Delivery of Sprint-2

DATE	18 November 2022
TEAM ID	PNT2022TMID32932
PROJECT NAME	PROJECT - 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 "9gbe4w" // IBM organisation id
#define DEVICE_TYPE "SWMSMC" // Device type mentioned in
ibm watson iot platform  #define DEVICE_ID "ibmproject" //
Device ID mentioned in ibm watson iot platform #define  TOKEN "sUNA41tG6-
Pq)0rk5X" // Token

//---------------------- customise above values ----------------------------------------
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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[] = "use-tokenauth";
// 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);
```
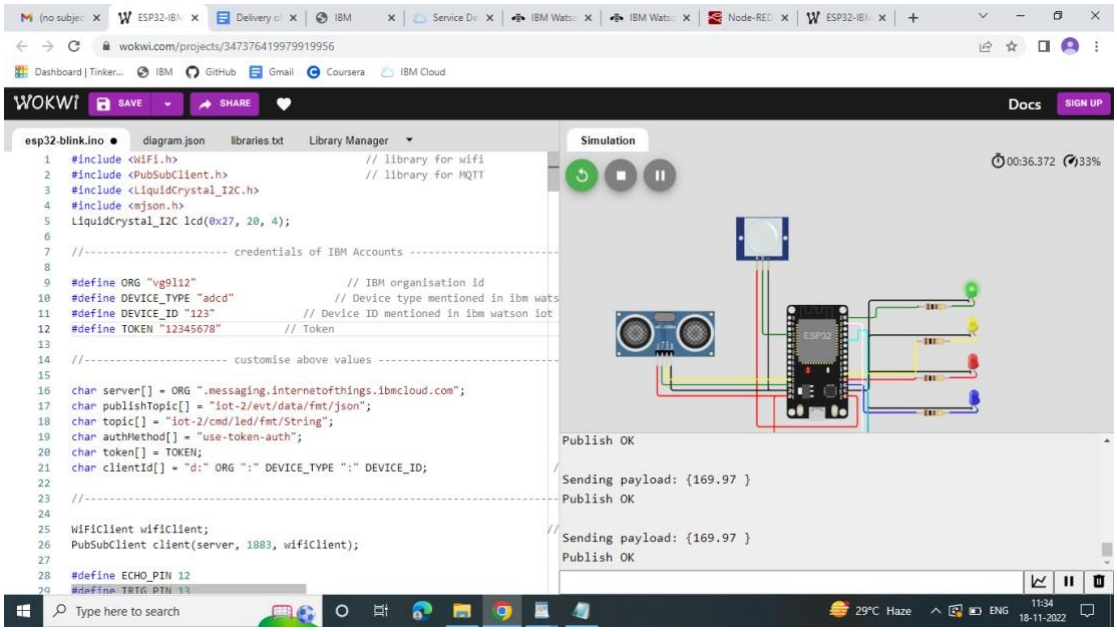

```
#define ECHO_PIN 12 #define
TRIG_PIN 13
float dist;

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()
{
```

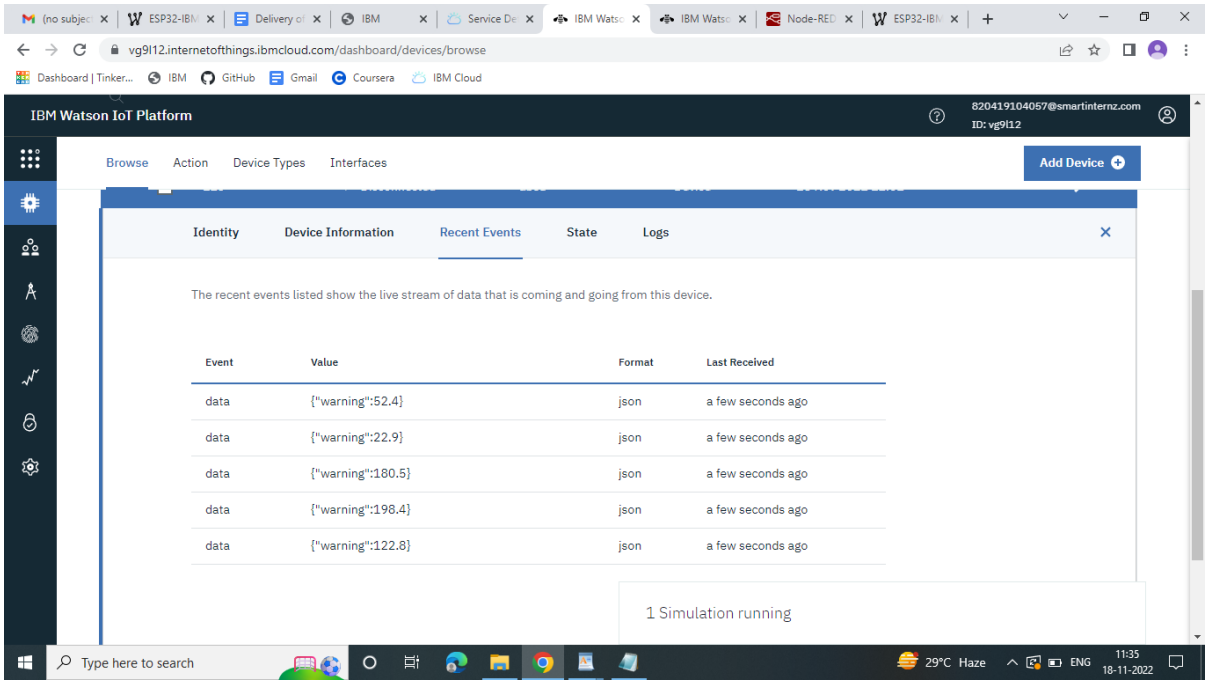
```
 lcd.clear();

 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");
 }
else
{
Serial.p
rintln("s  ubscrib
e 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();
}
```





Link : https://wokwi.com/projects/347376419979919956