Project Documentation Report

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Course: Web Design and Development, INFO263

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1. Introduction

This web application is designed for a vehicle rental company to allow users to filter, view, and track various types of vehicles, movements, and financial outcomes. It enables users to interact with the system using dynamic filters, retrieve relevant information from an API, and visualize data such as incoming and outgoing movements using charts and maps. The system is built to provide an easy-to-navigate interface for users to explore vehicle data and associated metrics.

2. Tools Used

- Frontend: React and TypeScript

- Backend: PHP

- API Requests: Axios for communicating with the backend

- Libraries:

  - Bootstrap and Material UI3 for UI components

  - Chart.js for creating charts and histograms

  - Leaflet for map rendering

- Asynchronous Requests: `async...await` with Axios is used for handling asynchronous HTTP requests when fetching data from the database.

3. Key Features and Components

- Home Page:

The homepage displays a summary of simulation data, including costs, rates, and vehicle types. Clicking on any vehicle category dynamically fetches filtered vehicle data from the server. Additionally, clickable sections such as trips, maintenance, and relocations allow users to navigate to detailed pages for each respective category.

- Navigation:

The navigation system allows users to explore individual vehicle details, including their trip history, maintenance records, and relocations. Each page is paginated with 24 items per page. Users can also navigate between trips, maintenance, and relocations by interacting with buttons on vehicle cards. Each trip, maintenance, or relocation page contains detailed information, and links back to the vehicle details for cross-referencing.

- Filtering and Pagination on Vehicles Page:

The vehicles page can be filtered by:

- Registration number (rego_no)

- Odometer range

- Commissioned and decommissioned dates

- Vehicle category

The odometer range, dates, and categories are all dynamically fetched from the database, ensuring that only valid and relevant filter options are available to the user. The filtering

process is designed to minimize errors by disabling unavailable date ranges and preventing the selection of invalid odometer ranges.

-Charts Page:

Four charts are displayed on the charts page, including:

- Quarterly indicators

- Monthly incoming movements

- Monthly outgoing movements

- Daily incoming and outgoing movements

These charts provide an at-a-glance summary of key metrics, though filtering functionality for the charts has not yet been implemented.

API Path Configuration:

To simplify the handling of API endpoints, the API path is stored in a variable. If the endpoint changes, it only needs to be updated in one place rather than throughout the entire codebase. For example, the endpoint is defined as:

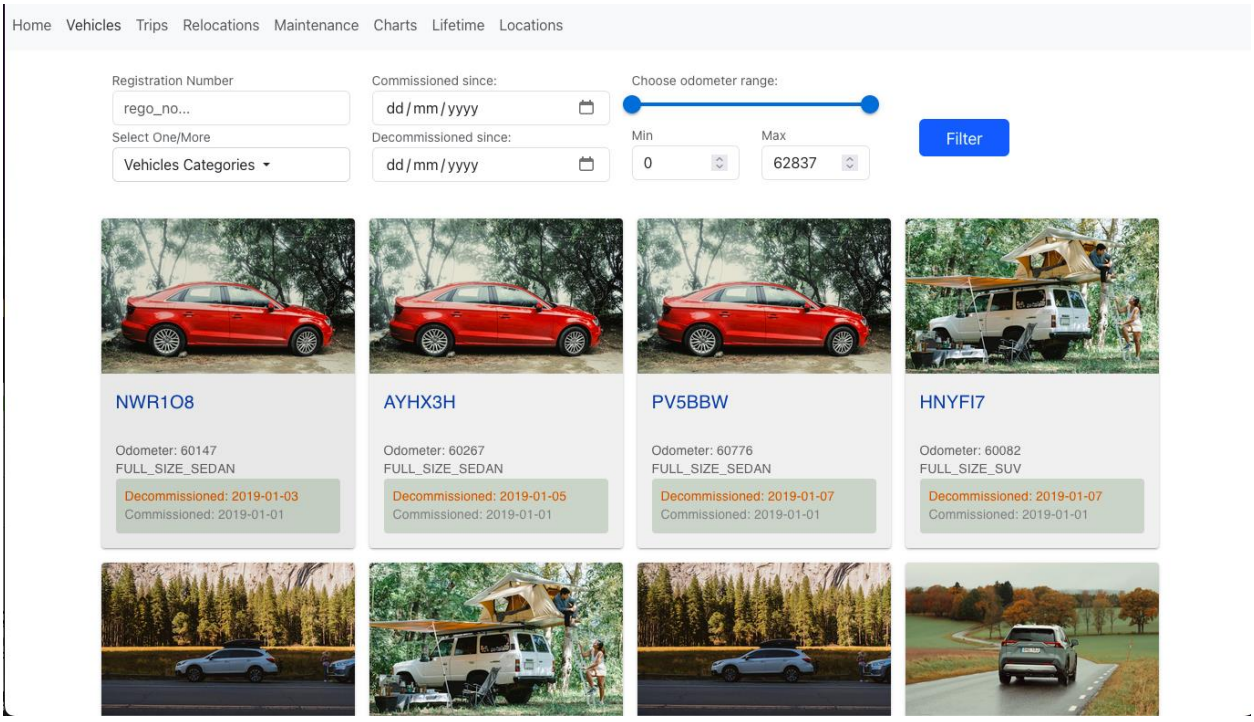
```
const apiPath = 'http://localhost:80/assignment/vehicles/vehicles_api.php';
```

The API requests are sent through this path using Axios, which communicates with the backend on port 80.

4. Additional Features

- Lifecycle Histogram:

A lifecycle histogram is implemented, visualizing the lifespan of vehicles in different lifecycle duration ranges. For instance, it shows vehicles with lifespans as short as 600 days and as long as 16,000 days. Each bar in the histogram is clickable, rendering a list of vehicles that fall within that specific lifespan range. This list can be further sorted by maintenance needs, longest lifetime, and shortest lifetime.



Summary

Trips Completed: 1021203 | **Trips Upgraded:** 2735 | **Refused Bookings:** 388

Refused Walk-ins: 643 | **Vehicles Relocated:** 13712 | **Vehicles Serviced:** 34804

Categories

From NZD $30
From NZD $1000

From NZD $40
From NZD $1300

From NZD $60
From NZD $1700

From NZD $100
From NZD $2000

Trip Summary
AUCKLAND -> AUCKLAND
Distance: 539 km
Trip duration: 11 days

Trip Summary
CHRISTCHURCH -> AUCKLAND
Distance: 2028 km
Trip duration: 11 days

Trip Summary
AUCKLAND -> AUCKLAND
Distance: 372 km
Trip duration: 4 days

Trip Summary
AUCKLAND -> WELLINGTON
Distance: 1208 km
Trip duration: 11 days

Trip Summary
AUCKLAND -> AUCKLAND
Distance: 203 km
Trip duration: 7 days

Trip Summary
CHRISTCHURCH -> AUCKLAND
Distance: 1078 km
Trip duration: 1 days

Trip Summary
CHRISTCHURCH -> AUCKLAND
Distance: 1129 km
Trip duration: 5 days

Trip Summary
AUCKLAND -> WELLINGTON
Distance: 1450 km
Trip duration: 11 days

Trip Summary
AUCKLAND -> WELLINGTON
Distance: 1148 km
Trip duration: 14 days

Trip Summary
AUCKLAND -> AUCKLAND
Distance: 735 km
Trip duration: 15 days

Trip Summary
AUCKLAND -> AUCKLAND
Distance: 380 km
Trip duration: 4 days

Trip Summary
AUCKLAND -> CHRISTCHURCH
Distance: 1778 km
Trip duration: 14 days

Trip Summary

Trip Summary

Trip Summary

Trip Summary

Select One/More

Vehicles Categories

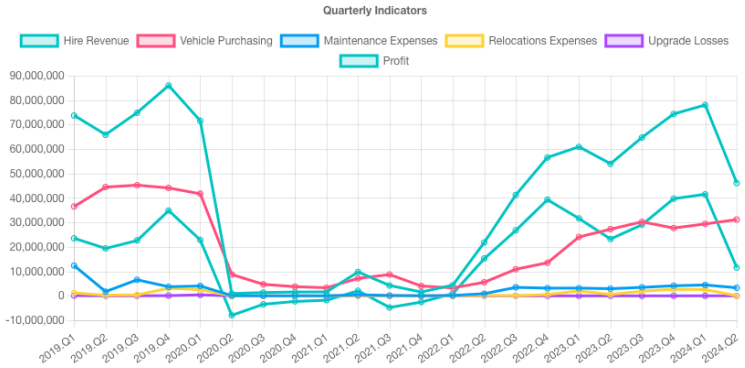
Start day:

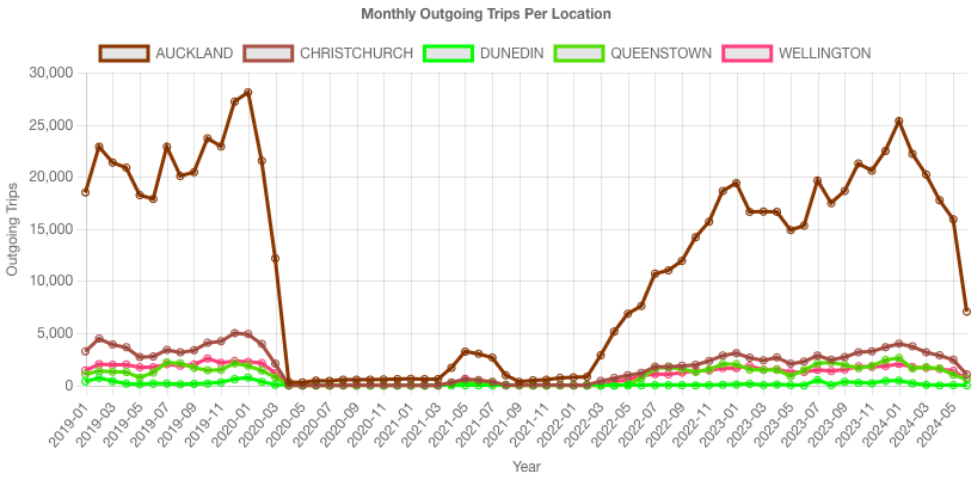
dd / mm / yyyy

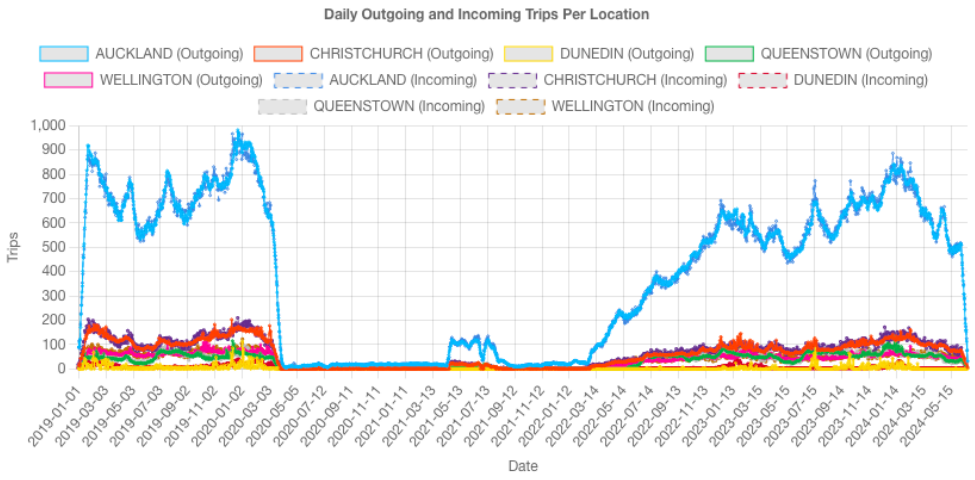
End day:

dd / mm / yyyy

Filter







Vehicle Lifetime Duration Histogram