Public Transport Optimization

Step 1: Set Up Your Wokwi Project

1. Visit the Wokwi website (https://wokwi.com/).
2. Create an account if you don't have one.
3. Log in to your Wokwi account.

Step 2: Create a New Wokwi Project

4. Click on the "Create New Project" button.
5. Give your project a name, and select "Arduino" as the platform.
6. Click "Create."

Step 3: Design the Circuit

7. In the Wokwi project editor:
   - Add an ESP32 development board to the canvas.
   - Add the components you need, such as a GPS module, an OLED display, and any other sensors or peripherals.
   - Connect the components using the virtual wires available in the Wokwi platform.

Step 4: Write the Arduino Code

8. Click on the ESP32 component on the canvas to open its settings.
9. Go to the "Code" tab.
10. Write your Arduino code for collecting GPS data and displaying it on the OLED display. Here's a simplified example to get you started:

```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();
    }
  }
}
```

Step 5: Simulate and Test

11. Upload your Arduino code to the virtual ESP32 in the Wokwi platform.
12. Start the simulation and observe the behavior. You should see simulated GPS data displayed on the virtual OLED screen.

Step 6: Build on the Foundation

From this foundation, you can expand your project by implementing optimization algorithms, integrating additional sensors, and creating a more comprehensive simulation of public transport operations. The complexity of your project will depend on your specific goals and requirements.

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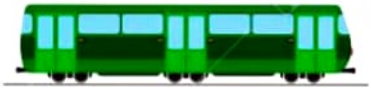

PUBLIC TRANSPORT

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