**PROJECT TITLE: AIR QUALITY MONITORING**

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**Python code :**

import time

import serial

import RPi.GPIO as GPIO

import Adafruit\_CharLCD as LCD

# Initialize the LCD

lcd\_rs = 25

lcd\_en = 24

lcd\_d4 = 23

lcd\_d5 = 17

lcd\_d6 = 21

lcd\_d7 = 22

lcd\_columns = 16

lcd\_rows = 2

lcd = LCD.Adafruit\_CharLCD(lcd\_rs, lcd\_en, lcd\_d4, lcd\_d5, lcd\_d6, lcd\_d7, lcd\_columns, lcd\_rows)

# Initialize the SDS011 sensor

ser = serial.Serial('/dev/ttyUSB0', baudrate=9600, timeout=2)

ser.flushInput()

def read\_sensor\_data():

try:

while True:

while ser.in\_waiting < 10:

time.sleep(1)

data = ser.read(10)

if data[0] == 170 and data[1] == 192:

pm25 = (data[2] + data[3] \* 256) / 10.0

pm10 = (data[4] + data[5] \* 256) / 10.0

return pm25, pm10

except Exception as e:

print(f"Error reading from the sensor: {e}")

def display\_air\_quality(pm25, pm10):

lcd.clear()

lcd.message('PM2.5: {:.2f} ug/m3\n'.format(pm25))

lcd.message('PM10: {:.2f} ug/m3'.format(pm10))

if \_\_name\_\_ == '\_\_main\_\_':

try:

while True:

pm25, pm10 = read\_sensor\_data()

display\_air\_quality(pm25, pm10)

time.sleep(10) # Update every 10 seconds

except KeyboardInterrupt:

lcd.clear()

GPIO.cleanup()