Delivery of Sprint-2

DATE	15 November 2022
TEAM ID	PNT2022TMID29359
PROJECT NAME	SMART WASTE MANAGEMENT FOR METROPOLITAN CITIES

Code for Data Transfer from Sensors

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

        #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 "et6ht9"                              // IBM organisation id
     #define DEVICE_TYPE "nodemcu"                   // Device type mentioned in ibm watson iot platform
     #define DEVICE_ID "12345"                         // Device ID mentioned in ibm watson iot platform
     #define TOKEN "+sy+ljPTeX59LkpZD0"                // Token

                                                                                     char
        server[]    =         ORG       ".messaging.internetofthings.ibmcloud.com";      //        server     name      char
        publishTopic[]        =         "iot2/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()
  {
```

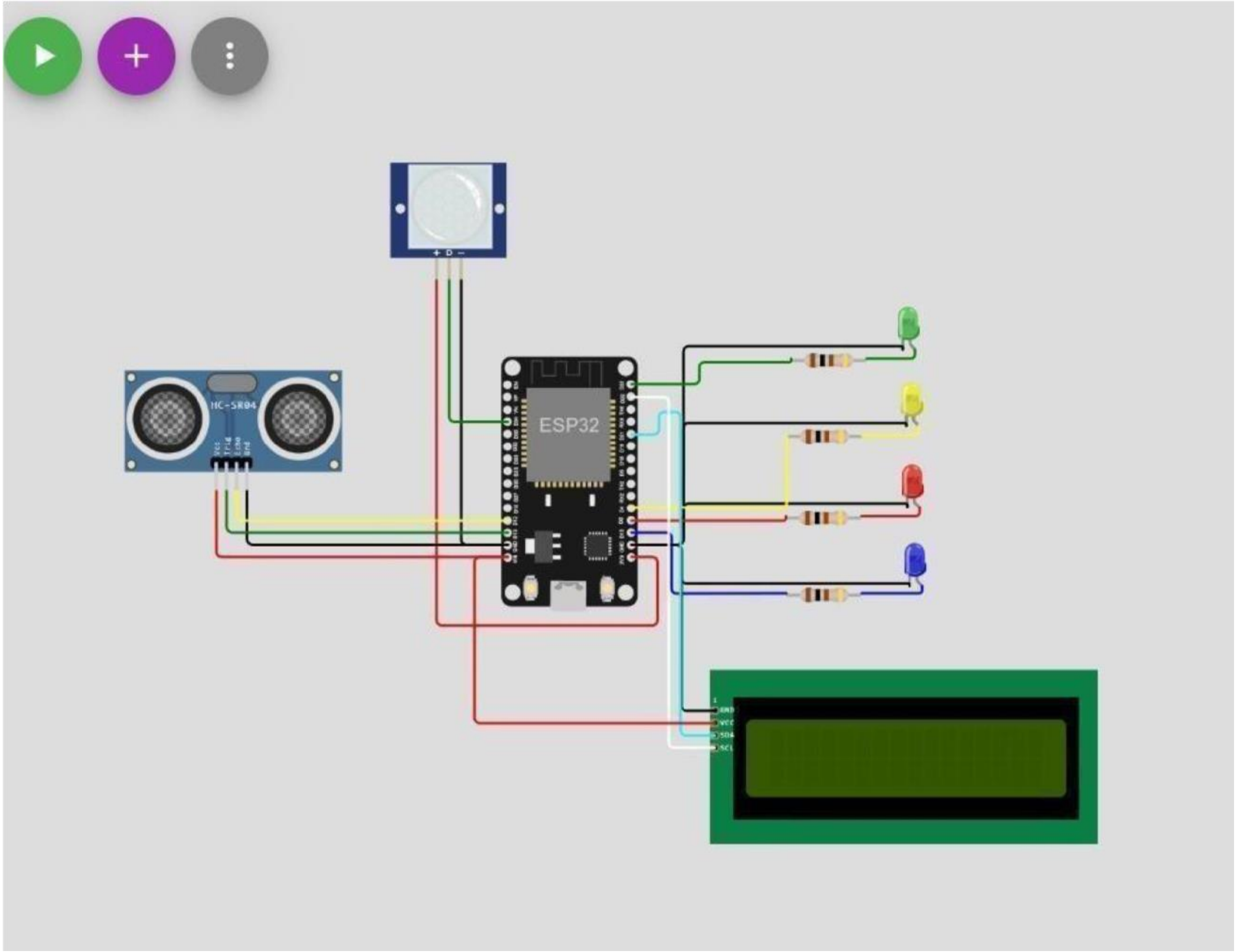
```
  Serial.print("Connecting to ");
  Serial.print("Wifi");
  WiFi.begin("Wokwi-GUEST", "", 6);
  while (WiFi.status() != WL_CONNECTED)
    {
     delay(500);
     Serial.print(".");
    }
  Serial.print("WiFi connected, IP address: ");
  Serial.println(WiFi.localIP());
  }
  void mqttConnect()
  {
    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