Delivery of Sprint-3

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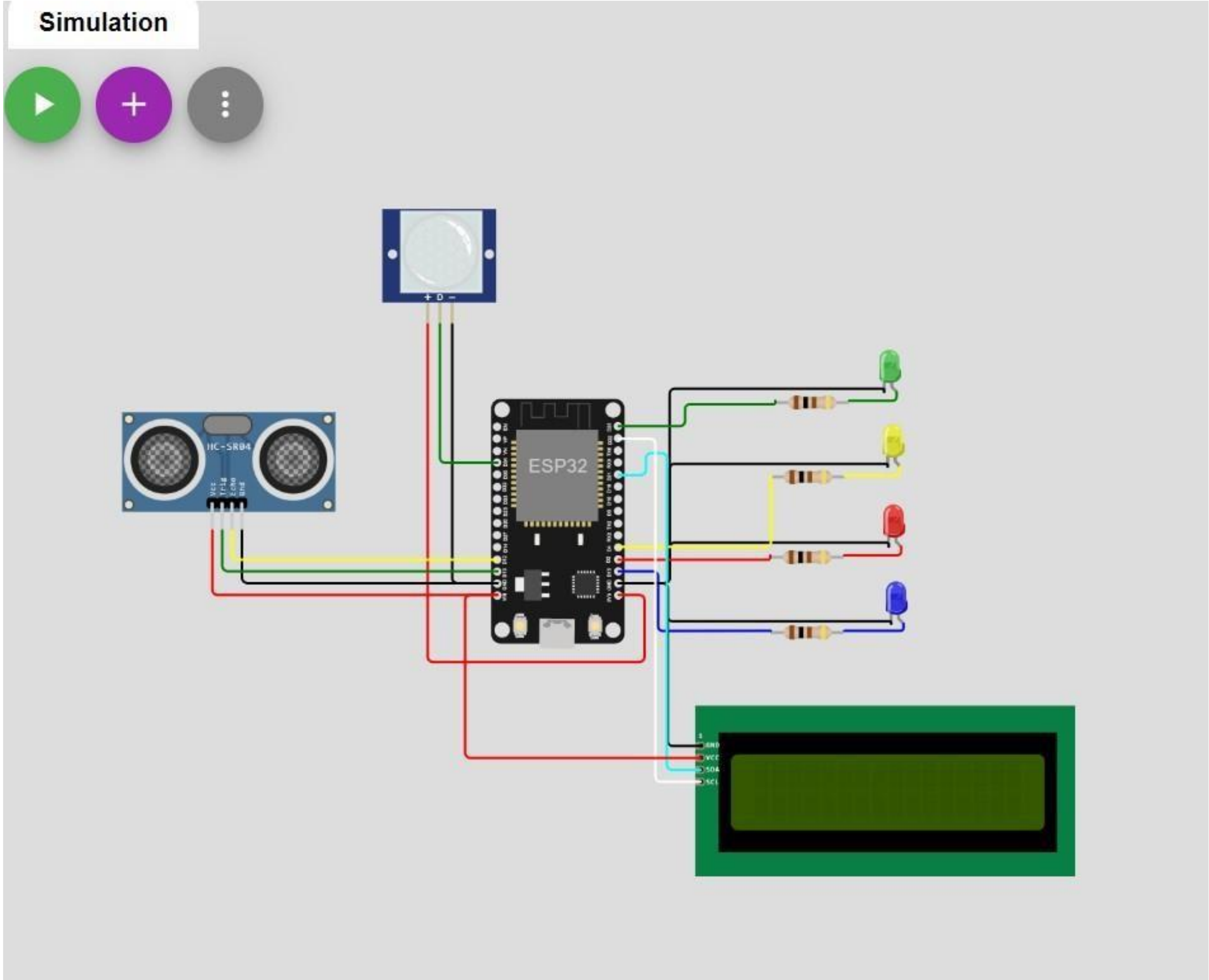
PROJECT NAME	SMARTWASTEMANAGEMENTFORMETROPOLITAN CITIES-IOT

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
#defineTOKEN "sUNA41tG6-Pq)0rk5X"            // Token

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

char server[] = ORG ".messaging.internetofthings.ibmcloud.com";// server name
 charpublishTopic[] = "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-token-auth";                          // authentication method char token[] =
TOKEN;char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID;//Client id

 //-------------------------------------------------------------------------------------------

WiFiClient wifiClient;                                         // creating instance for
 wificlientPubSubClient client(server, 1883, wifiClient);

 #define ECHO_PIN 12
 #defineTRIG_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);

}
 els
 e
 { 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(2
  3,
                        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



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