DELIVERY OF SPRINT-2

TEAM ID	**92172019104055**
PROJECT NAME	SMART WASTE MANAGEMENT FOR METROPOLITAN CITIES

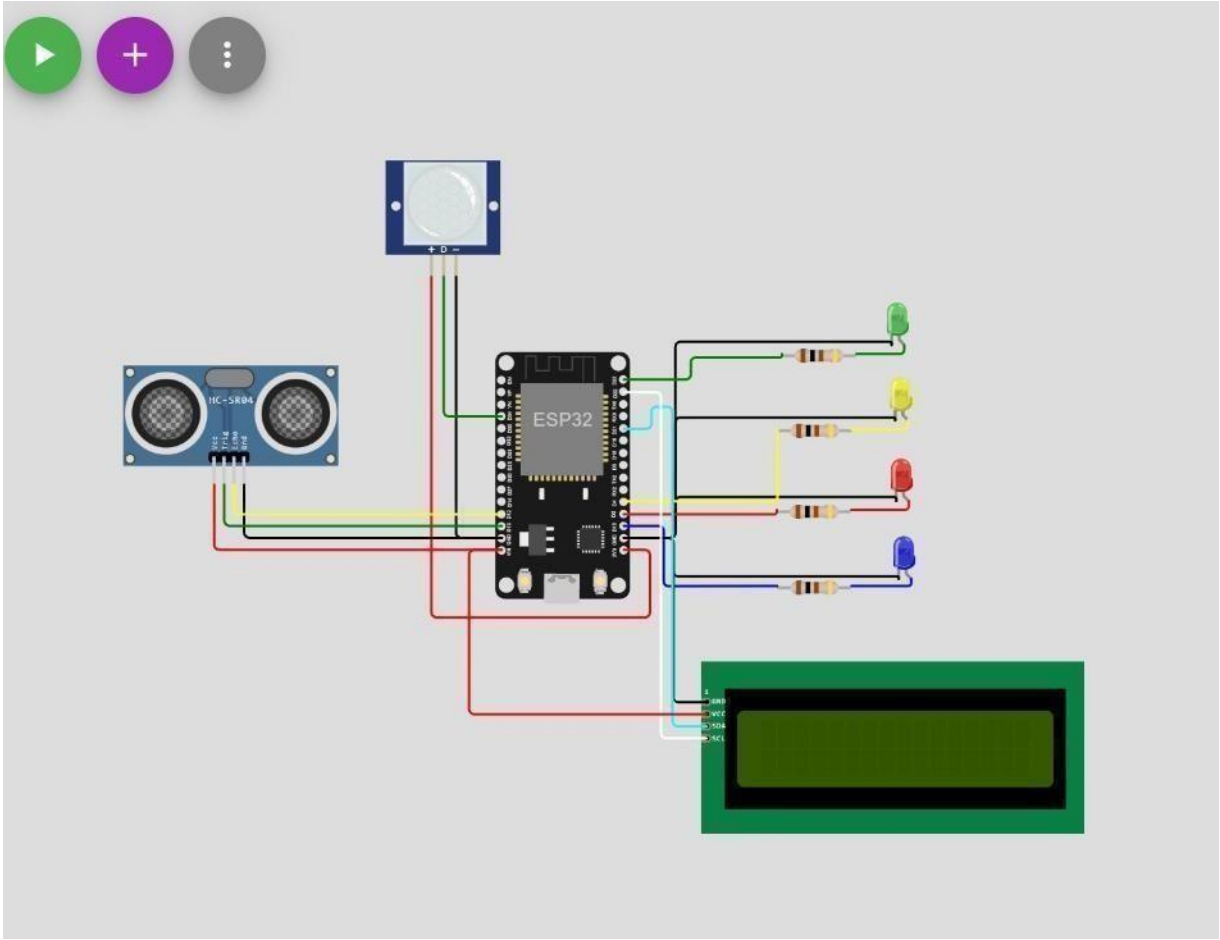
CODE FOR DATA TRANSFER FROM SENSORS

```
#include <WiFi.h>                                            // library for wifi
#include <PubSubClient.h>                                    // library for MQ
  #include <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.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);
 }
     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



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HC-SR04
Vcc Trig Echo Gnd
ESP32
GND
VCC
SDA
SCL