



# IT Project 2024

## Planning Tool for Truck Tours

## Documentation



**University of Applied Science in Business  
Information Technology**

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### **Group Name:**

- TechTitans

### **Group Members:**

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**Project Start:** 23.02.2024

**Project End:** 31.05.2024

**Place:** Basel

### **DevOps Project:**

[https://dev.azure.com/AALM2023/IT\\_Project\\_Tr](https://dev.azure.com/AALM2023/IT_Project_Tr)

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# 1 General Notes

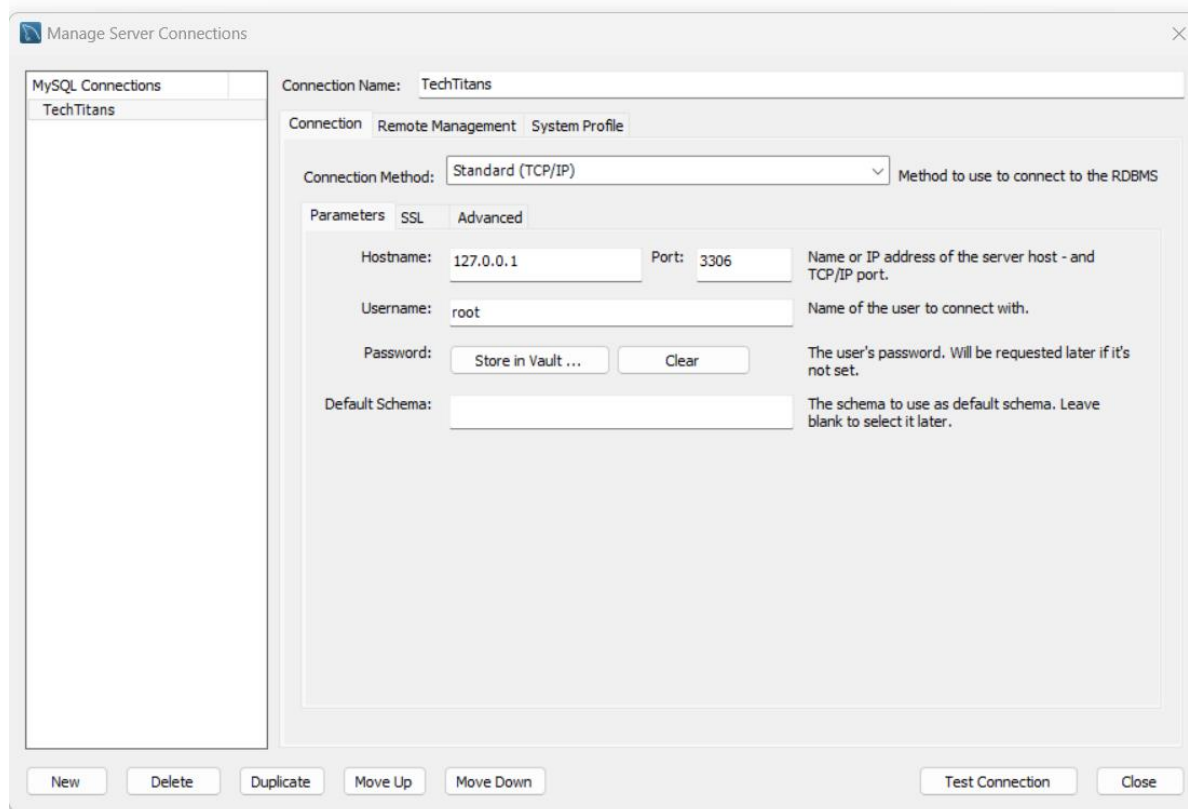
Our whole project is stored on following DevOps Project:

<https://dev.azure.com/AALM2023/IT Project Truck Tours Manuel Dejen Stefan>

We have some further information also available on the Wiki Pages of our DevOps Project on following link:

<https://dev.azure.com/AALM2023/IT Project Truck Tours Manuel Dejen Stefan/wiki/wikis/IT Project Truck Tours Manuel Dejen Stefan.wiki/12/Database-Information>

## 2 Installation Guide



Add a new Database connection over MySQL Workbench as above. The password is as follows:

Classy5544\*\*

Then copy the main branch from our DevOps Repository into inelij:

[https://AALM2023@dev.azure.com/AALM2023/IT\\_Project\\_Truck\\_Tours\\_Manuel\\_Dejen\\_Stefan/\\_git/TechTitans](https://AALM2023@dev.azure.com/AALM2023/IT_Project_Truck_Tours_Manuel_Dejen_Stefan/_git/TechTitans)

Then let the create table statement run from our wiki page:

[https://dev.azure.com/AALM2023/IT\\_Project\\_Truck\\_Tours\\_Manuel\\_Dejen\\_Stefan/wiki/wikis/IT\\_Project\\_Truck\\_Tours\\_Manuel\\_Dejen\\_Stefan.wiki/26/DB-Script-Insert-Imaginary-Data](https://dev.azure.com/AALM2023/IT_Project_Truck_Tours_Manuel_Dejen_Stefan/wiki/wikis/IT_Project_Truck_Tours_Manuel_Dejen_Stefan.wiki/26/DB-Script-Insert-Imaginary-Data)

Next insert the Insert Scripts for Imaginary Data from the Wiki page:

[https://dev.azure.com/AALM2023/IT\\_Project\\_Truck\\_Tours\\_Manuel\\_Dejen\\_Stefan/wiki/wikis/IT\\_Project\\_Truck\\_Tours\\_Manuel\\_Dejen\\_Stefan.wiki/24/DB-Script-for-Table-Creation](https://dev.azure.com/AALM2023/IT_Project_Truck_Tours_Manuel_Dejen_Stefan/wiki/wikis/IT_Project_Truck_Tours_Manuel_Dejen_Stefan.wiki/24/DB-Script-for-Table-Creation)

Next you can run the application in the main class and register a new user. For the first user you have to update for the admin role manually over MySQL Workbench:

[https://dev.azure.com/AALM2023/IT\\_Project\\_Truck\\_Tours\\_Manuel\\_Dejen\\_Stefan/wiki/wikis/IT\\_Project\\_Truck\\_Tours\\_Manuel\\_Dejen\\_Stefan.wiki/17/Add-Admin-on-MySQL-Workbench](https://dev.azure.com/AALM2023/IT_Project_Truck_Tours_Manuel_Dejen_Stefan/wiki/wikis/IT_Project_Truck_Tours_Manuel_Dejen_Stefan.wiki/17/Add-Admin-on-MySQL-Workbench)

### 3 Updated Data Structure

Following is our updated Data Structure. The main change is the addition of a new table for Clustering Assignment. This table stores the Order IDs, their respective clusters, and the assigned trucks.

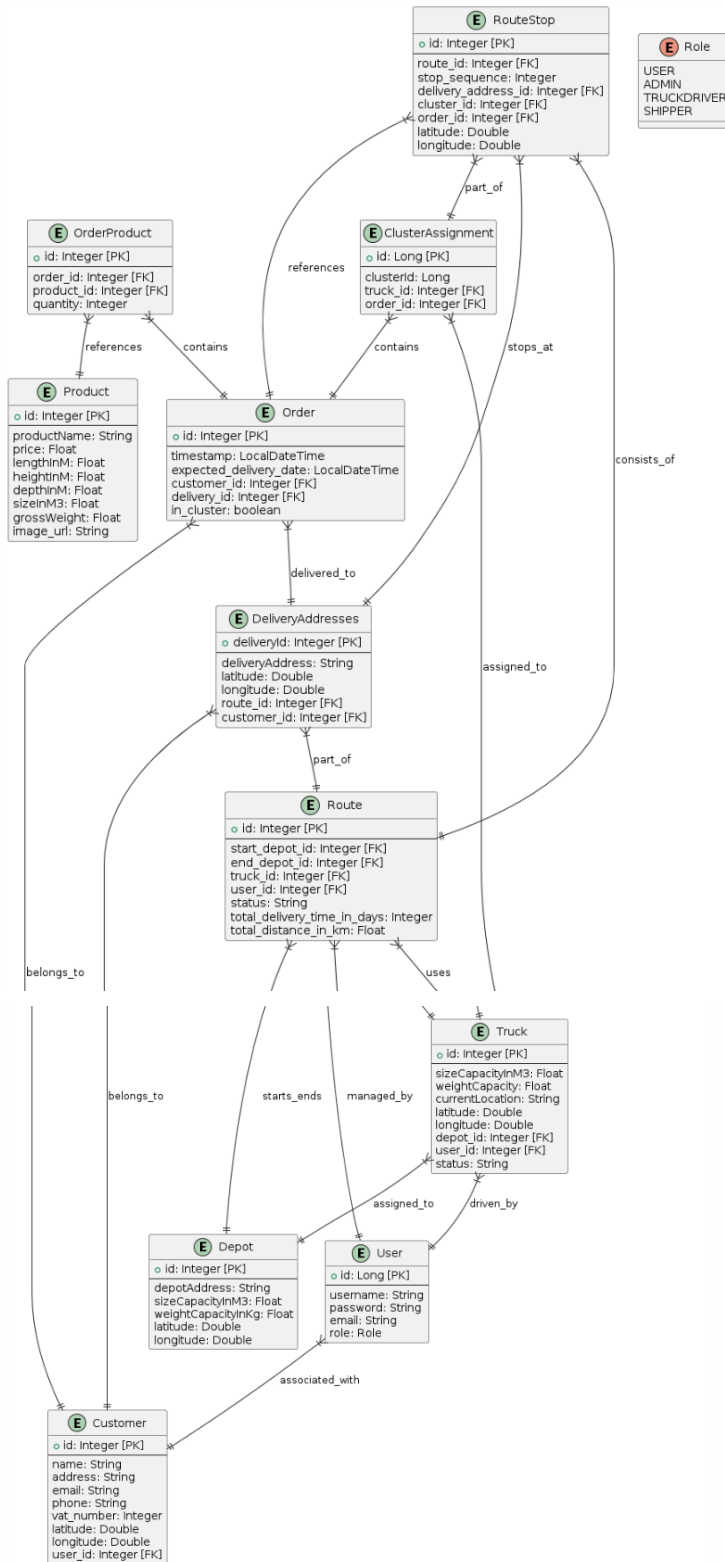
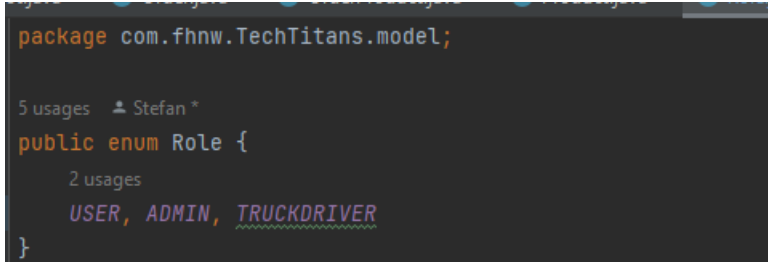


Figure 1 - New Data Model

The DDL Script are not necessary anymore since the application should create the tables itself through the model classes. However, there would be a Script available on the Wiki pages to create all necessary tables if there is the need for examples to insert imaginary data in the program before starting the application.

## 4 Updated Roles

A screenshot of a code editor showing a Java package declaration and an enum definition. The package is 'com.fhnw.TechTitans.model'. The enum is named 'Role' and contains three values: 'USER', 'ADMIN', and 'TRUCKDRIVER'. There are comments indicating '5 usages' for the package and '2 usages' for the enum.

```
package com.fhnw.TechTitans.model;

5 usages  Stefan *
public enum Role {
    2 usages
    USER, ADMIN, TRUCKDRIVER
}
```

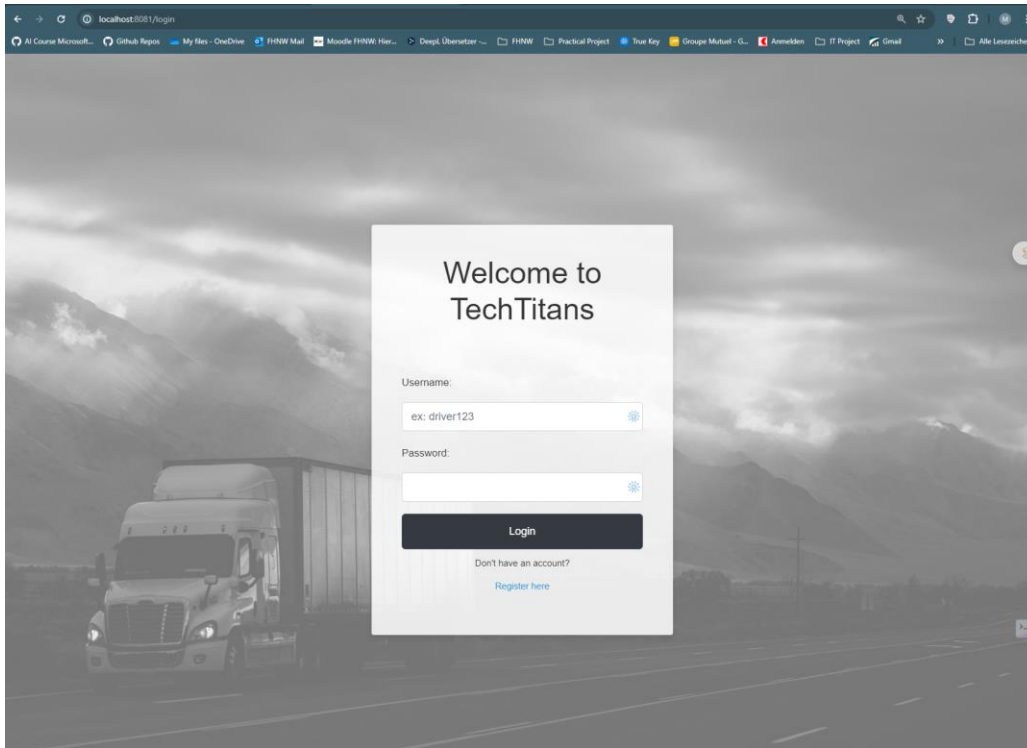
Our system supports three distinct roles, which are assigned by an admin. The admin role for the first admin must be granted through direct interaction with the database.

All users can log in and view the homepage. The first user role, "Customer," has limited capabilities: they can only access core functionalities and view their orders on a separate page. The "Truck Driver" role allows users to view their routes and update the status of those routes. The "Admin" role has the most extensive capabilities, including changing roles, adding, and modifying products, and initiating the clustering and route algorithms.

If someone registers new, they will be a user by default and a change of this role must be made by an administrator.

## 5 User Guide

As it was already visible in the Roles description our application has three different usage process flows. However, all of them have to go through the login / register process first. If you go on <http://localhost:8081/> you will be automatically redirected to <http://localhost:8081/login> where you can either register a new account on the link or directly log in with an existing account.



## Register

Username:

Password:

Email:


Register

Already have an account? [Login here](#)

## 5.1 User/Customer Process flow

Login to the system and get redirected to the homepage. Click on My Orders where all orders connected to the customer id and this to the user id from the currently logged in user are being displayed:

HomeMy Orders



Logout

Welcome, manuking

Contact Us  
Email: info@TechTitans.ch  
Phone: +123 456 7890

Efficient Truck Planning  
Maximize Your Delivery Efficiency with Our Expertise  
As industry leaders in truck tour planning, we specialize in optimizing delivery schedules and resource utilization.  
Enhance your operations, minimize costs, and boost efficiency with our customized solutions.

About Us  
Truck Tour Planning Co. is dedicated to optimizing logistics and transportation for businesses worldwide.

Contact Information  
Email: info@TechTitans.ch  
Phone: +123 456 7890

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Home



Customer Orders

No orders found for this customer.

Return to Home

About Us  
Truck Tour Planning Co. is dedicated to optimizing logistics and transportation for businesses worldwide.

Contact Information  
Email: info@TechTitans.ch  
Phone: +123 456 7890

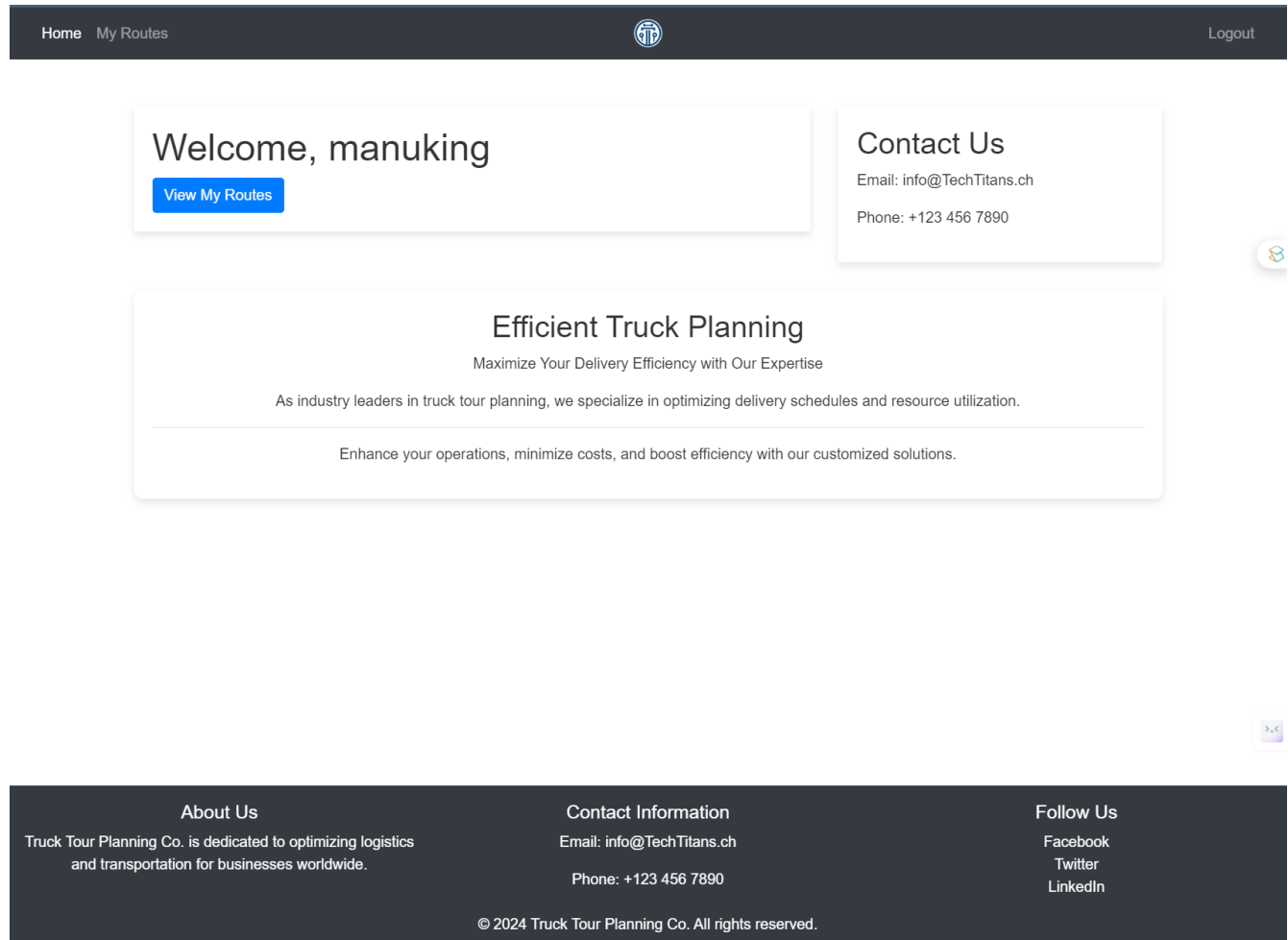
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## 5.2 Truck Driver Process flow

Log in to the system and get redirected to the homepage. Click on View my Routes.



Check out all routes that are assigned to my user ID and manage the status of the routes.

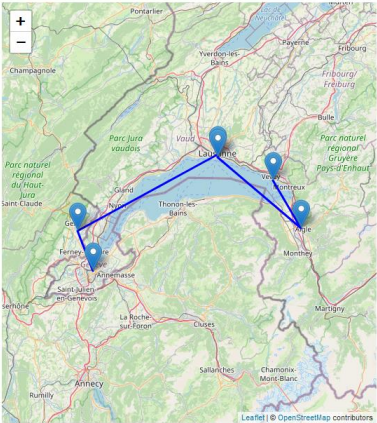
Home



Logout

### My Tours

Route ID	Status	Distance in Km	Starting Depot	Actions
1	pending	156.644	Depot: 1	<a href="#">Show Route on Map</a>
2	pending	453.723	Depot: 2	<a href="#">Show Route on Map</a>
3	pending	242.623	Depot: 1	<a href="#">Show Route on Map</a>
4	pending	42.1389	Depot: 2	<a href="#">Show Route on Map</a>
5	pending	178.966	Depot: 1	<a href="#">Show Route on Map</a>

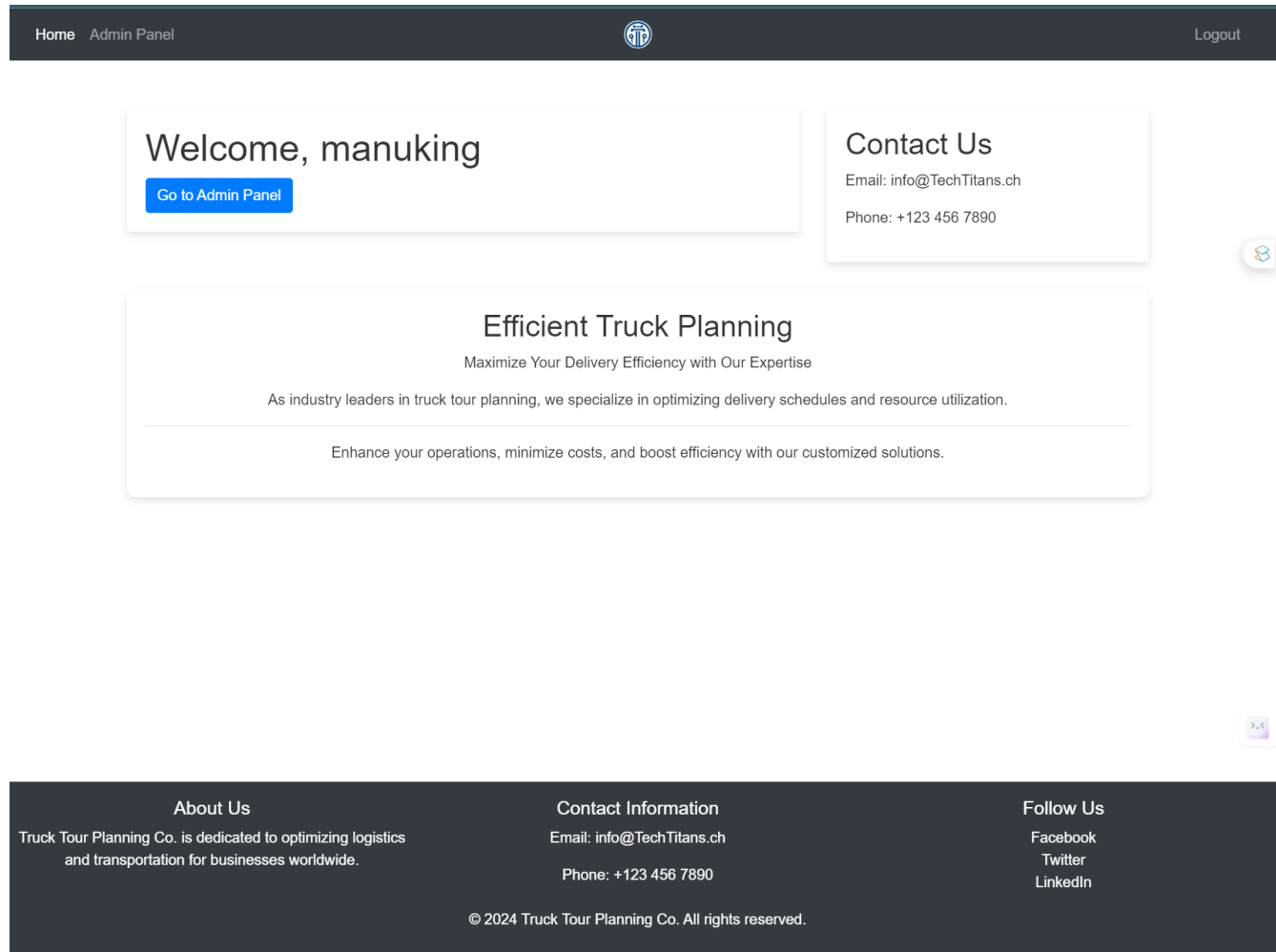


### Selected tour

- Stop ID: 0, Address: Delivery Address 29
- Stop ID: 1, Address: Delivery Address 33
- Stop ID: 2, Address: Delivery Address 11

## 5.3 Admin Process flow

Log in to the system and get redirected to the homepage.



Click on go to admin panel. Manage user roles or update or insert new products. Go on the Clustering page where we can see all orders on the map that are currently in the database.

Route Calculation

Route Calculation

Calculate Routes

Clustering

Clustering

Cluster Stops

Manage Users

Manage Users

ID	Username	Email	Role	Actions
1	user1	user1@example.com	TRUCKDRIVER	USER <div>Update Role</div> <div>Delete</div>
2	user2	user2@example.com	TRUCKDRIVER	USER <div>Update Role</div> <div>Delete</div>
3	user3	user3@example.com	TRUCKDRIVER	USER <div>Update Role</div> <div>Delete</div>
4	user4	user4@example.com	TRUCKDRIVER	USER <div>Update Role</div> <div>Delete</div>
5	user5	user5@example.com	TRUCKDRIVER	USER <div>Update Role</div> <div>Delete</div>
6	user6	user6@example.com	TRUCKDRIVER	USER <div>Update Role</div> <div>Delete</div>

PRODUCTS

Products

ID	Product Name	Price	Dimensions (L x H x D)	Actions
1	Gaming Chair	150.0	0.8 x 1.3 x 0.8	<div>Edit</div> <div>Delete</div>
2	TV Stand	200.0	1.2 x 0.6 x 0.4	<div>Edit</div> <div>Delete</div>
3	Dining Set	600.0	2.0 x 1.0 x 1.0	<div>Edit</div> <div>Delete</div>
4	Wardrobe	500.0	2.0 x 2.0 x 0.6	<div>Edit</div> <div>Delete</div>
5	Bedside Table	75.0	0.5 x 0.7 x 0.4	<div>Edit</div> <div>Delete</div>
6	Bookshelf	180.0	0.8 x 1.8 x 0.3	<div>Edit</div> <div>Delete</div>
7	Sofa	450.0	2.2 x 0.9 x 1.0	<div>Edit</div> <div>Delete</div>
8	Refrigerator	900.0	1.8 x 0.8 x 0.7	<div>Edit</div> <div>Delete</div>
9	Microwave	100.0	0.5 x 0.4 x 0.3	<div>Edit</div> <div>Delete</div>
10	TV	700.0	1.5 x 0.9 x 0.2	<div>Edit</div> <div>Delete</div>

Back to Admin Panel

Add New Product

Add New Product

Product Name

Price

Length (in meters)

Height (in meters)


Depth (in meters)

Gross Weight

Add Product

Click on Clustering an see all orders that are currently in the database:

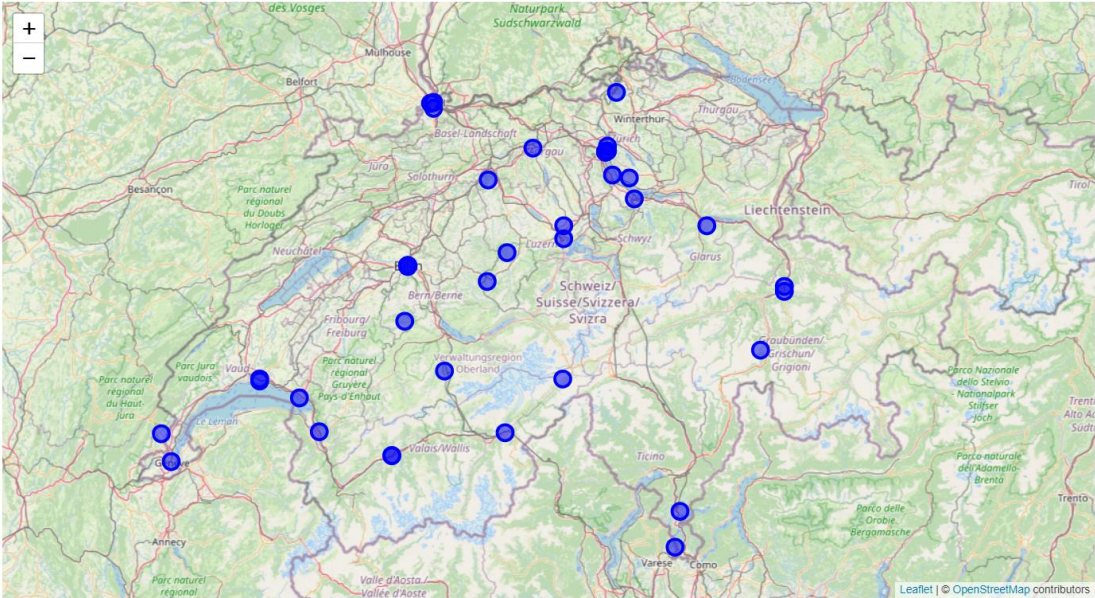
Home



Logout

# Cluster Orders

Cluster Orders



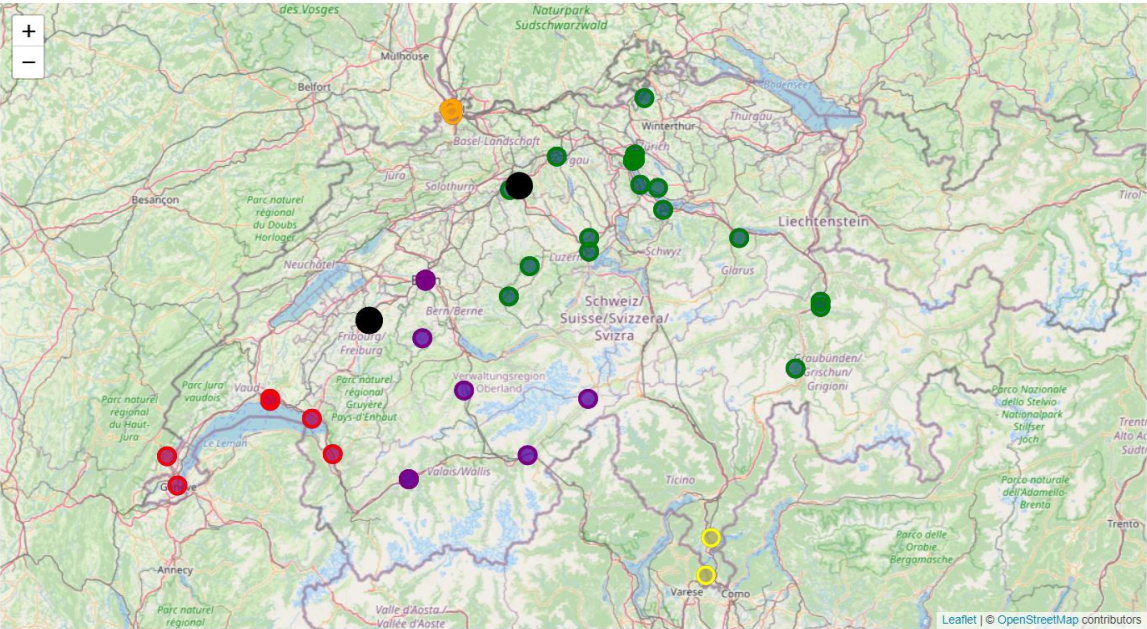
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Click on Cluster Orders to start the Clustering algorithm and see the different cluster / Order points in different colours. See cluster details below the map. If wanted, assign the orders to new clusters manually.

# Cluster Orders

Cluster Orders



The black points on the map represent the depots where the trucks are located.

● Cluster 1:

Total Volume: 9.70  
Total Weight: 350.00  
Orders: Order 34 [Cluster 1 v], Order 6 [Cluster 1 v], Order 31 [Cluster 1 v], Order 37 [Cluster 1 v], Order 9 [Cluster 1 v], Order 13 [Cluster 1 v]  
Assigned Truck ID: 1  
Current Location of the Truck: Depot 1  
Depot ID of the location: 1

● Cluster 2:

Total Volume: 18.48  
Total Weight: 844.00  
Orders: Order 23 [Cluster 2 v], Order 38 [Cluster 2 v], Order 21 [Cluster 2 v], Order 32 [Cluster 2 v], Order 25 [Cluster 2 v], Order 14 [Cluster 2 v], Order 5 [Cluster 2 v], Order 12 [Cluster 2 v], Order 3 [Cluster 2 v], Order 18 [Cluster 2 v], Order 35 [Cluster 2 v], Order 26 [Cluster 2 v], Order 4 [Cluster 2 v], Order 16 [Cluster 2 v], Order 8 [Cluster 2 v], Order 10 [Cluster 2 v], Order 15 [Cluster 2 v], Order 29 [Cluster 2 v], Order 19 [Cluster 2 v]  
Assigned Truck ID: 2  
Current Location of the Truck: Depot 2  
Depot ID of the location: 2

● Cluster 3:

Total Volume: 18.20  
Total Weight: 637.00  
Orders: Order 24 [Cluster 3 v], Order 39 [Cluster 3 v], Order 33 [Cluster 3 v], Order 22 [Cluster 3 v], Order 17 [Cluster 3 v], Order 11 [Cluster 3 v], Order 1 [Cluster 3 v], Order 27 [Cluster 3 v], Order 40 [Cluster 3 v], Order 7 [Cluster 3 v]  
Assigned Truck ID: 3  
Current Location of the Truck: Depot 1  
Depot ID of the location: 1

Start the route algorithm for a specific cluster so it finds the best way between the orders in this cluster and stores it in the table route stop.

