

Delivery of Sprint-2

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PROJECT NAME	SMART WASTE MANAGEMENT FOR METROPOLITAN CITIES

Code for Data Transfer from Sensors

```
#include <WiFi.h>                                // library for wifi
#include <PubSubClient.h>                          // library for MQTT
#include <LiquidCrystal_I2C.h> LiquidCrystal_I2C
LCD(0x27, 20, 4);

// credentials of IBM Accounts _____-
#define ORG "kytmylx"                            // IBM organisation id
#define DEVICE_TYPE "new"                         // Device type mentioned in ibm watson iot platform
#define DEVICE_ID "09876"                          // Device ID mentioned in ibm watson iot platform
#define TOKEN "Kamesh@2002"                        // Token

// customise above values.....- 

char server[] = ORG ".messaging.internetofthings.ibmcloud.com"; // server name char publishTopic[] = "iot-2/evt/data/fmt/json"; char
topic[] = "iot-2/cmd/led/fmt/String"; // cmd Represent type and command is test format of strings char authMethod[] = "usetoken-
auth"; // authentication method char token[] = TOKEN;
char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID;           //Client id

// _____

WiFiClient wifiClient;                                     // creating instance for wificlient
PubSubClient client(server, 1883, wifiClient);

#define ECHO_PIN 12
#define TRIG_PIN 13 float
dist;

void setup()
{
Serial.begin(115200);
pinMode(LED_BUILTIN,      OUTPUT);
pinMode(TRIG_PIN,         OUTPUT);
pinMode(ECHO_PIN, INPUT);
//pir pin pinMode(4, INPUT);

//ledpins pinMode(23,
OUTPUT); pinMode(2,
OUTPUT); pinMode(4,
OUTPUT); pinMode(15,
OUTPUT);

```

```

lcd.init(); lcd.backlight(); lcd.setCursor(1,
0); lcd.print(""); wifiConnect();
mqttConnect();
}

float readcmCM()
{
digitalWrite(TRIG_PIN, LOW);
delayMicroseconds(2); digitalWrite(TRIG_PIN,
HIGH); delayMicroseconds(10);
digitalWrite(TRIG_PIN, LOW); int duration =
pulseIn(ECHO_PIN, HIGH); return
duration * 0.034 / 2;
}

void loop()
{
lcd.clear();

publishData(); delay(500);
if (!client.loop())
{
    mqttConnect(); // function call to connect to IBM
}
}

/* _____-retrieving to cloud_____ */

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("IBM subscribe to cmd OK");
}
}

```

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        else
        {
            Serial.println("subscribe to cmd FAILED");
        }
    }
void publishData()
{
float cm = readcmCM();

if(digitalRead(34))                                //PIR motion detection
{
    Serial.println("Motion
Detected");    Serial.println("Lid
Opened"); digitalWrite(15, HIGH);
}
else
{
    digitalWrite(15, LOW);
}

if(digitalRead(34)== true)
{
    if(cm <= 100)                                //Bin level detection
    {
        digitalWrite(2, HIGH);
        Serial.println("High Alert!!!,Trash bin is about to be full");
        Serial.println("Lid Closed"); lcd.print("Full! Don't use"); delay(2000);
        lcd.clear();      digitalWrite(4,      LOW);
        digitalWrite(23, LOW);
    }
    else if(cm > 150 && cm < 250)
    {
        digitalWrite(4, HIGH);
        Serial.println("Warning!!,Trash is about to cross 50% of bin level"); digitalWrite(2,
LOW);
        digitalWrite(23, LOW);
    }
    else if(cm > 250 && cm <=400)
    {
        digitalWrite(23, HIGH); Serial.println("Bin is
available"); digitalWrite(2,LOW);
        digitalWrite(4, LOW);
    }
    delay(10000); Serial.println("Lid Closed");
}
else
{
    Serial.println("No motion detected");
}

if(cm <= 100)
{
digitalWrite(21,HIGH);
String payload = "{\"High Alert!\":\"";
payload += cm; payload
+= "left\"}";
Serial.print("\n");
Serial.print("Sending payload: ");
Serial.println(payload); if (client.publish(publishTopic, (char*) payload.c_str())) // if data is uploaded to cloud successfully,prints publish
ok or prints publish failed
{
    Serial.println("Publish OK");
}

```

```

}
}

if(cm <= 250)
{
digitalWrite(22,HIGH);
String payload = "{\"Warning!\":\"\"";
payload += dist; payload += "left\"}";
Serial.print("\n");
Serial.print("Sending distance: "); Serial.println(cm); if(client.publish(publishTopic,
(char*) payload.c_str()))
{
Serial.println("Publish OK");
}
else
{
Serial.println("Publish FAILED");
}
}

float inches = (cm / 2.54); //print on LCD lcd.setCursor(0,0); lcd.print("Inches"); lcd.setCursor(4,0);
lcd.setCursor(12,0); lcd.print("cm"); lcd.setCursor(1,1); lcd.print(inches, 1); lcd.setCursor(11,1);
lcd.print(cm, 1); lcd.setCursor(14,1); delay(1000); lcd.clear();
}

```

Connection Diagram

