**ASSIGNMENT – IV TEAM ID: PNT2022TMID30692**

Write code and connections in wokwi for ultrasonicsensors.

Whenever distance is less than 100cms send "alert" to ibmcloud and display d evice recent events.

**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(); mqttConnect();

}

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 (!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 = "{\"Normal 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>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);

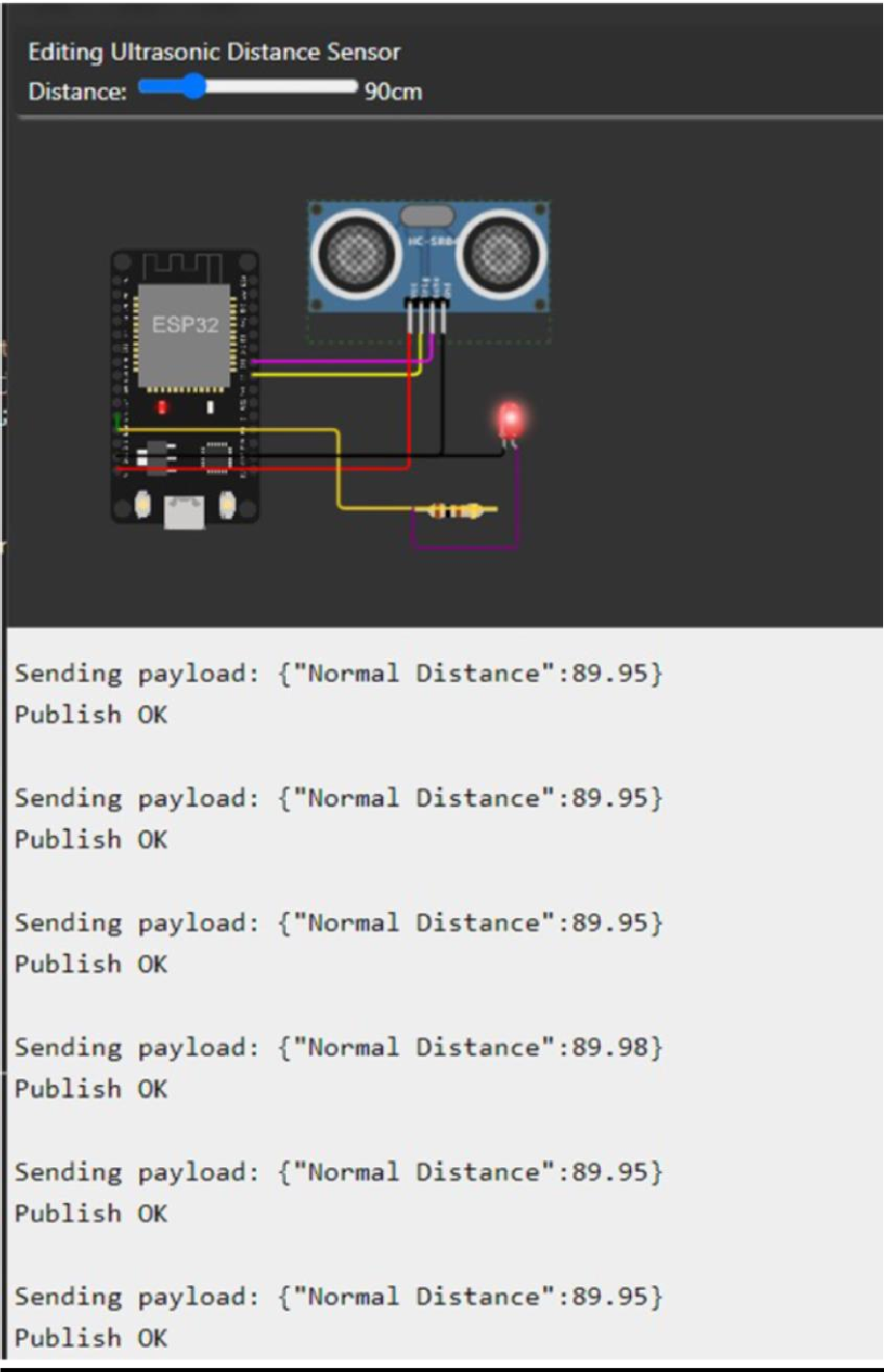
}

data3="";

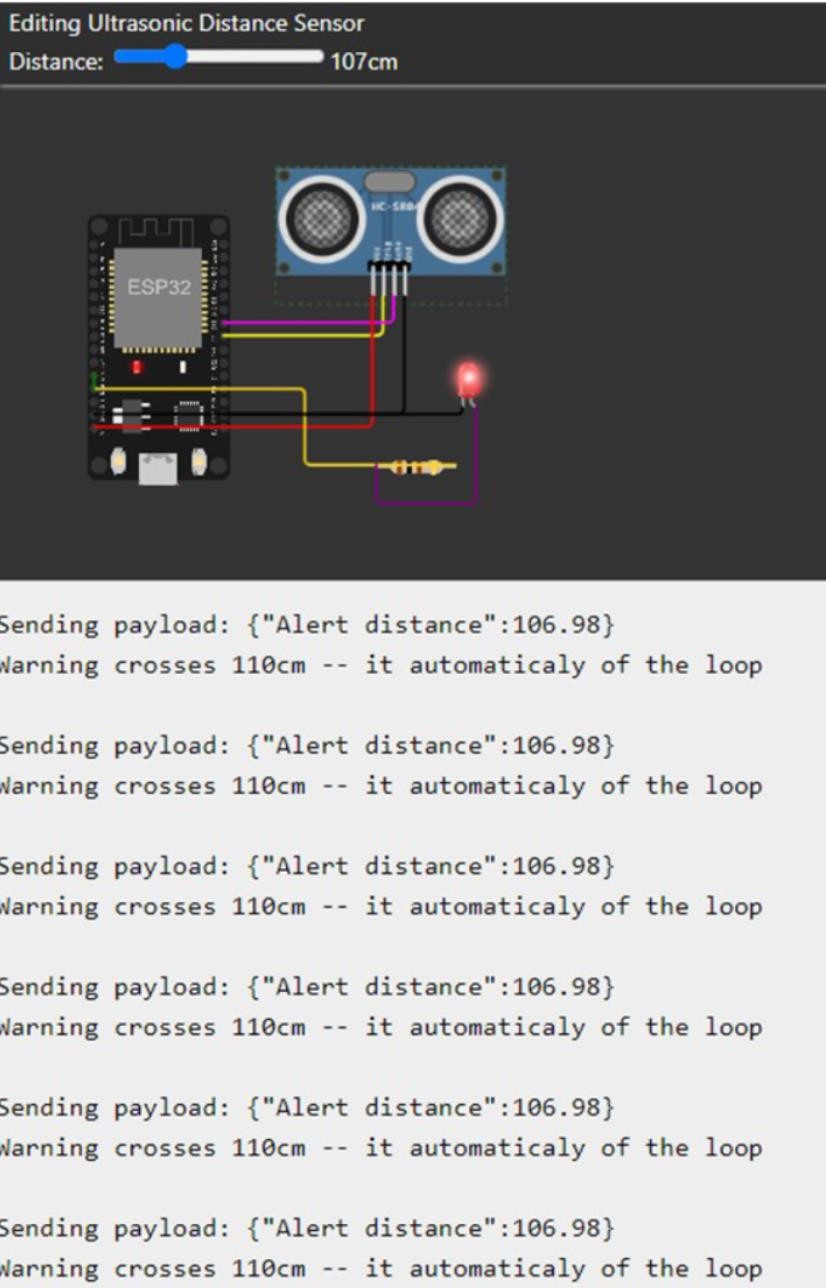
}

**Output :**

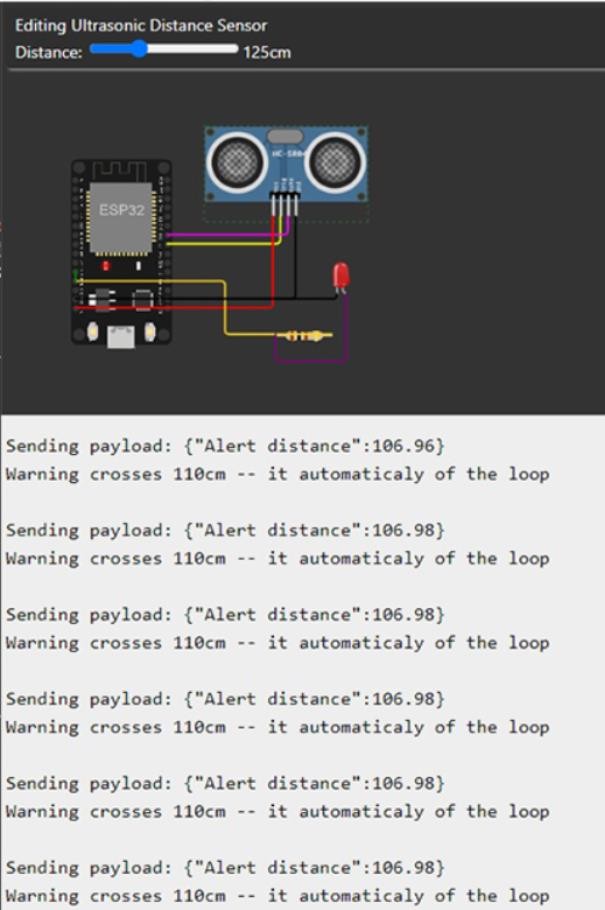
1. **When Distance < 100 cm, it will show normal distance.**



1. **When distance > 100cm <110cm, alert with warning message occurs.**



1. **When distance>110cm, totally moves to iff state.**



**IBM Cloud Output:**

