## Sprint-2

| | |
|---|---|
| **DATE** | 07 November 2022 |
| **TEAM ID** | PNT2022TMID11587 |
| **PROJECT NAME** | SMART WASTE MANAGEMENT FOR METROPOLITAN CITIES |

Code for Data Transfer fromSensors

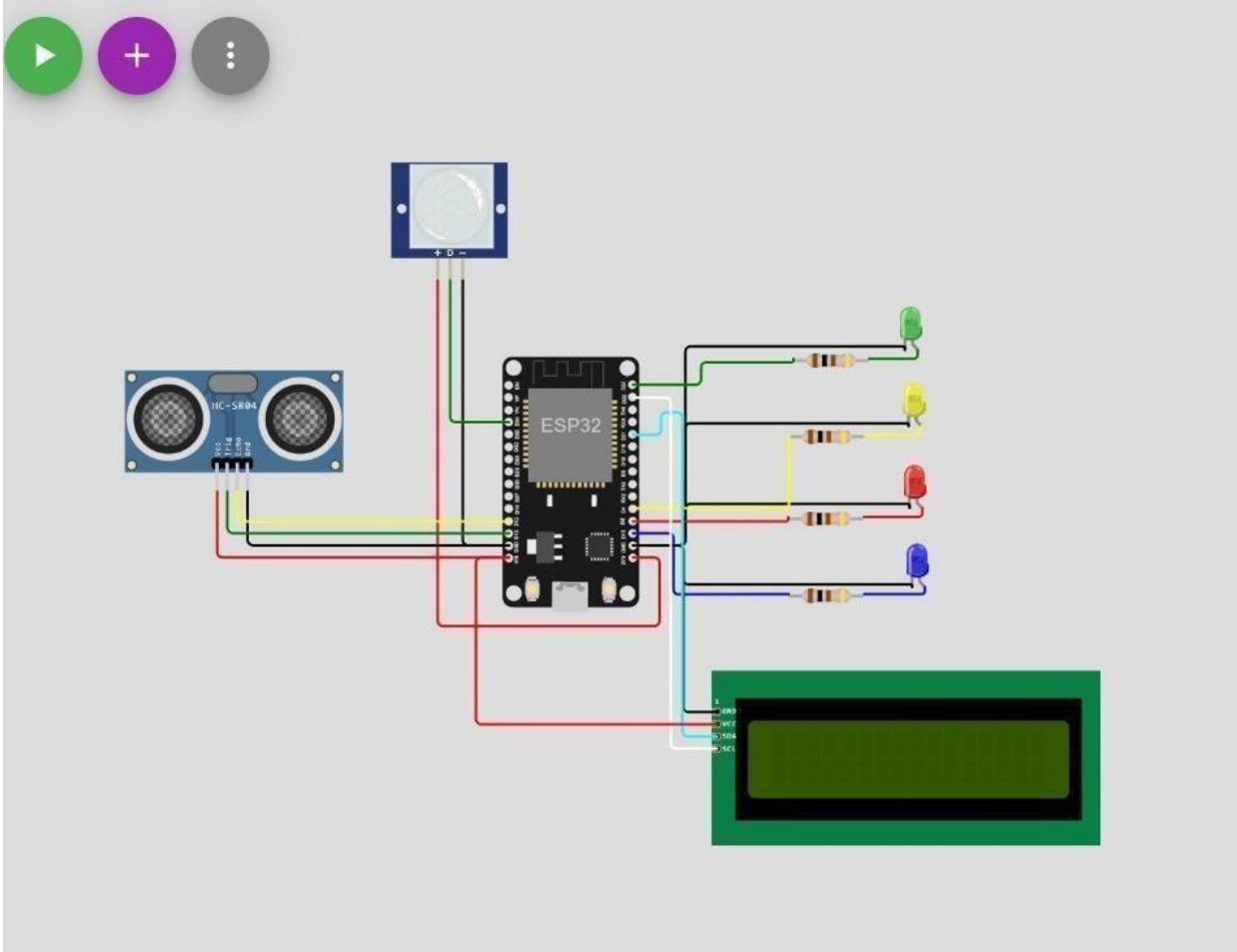
```
#include <WiFi.h>                                   // library for wifi
#include <PubSubClient.h>                           // library for
#include                                            MQTT
<LiquidCrystal_I2C.h>
LiquidCrystal_I2C
lcd(0x27, 20, 4);


//              credentials of IBM Accounts----------

#define ORG "ktymlx"                                // 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.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=pulseln(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”):
Serail.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);
     (!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.print
      ln("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.pri
      ntln("Bin                  isavailable"); 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.prin
t("\n");
Serial.prin
t("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


HC-SR04
ESP32