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PROGRAM

Smart Waste Management System for Metropolitan Cities

ASSIGNMENT 4:

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. Uplode document with wokwi share link

and images of ibm cloud.

CODE:

```
#include <WiFi.h>

#include <PubSubClient.h>

WiFiClient wifiClient;

String data3;

#define ORG "ztcz45"

#define DEVICE_TYPE "naveen"

#define DEVICE_ID "naveen123"

#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);

    ...

[10:32 pm, 23/10/2022] Gogul B.E CSE: }

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);

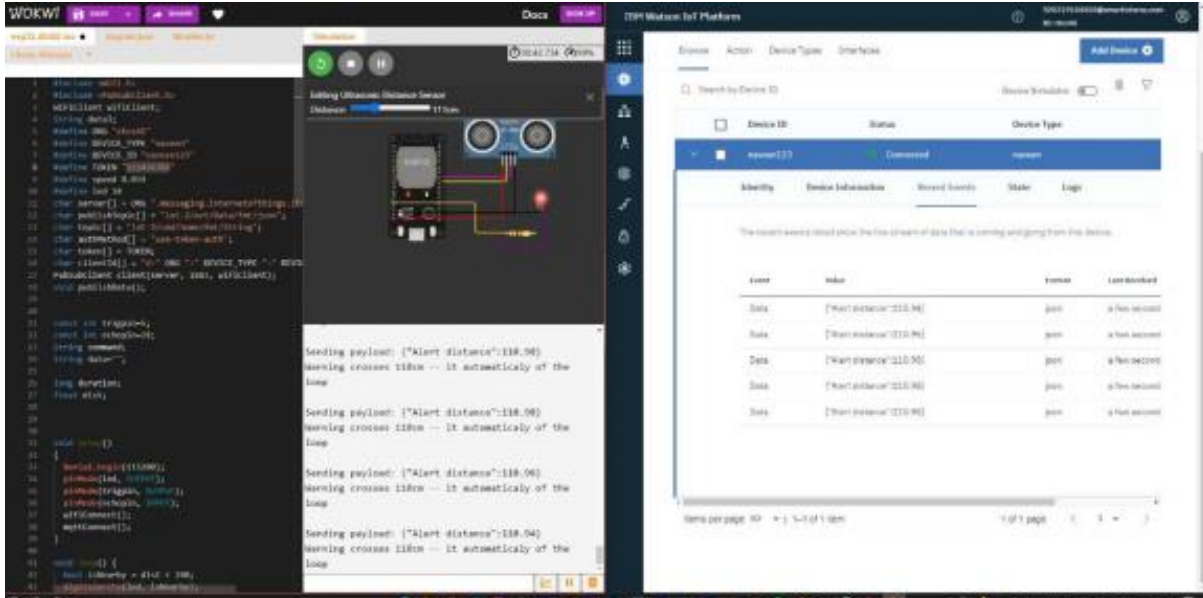
digitalWrite(led,HIGH);

}

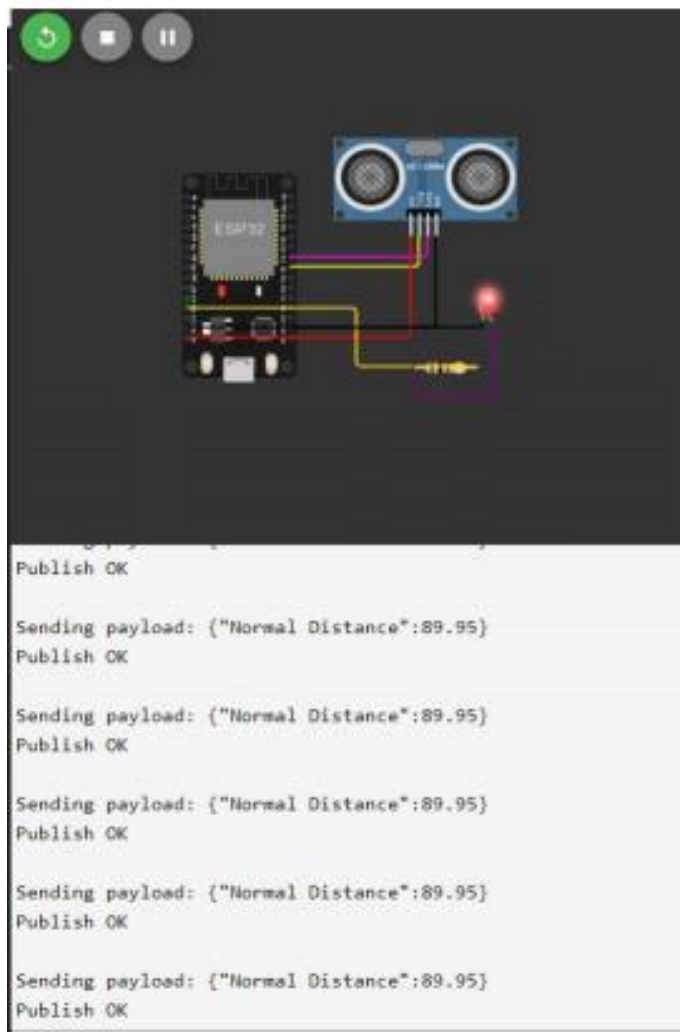
```

```
data3="";
}
```

output:



1. When distance under 100 cm it wil show normal distance.



2. When distance cross 100 cm it will show ALERT warning message distance

The screenshot displays the Wokwi IDE on the left, where a C++ program for an Arduino Uno is being simulated. The code uses an ultrasonic sensor to measure distance and sends data to the IBM Watson IoT Platform. The simulation window shows a visual representation of the sensor and the distance being measured. On the right, the IBM Watson IoT Platform interface is shown, displaying the device 'akash123' in a 'Connected' state. The 'Recent Events' tab is active, showing a live stream of data points where the distance has crossed 110 cm, triggering an alert.

Event	Value	Format	Last Received
Data	{"Alert distance":110.90}	json	a few second
Data	{"Alert distance":110.90}	json	a few second
Data	{"Alert distance":110.90}	json	a few second
Data	{"Alert distance":110.90}	json	a few second
Data	{"Alert distance":110.90}	json	a few second

3. When it cross above 110 cm it today move to iff state once it

reduce to 110 it on again

Connection information:

Basic connection information about this device.

Organization ID : ztcz45

Device Type : akash

Device ID : akash123

Authentication Method : use-token-auth Authentication Token : 123456789

Identity	Device Information	Recent Events	State	Logs
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":89.95}	json	a few second	
Data	{"Normal Distance":89.95}	json	a few second	
Data	{"Normal Distance":89.95}	json	a few second	
Data	{"Normal Distance":89.95}	json	a few second	
Data	{"Normal Distance":89.95}	json	a few second	