Junior Software Engineer – Backend
Home Assignment

Create a backend application that provides a REST API for the following tasks.

It should satisfy quality requirements you would set: understandable, maintainable, portable, and efficient. Please attach a documentation to your solution.

This backend application would be integrated to the administrative system of a passenger transportation (taxi) company.

The used technology stack, data storage method, the particular endpoint definitions, etc. are up to the author.

1. Adding a new vehicle to the fleet.

A vehicle may have following properties:

- *Passenger capacity*
- *Range* (how many kilometers can it travel with a full tank/charge)
- *Fuel* (gasoline; mild hybrid; pure electric)

2. Provide a suggestion for assigning vehicles to a trip.

Here we get the number of passengers and the distance as parameters. Based on this the application should list all the *combinations* based on the available *vehicles*. For each such suggestion the application should compute the *assumed profit* and show it to help the dispatcher assigning vehicles to the trip.

Before the route, all the vehicles are fully fueled/charged. We cannot stop for tanking/charging during a trip. After the trip the vehicles are always going to be refueled for the maximum. Approaching the gas station is considered immediate.

What does the profit consist of?

- *Travel fee*: Every customer pays €2 for every kilometer traveled – plus another €2 for every half hour started
- *Refueling*: After every trip, we fill the tank. This costs €2 per kilometer traveled for gasoline and €1 for electric drive

Note: The part of the trips under 50 km mostly takes place in the city, here every kilometer traveled should be calculated as taking 2 minutes, while from 50 km onwards, a kilometer traveled takes 1 minute. Similarly, for city trips (which we can consider as the part of the trips under 50 km) for hybrid cars, the remaining range should only decrease by 1 km after every second kilometer traveled.

Deadline: *one week of the date of receipt*   ***Good luck!***