# Project Report: Implementing a Vehicle Tracking System with Spring Boot

## Overview:

This project serves Numadic's commitment to revolutionizing transportation by developing a simplified vehicle tracking system. It aims to showcase Numadic's innovation in vehicle automation technologies, attract interest from industry stakeholders, and cultivate a skilled talent pool aligned with Numadic's technological ambitions. By creating a vehicle tracking system, Numadic positions itself at the forefront of shaping the future of smart transportation solutions.

# Achievements:

## Backend Implementation

* Utilized Spring Security to implement authentication.
* Configured and created all the classes, repositories, services, controllers, and database tables.
* Implemented a User Service to authenticate users.
* Secured REST API endpoints to ensure only authenticated users can access them.

## Frontend Integration

* Updated the frontend to include a user-friendly login form that communicates with the backend for authentication.
* Implemented frontend logic to handle successful login and logout actions, enhancing user interaction and satisfaction.

# Challenges Faced:

* Utilizing authentication tokens or session management to maintain user sessions across multiple requests, ensuring a seamless user experience.
* Implementing map for Vehicle location.
* Understanding Business Requirements: Aligning the technical implementation with Numadic's business objectives posed a challenge, especially ensuring that the system showcases Numadic's innovation in vehicle automation technologies effectively.
* Integrating Frontend and Backend: Coordinating the integration between frontend and backend systems required careful planning and implementation to ensure seamless communication and user experience.

# Learning Outcomes:

* Application Security: Through this project, I gained a deeper understanding of application security concepts, particularly in implementing authentication and authorization mechanisms to secure sensitive data and endpoints.
* Frontend-Backend Integration: I improved my skills in integrating frontend and backend systems.
* Business Alignment: This project emphasized the importance of aligning technical implementations with business objectives, ensuring that the developed solution effectively showcases Numadic's innovation and addresses industry needs.

# Conclusion:

By implementing a vehicle tracking system with Spring Boot, this project highlights Numadic's commitment to revolutionizing transportation and shaping the future of smart transportation solutions. The system serves as a foundational step towards understanding how backend and frontend technologies can be integrated to solve real-world problems in the automotive domain, showcasing Numadic's innovation and attracting interest from industry stakeholders.

# [GitHub Repository Link:](https://github.com/yourusername/your-repo)

<https://github.com/kwazikonke/Vehicle_Tracking_System.git>