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()
```