PUBLIC TRANSPORT OPTIMIZATION USING IOT

SPECIFICATIONS :

- Ardunio UNO
- ESP32 Development board
- GPS module
- OLED Display
- Other Sensors
- Arduino Compiler
- Programming language: Python
- IOTGecKo

PYTHON SCRIPT :

cpp

```
#include <Wire.h>
#include <Adafruit_GFX.h>
#include <Adafruit_SSD1306.h>
#include <TinyGPS++.h>
#include <HardwareSerial.h>

#define SDA_PIN 21
#define SCL_PIN 22

#define OLED_RESET -1
Adafruit_SSD1306 display(OLED_RESET);

HardwareSerial gpsSerial(1); // Use Serial1 for ESP32

TinyGPSPlus gps;

void setup() {
  Serial.begin(115200);
  gpsSerial.begin(9600, SERIAL_8N1, 16, 17);

  if (!display.begin(SSD1306_I2C_ADDRESS, SDA_PIN, SCL_PIN)) {
    Serial.println(F("SSD1306 allocation failed"));
    for (;;);
  }

  display.display();
  delay(2000);
  display.clearDisplay();
  display.setTextSize(1);
  display.setTextColor(SSD1306_WHITE);
```

```
}

void loop() {
  while (gpsSerial.available() > 0) {
    if (gps.encode(gpsSerial.read())) {
      display.clearDisplay();
      display.setCursor(0, 0);
      display.print(F("Lat: "));
      display.println(gps.location.lat(), 6);
      display.setCursor(0, 10);
      display.print(F("Lon: "));
      display.println(gps.location.lng(), 6);
      display.setCursor(0, 20);
      display.print(F("Alt: "));
      display.println(gps.altitude.meters());
      display.display();
    }
  }
}
```