

char server[]= ORG ".messaging.internetofthings.ibmcloud.com";

char publishTopic[] "iot-2/evt/Data/fmt/json": char topic[]="iot-2/cmd/home/fmt/String":

char authMethod[]"use-token-auth";

char token[] TOKEN;

char clientid[]"d:" ORG: DEVICE TYPE: DEVICE ID;

PubSubClient client(server, 1883, wifiClient);

void publishData();

 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(): mattConnect();
}
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 (Iclient.connected())
 {
 Serial.print("Reconnecting MQTT client to ");
 Serial.println(server);
while (!client.connect(clientId, authMethod, token)) {
Serial.print("."); delay(500);
}
 initManagedDevice();
 Serial.println();
 }
}
void initManaged Device()
{
 if (client.subscribe(topic))
{
Il Serial.println(client.subscribe(topic));
```

```
 Serial.println("IBM subscribe to cmd OK");
 Serial.println("subscribe to cmd FAILED");
}
else{
}
} 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="{\"Normal Distance\":";
payload += dist,
payload += ""
Serial.print("\n");
Serial.print("Sending payload: ");
 Serial.println(payload);
if (client.publish(publish Topic, (char*) payload.c_str()) {
Serial.println("Publish OK");
}
Wondershare opFelement
}
```

```
if(dist>101 && dist<111){

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("Warning crosses 110cm--it automaticaly of the loop");
digitalWrite(led,HIGH);

}else { Serial.println("Publish 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++){

 dist += (char)payload[i];

}

Serial.println("data" + data3);

if(data3=="lighton"){

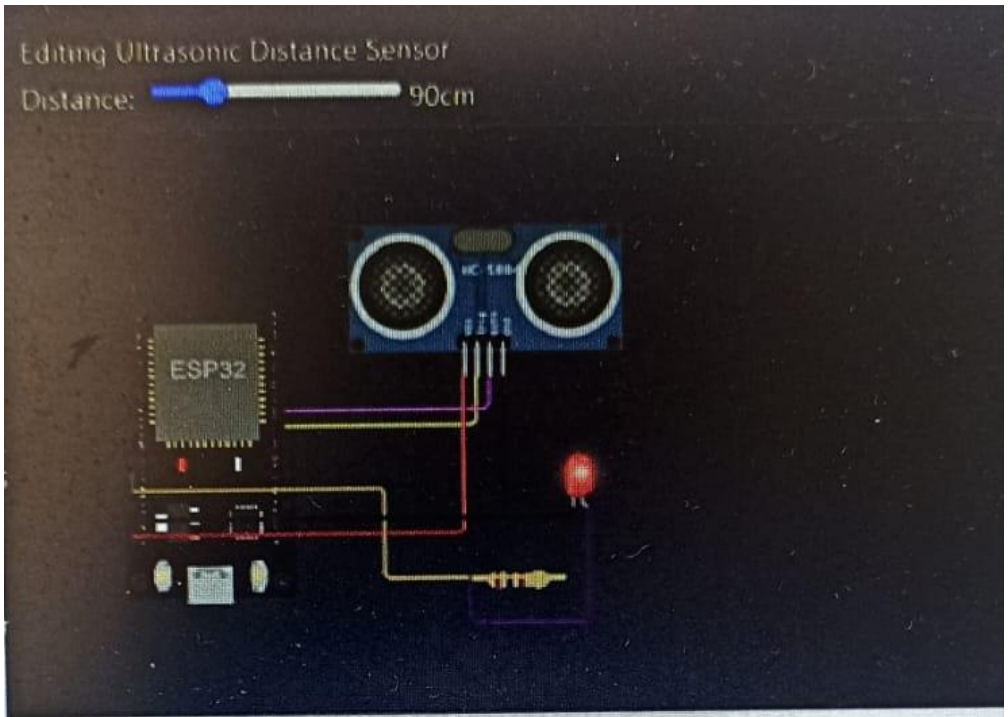
Serial.println(data3);

digitalWrite(led,HIGH);

 }

data3="";
```

}




```
Sending payload: {"Normal Distance":89.95}
Publish OK

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Publish OK

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Publish OK

Sending payload: {"Normal Distance":89.98}
Publish OK

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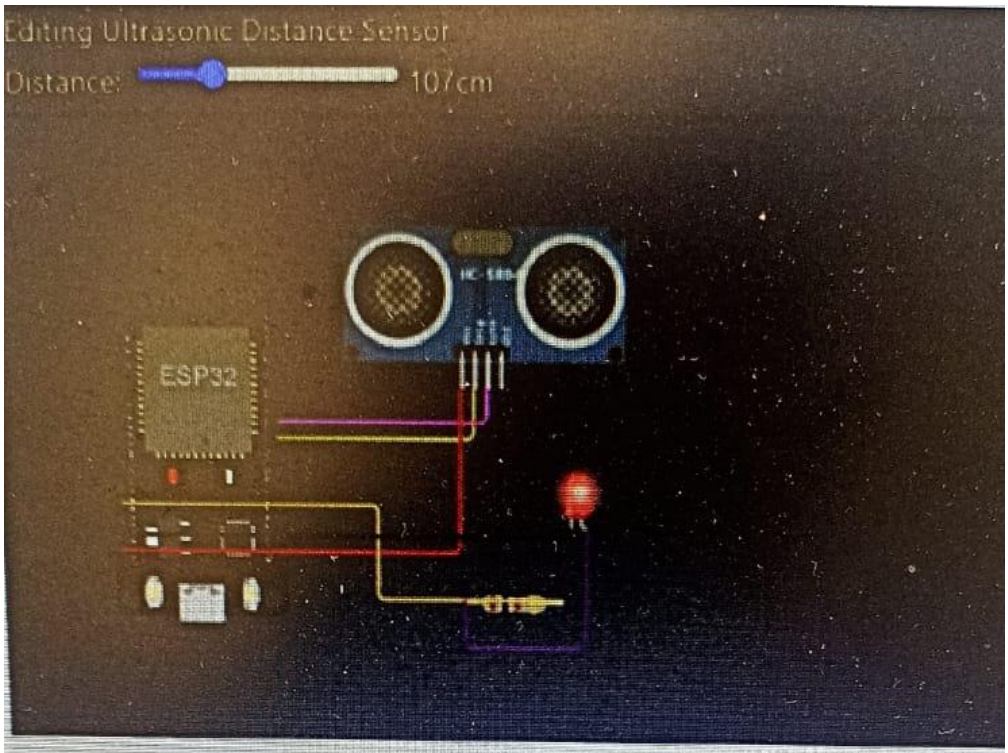
Publish OK
```

1) when distance under 100 cm it wil show normal distance




```
Sending payload: {"Alert distance":106.98}
Warning crosses 110cm -- it automaticaly of the loop

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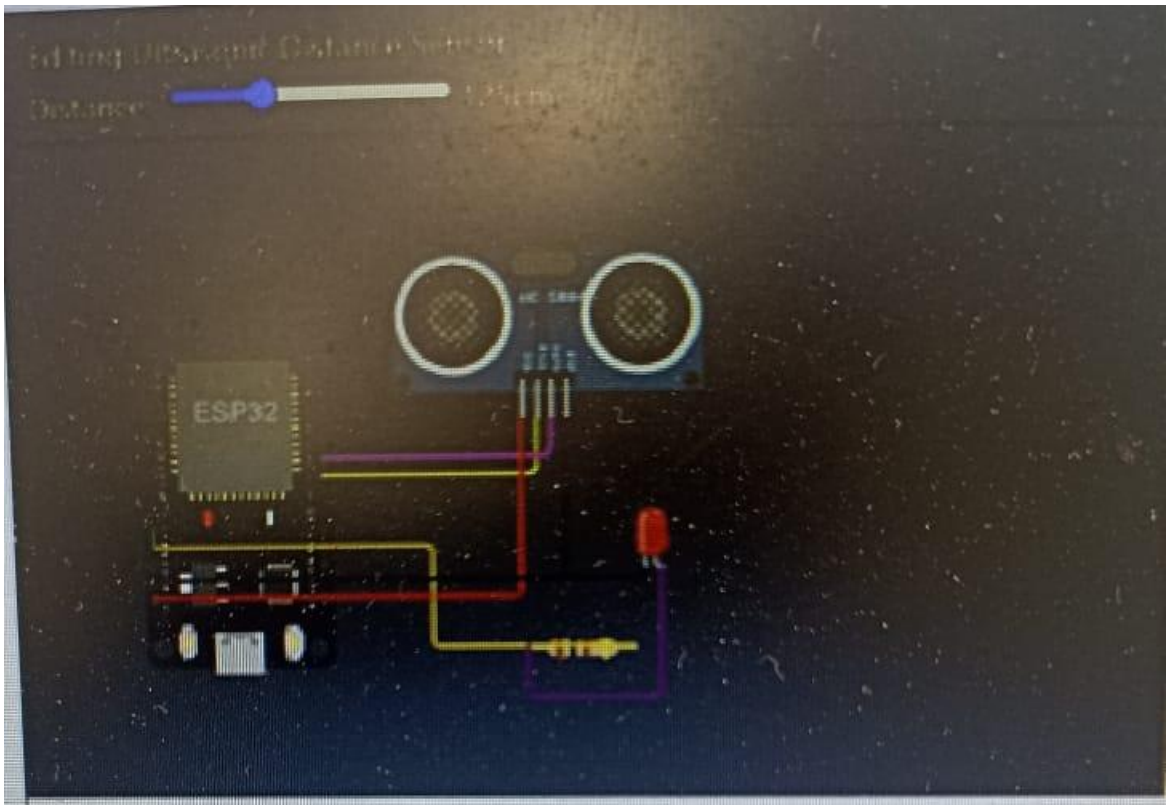
2) when distance cross 100 cm
it wil show ALERT with warning message
distance

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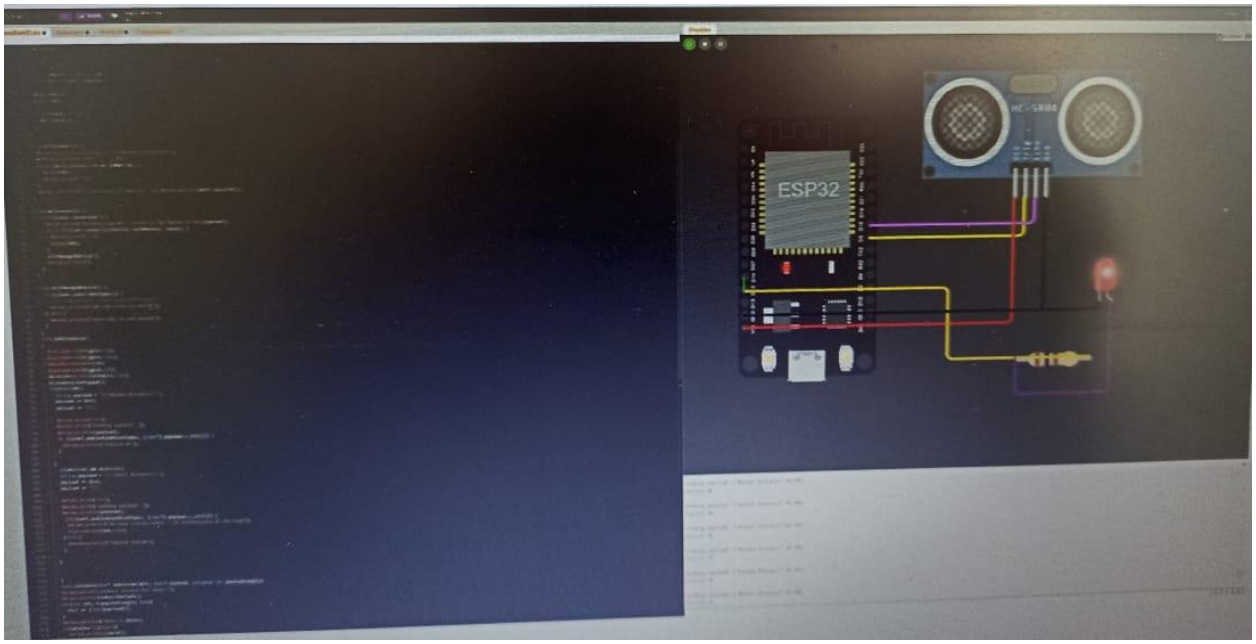
Recent Events

The recent events listed show the live stream of data that is coming and going from this device.

Event	Value	Format	Last Received
Data	{"Normal Distance":92.99}	json	a few seconds ago
Data	{"Normal Distance":92.99}	json	a few seconds ago
Data	{"Normal Distance":92.99}	json	a few seconds ago
Data	{"Normal Distance":92.99}	json	a few seconds ago
Data	{"Normal Distance":92.99}	json	a few seconds ago



IBM CLOUD OUPUT

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Event	Value	Format	Last Received
Data	{"Alert distance":106.98}	json	a few seconds ago
Data	{"Alert distance":107.03}	json	a few seconds ago
Data	{"Alert distance":106.98}	json	a few seconds ago
Data	{"Alert distance":106.98}	json	a few seconds ago
Data	{"Alert distance":106.98}	json	a few seconds ago