

Sprint 2

Date	19 november 2022
Team ID	PNT2022TMID33070
Project name	Smart Waste Management for metropolitan cities

```
#include <LiquidCrystal_I2C.h>
LiquidCrystal_I2C lcd(0x27, 20, 4);
float cm;
float inches;

#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(22, OUTPUT);
  pinMode(21, OUTPUT);
  pinMode(15, OUTPUT);

  lcd.init();
  lcd.backlight();
  lcd.setCursor(1, 0);
  lcd.print("");
}

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()
{

    if(digitalRead(34))                //pir motion detection
    {
        Serial.println("Motion Detected");
        Serial.println("Lid Opened");
        digitalWrite(10, HIGH);
        delay(10000);
        Serial.println("Lid Closed");

    }
    else
    {
        digitalWrite(10, LOW);
    }

    if(cm <= 100)                      //Bin level detection
    {
        digitalWrite(21, HIGH);
        Serial.println("High Alert!!!,Trash bin is about to be full");
        digitalWrite(22, LOW);
        digitalWrite(23, LOW);
    }
    else if(cm > 150 && cm < 250)
    {
        digitalWrite(22, HIGH);
        Serial.println("Warning!!,Trash is about to cross 50% of bin level");
        digitalWrite(21, LOW);
        digitalWrite(23, LOW);
    }
    else if(cm > 250 && cm <=400)
    {
        digitalWrite(23, HIGH);
        Serial.println("Bin is available");
        digitalWrite(21, LOW);
        digitalWrite(22, LOW);
    }

    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();
```

```
}
```

Diagram.json file

```
{  
  "version": 1,  
  "author": "Uri Shaked",  
  "editor": "wokwi",  
  "parts": [  
    { "type": "wokwi-esp32-devkit-v1", "id": "esp", "top": 0, "left": 0, "attrs": {} },  
    {  
      "type": "wokwi-led",  
      "id": "led1",  
      "top": -43.97,  
      "left": 296.62,  
      "attrs": { "color": "limegreen" }  
    },  
    {  
      "type": "wokwi-led",  
      "id": "led2",  
      "top": 15.48,  
      "left": 299.36,  
      "attrs": { "color": "yellow" }  
    },  
    {  
      "type": "wokwi-led",  
      "id": "led3",  
      "top": 140.83,  
      "left": 302.1,  
      "attrs": { "color": "blue" }  
    },  
    {  
      "type": "wokwi-led",  
      "id": "led4",  
      "top": 79.19,  
      "left": 300.24,  
      "attrs": { "color": "red" }  
    },  
    {  
      "type": "wokwi-resistor",
```

```
"id": "r1",
"top": -3.9,
"left": 224.81,
"attrs": { "value": "1000" }
},
{
  "type": "wokwi-resistor",
  "id": "r2",
  "top": 55.55,
  "left": 221.42,
  "attrs": { "value": "1000" }
},
{
  "type": "wokwi-resistor",
  "id": "r3",
  "top": 179.36,
  "left": 221.1,
  "attrs": { "value": "1000" }
},
{
  "type": "wokwi-resistor",
  "id": "r4",
  "top": 119.28,
  "left": 220.77,
  "attrs": { "value": "1000" }
},
{
  "type": "wokwi-lcd1602",
  "id": "lcd1",
  "top": 248.08,
  "left": 161.61,
  "attrs": { "pins": "i2c" }
},
{
  "type": "wokwi-hc-sr04",
  "id": "ultrasonic1",
  "top": 13.99,
  "left": -295.33,
  "attrs": { "distance": "57" }
},
{
  "type": "wokwi-pir-motion-sensor",
  "id": "pir1",
  "top": -147.86,
  "left": -88.23,
  "attrs": {}
}
```

```

],
"connections": [
  [ "esp:TX0", "$serialMonitor:RX", "", [] ],
  [ "esp:RX0", "$serialMonitor:TX", "", [] ],
  [ "led1:A", "r1:2", "green", [ "v0" ] ],
  [ "led2:A", "r2:2", "yellow", [ "v0" ] ],
  [ "led4:A", "r4:2", "red", [ "v0" ] ],
  [ "led3:A", "r3:2", "blue", [ "v0" ] ],
  [ "led1:C", "esp:GND.1", "black", [ "v-2.56", "h-170.98", "v116.48" ] ],
  [ "led2:C", "esp:GND.1", "black", [ "v-2.24", "h-173.72", "v91.96" ] ],
  [ "led4:C", "esp:GND.1", "black", [ "v-3.11", "h-174.6", "v27.59" ] ],
  [ "led3:C", "esp:GND.1", "black", [ "v-1.92", "h-177.99", "v-32.18" ] ],
  [ "r1:1", "esp:D23", "green", [ "v2.63", "h-71.91", "v19.92" ] ],
  [ "r2:1", "esp:D22", "yellow", [ "v-1.65", "h-71.58", "v-30.65" ] ],
  [ "r4:1", "esp:D21", "red", [ "v-1.01", "h-89.32", "v-64.37" ] ],
  [ "r3:1", "esp:D15", "blue", [ "v0.22", "h-89.65", "v-53.64" ] ],
  [ "lcd1:GND", "esp:GND.1", "black", [ "h-26.5", "v-129.82" ] ],
  [ "lcd1:VCC", "esp:3V3", "red", [ "h-44.89", "v-131.65" ] ],
  [ "pir1:VCC", "esp:3V3", "red", [ "v268.96", "h172.77", "v-55.17" ] ],
  [ "pir1:GND", "esp:GND.2", "black", [ "v0" ] ],
  [ "pir1:OUT", "esp:D34", "green", [ "v0" ] ],
  [ "esp:D32", "lcd1:SDA", "cyan", [ "h-46.74", "v226.73", "h207.35" ] ],
  [ "lcd1:SCL", "esp:D19", "white", [ "h-38.76", "v-0.46" ] ],
  [ "ultrasonic1:GND", "esp:GND.2", "black", [ "v0" ] ],
  [ "ultrasonic1:ECHO", "esp:D12", "yellow", [ "v0" ] ],
  [ "ultrasonic1:TRIG", "esp:D13", "green", [ "v0" ] ],
  [ "ultrasonic1:VCC", "esp:VIN", "red", [ "v0" ] ]
]
}

```

Wokwi Library List

See <https://docs.wokwi.com/guides/libraries>

LiquidCrystal I2C

esp32-blink.ino

diagram.json

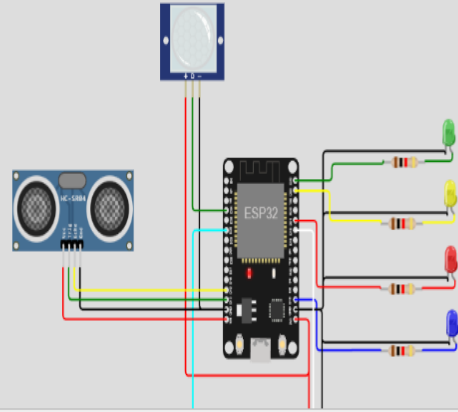
libraries.txt

Library Manager

Simulation

01:20:531 66%

```
1  #include <LiquidCrystal_I2C.h>
2  LiquidCrystal_I2C lcd(0x27, 20, 4);
3  float cm;
4  float inches;
5
6
7  #define ECHO_PIN 12
8  #define TRIG_PIN 13
9  float dist;
10
11 void setup()
12 {
13   Serial.begin(115200);
14   pinMode(LED_BUILTIN, OUTPUT);
15   pinMode(TRIG_PIN, OUTPUT);
16   pinMode(ECHO_PIN, INPUT);
17   //pirpin
18   pinMode(34, INPUT);
19
20   //ledpins
21   pinMode(23, OUTPUT);
22   pinMode(22, OUTPUT);
23   pinMode(21, OUTPUT);
24   pinMode(15, OUTPUT);
25
26
27   lcd.init();
28   lcd.backlight();
29   lcd.setCursor(1, 0);
30   lcd.print("");
```



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