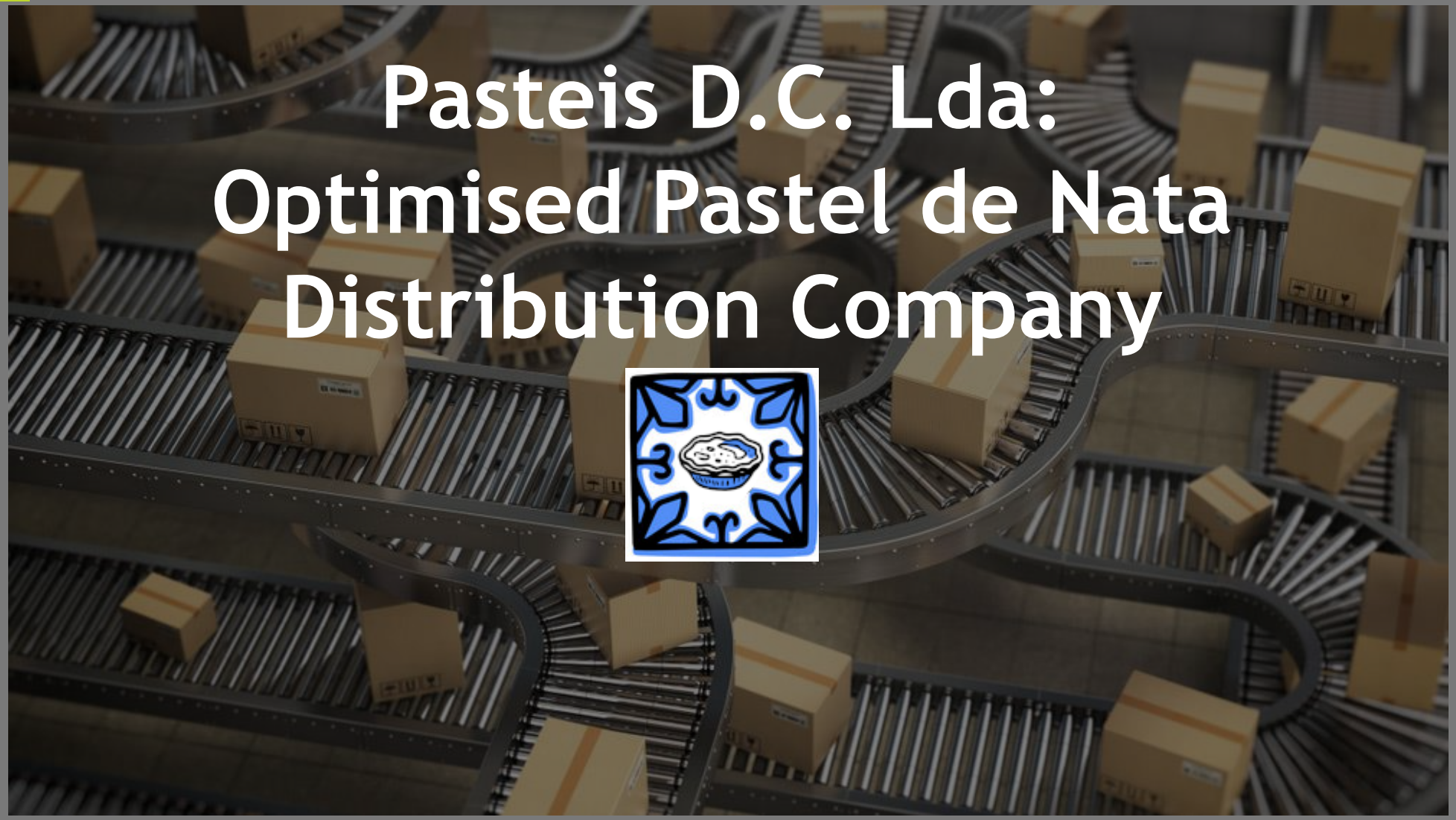
NOVA IMS Information Management School

Group Project Seminar on Programming and Analysis



Pasteis D.C. Lda: Optimised Pastel de Nata Distribution Company

Andre Kotze - m20211199
Guillem Ulldemolins - m20211210
Lucas Casuccio - m20210150

Introduction

Many enterprises face problems regarding efficiency on daily vehicle routing

- Current normal approach on planning lacks optimization steps.
- Resources are not managed in the most efficient way (sustainability/cost).

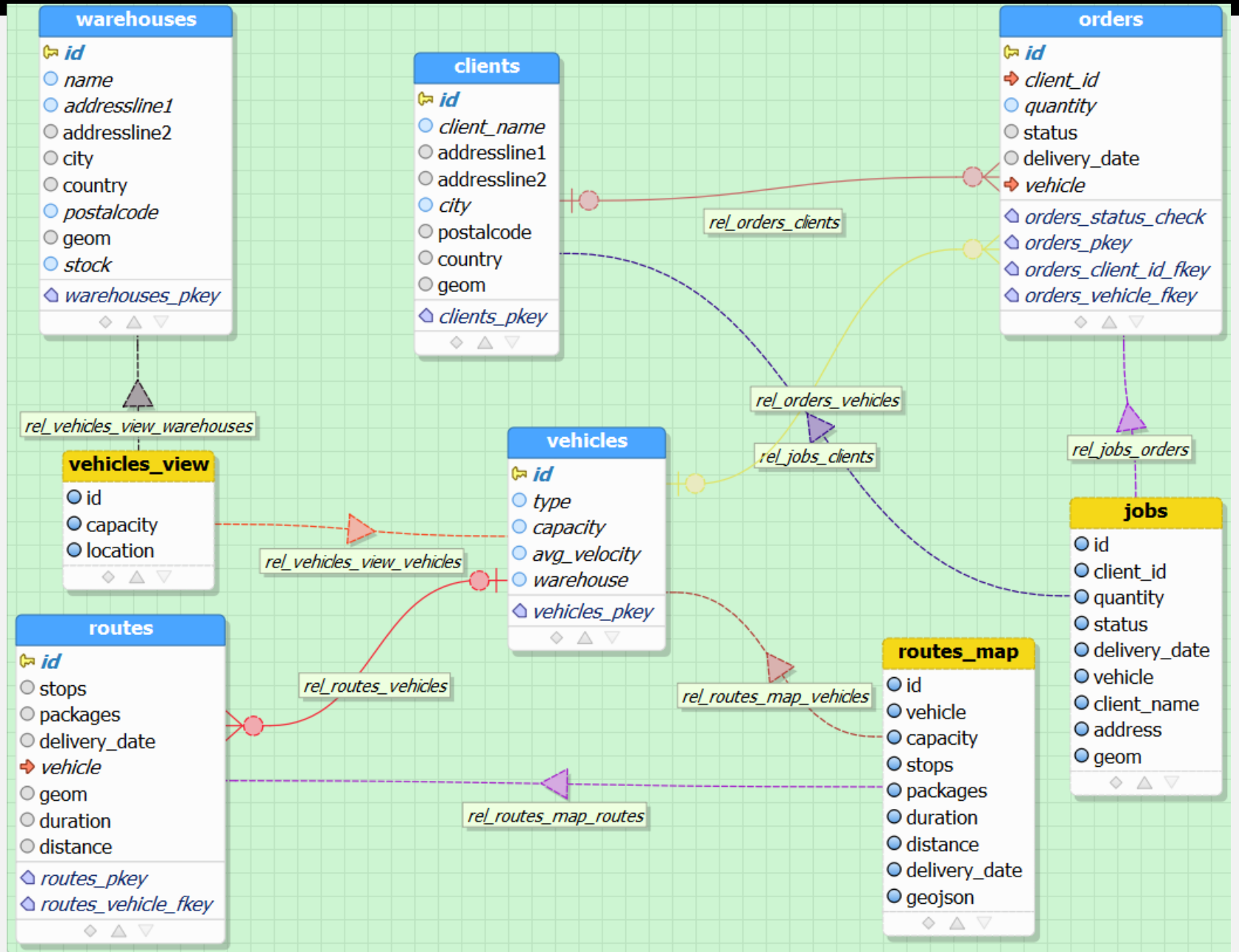
Main objectives

1. Create a program that is able to retrieve the most efficient route to cover distribution necessities easily for the user.

2. Provide reliable routing optimization considering order locations and sizes for a fleet of vehicles with varying capacities.

NOVA IMS
Information Management School

Database structure

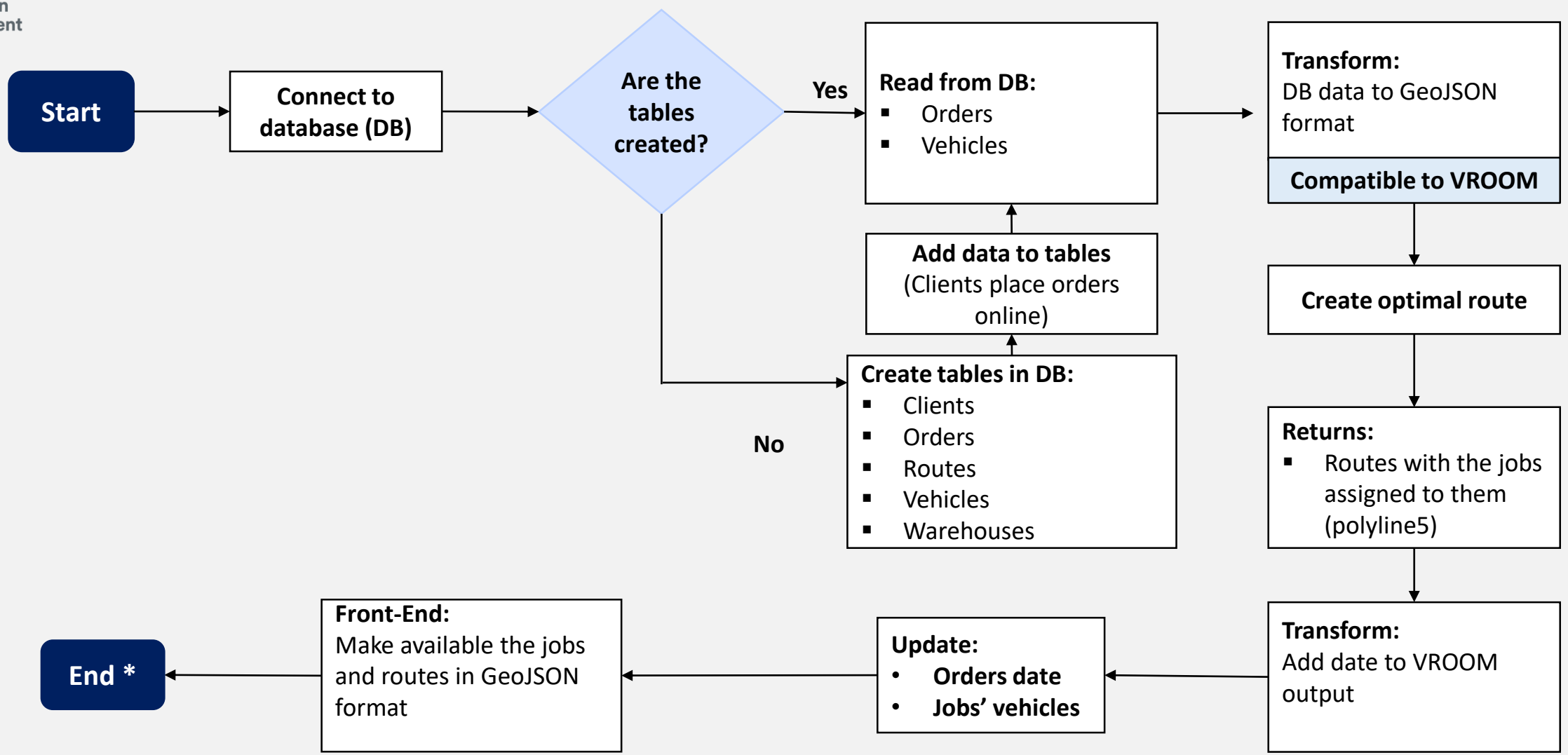


NOVA IMS Information Management School

Database structure

- · Clients can have zero to multiple orders.
- · Orders belong to one and only one client.
- · Orders can be distributed in one or more vehicles.
- · A vehicle can distribute zero to multiple orders.
- · A vehicle belongs to one and only one warehouse.
- · Warehouses can hold one to multiple vehicles.

Workflow: General



Front-End Routes

NOVA IMS Information Management School

Pasteis DC

Routes

Filter by:

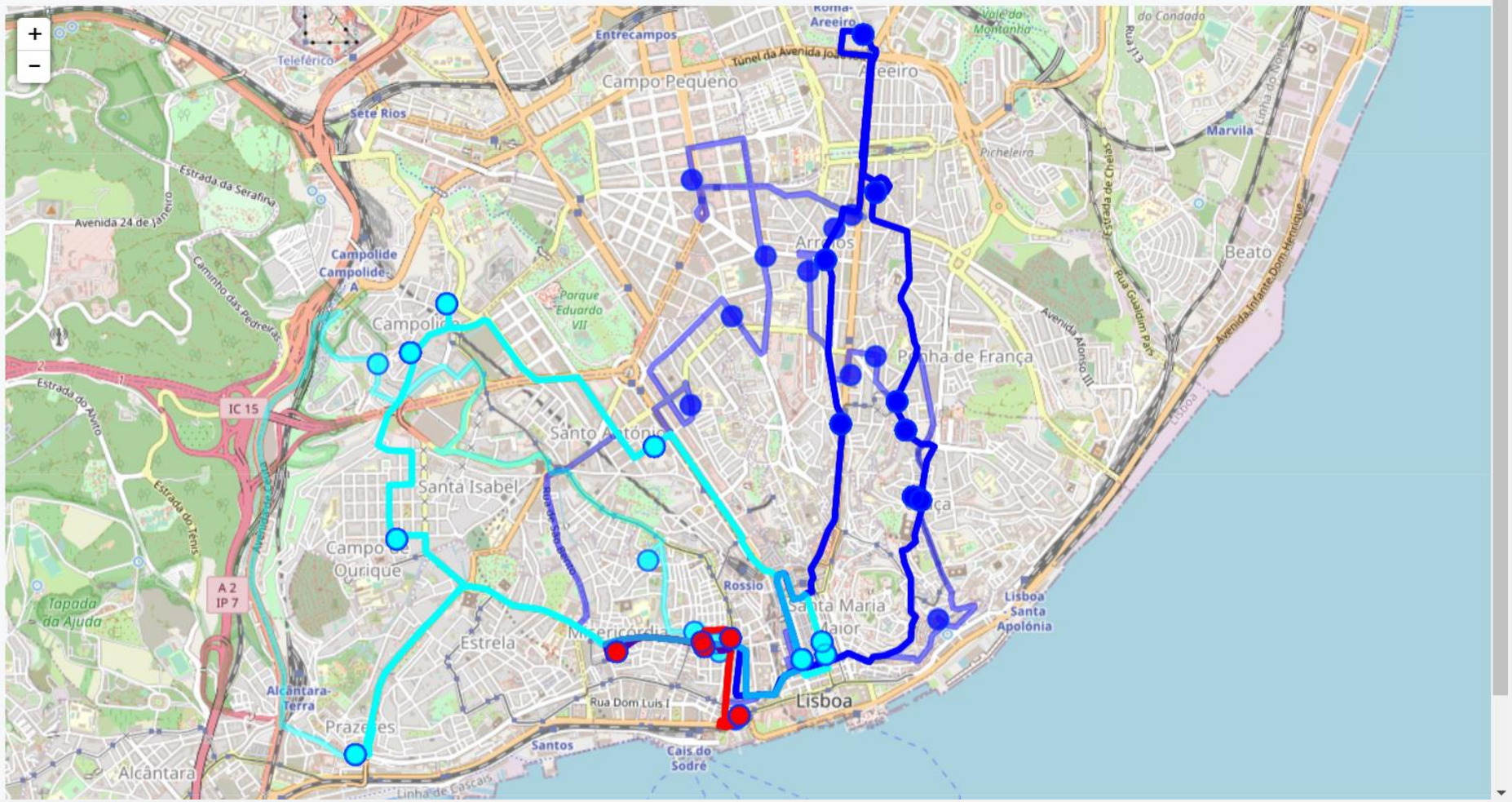
Vehicle ID

Get unique Vehicle ID

Delivery day

25/02/2022

Load Clear



NOVA IMS Information Management School

Conclusions

- Routes and vehicles assigned for each route were adjusted in the most efficient way considering distances from the warehouse to the delivery locations and the size of the orders.

- Various programs including Python, pgAdmin, Postgres and VROOM were used to develop the code. Also libraries such as *VROOM_requests, argparse, random, request*, *configParser, flask, flask_sqlalchemy, flask_cors, datetime and json*.

Conclusions

- Limitations:
  - Does not consider travel back to the warehouse to refill cargo.
  - Does not provide information regarding costs (i.e: driver hours, fuel).
  - Not considering daily problems that may occur on the routes (i.e: construction or repairing, accidents, etc).

NOVA IMS Information Management School

Thanks you for your attention!