SPRINT 2

DATE	30 OCTOBER 2022
TEAM ID	PNT2022TMID02004
PROJECT NAME	SMART WASTE MANAGEMENT FOR METROPOLITAN CITIES-IOT

CODE :

```
#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 "cbseji" // IBM organisation id

#define DEVICE_TYPE "abcd" // Device type mentioned in ibm watson iot platform

#define DEVICE_ID "1234" // Device ID mentioned in ibm watson iot platform

#define TOKEN "12345678" // Token

//------------------------ customise above values ---------------------------------------------------------

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

char publishTopic[] = "iot-2/evt/data/fmt/json"; // topic name and type of event perform and format in which data to
be send

char topic[] = "iot-2/cmd/led/fmt/String"; // cmd Represent type and command is test format of strings

char authMethod[] = "use-token-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(34, 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---------------------------------------------------- */
```

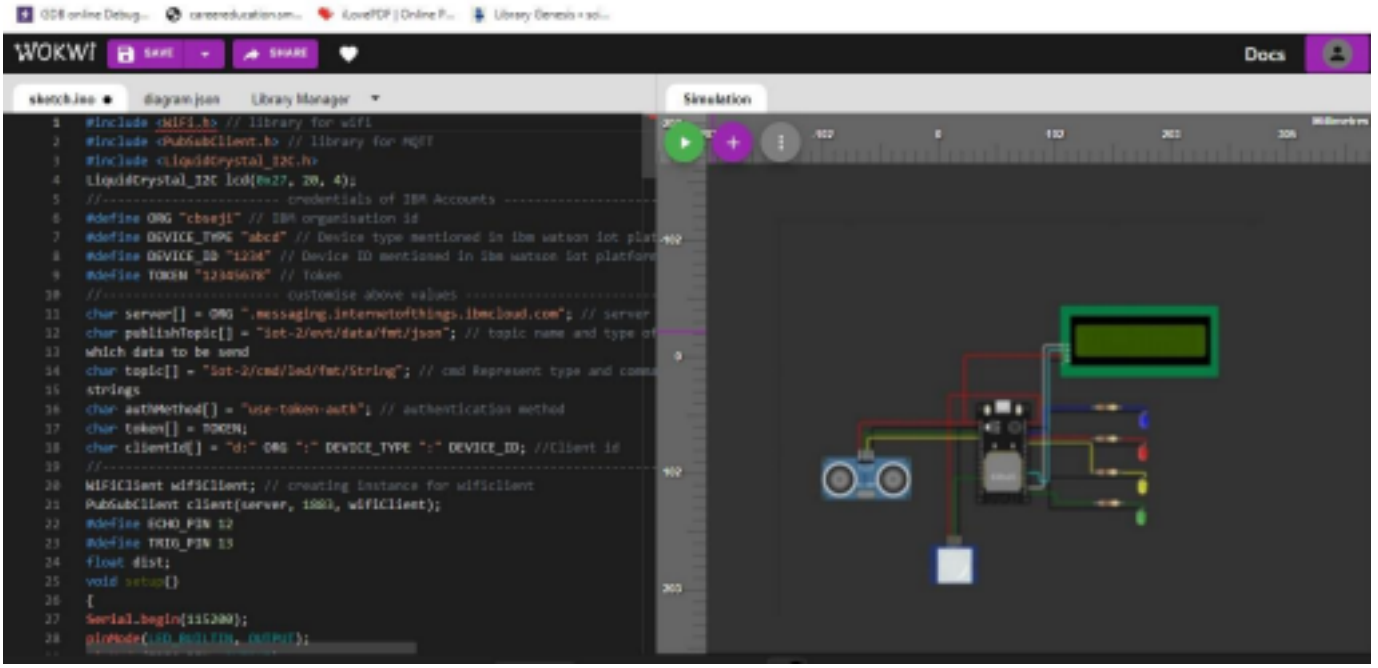
```
void wifiConnect()
{
  Serial.print("Connecting to ");
  Serial.print("Wifi");
  WiFi.begin("Wokwi-GUEST", "", 6);
  while (WiFi.status() != WL_CONNECTED)
    {
      delay(500);
      Serial.print(".");
    }
  Serial.print("WiFi connected, IP address: ");
  Serial.println(WiFi.localIP());
}
void 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.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);
  if(digitalRead(34)== true)
 {
 if(cm <= 60) //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 > 60 && cm < 120)
 {
   digitalWrite(4, HIGH);
   Serial.println("Warning!!,Trash is about to cross 50% of bin level");
   digitalWrite(2, LOW);
   digitalWrite(23, LOW);

 }
 else if(cm > 120)
 {
   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");
   digitalWrite(2, LOW);
   digitalWrite(15, LOW);
   digitalWrite(4, LOW);
   digitalWrite(23, LOW);
 }
  }
  else
  {
   digitalWrite(15, LOW);
   }
 if(cm <= 60)
{
digitalWrite(21,HIGH);
String payload = "{\"High_Alert\":";
payload += cm;
payload += " }";
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 else prints publish failed
{
Serial.println("Publish OK");
}
}
else if(cm <= 120)
{
```

```
digitalWrite(22,HIGH);

String payload = "{\"Warning\":";

payload += cm ;

payload += " }";

Serial.print("\n");
Serial.print("Sending payload: ");

Serial.println(payload);

if(client.publish(publishTopic, (char*) payload.c_str()))

{

Serial.println("Publish OK");

}

else

{

Serial.println("Publish FAILED");

}

}

else

{

Serial.println();

}

 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();

}
```

CIRCUIT :


WOKWI
SAVE
SHARE
Docs
sketch.ino
diagram.json
Library Manager
Simulation
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