**Team members**

**Car\_rental\_system**

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**Abstract**

The Car Rental System is a web-based application developed using Java, Spring Boot, Hibernate (JPA), and MySQL. It allows users to add, update, delete, and view available cars for rental. The project demonstrates a layered architecture including Entity, Repository, Service, and Controller. It can also be extended with Customer and Booking modules for a complete rental management system.

**Introduction**

* Problem Statement: Traditional car rental management is manual, time-consuming, and prone to errors.
* Objective: To build a digital system for easy management of cars and rentals.
* Scope: Initially includes car management, expandable to customers and bookings.

**Technology used**

* **Programming Language**: Java 17
* **Framework**: Spring Boot 3.x
* **ORM Tool**: Hibernate / JPA
* **Database**: MySQL
* **Build Tool**: Maven
* **API Style**: REST (GET, POST, PUT, DELETE)

**System Architecture**

* The project follows a **Layered Architecture**:

1. **Controller Layer** → Handles HTTP requests (e.g., /cars)
2. **Service Layer** → Contains business logic (rules, validations)
3. **Repository Layer** → Interacts with MySQL (CRUD operations)
4. **Entity Layer** → Maps Java objects to database tables

**Database Design**

Table: cars

| **Column** | **Type** | **Description** |
| --- | --- | --- |
| id (PK) | BIGINT | Unique identifier for a car |
| brand | VARCHAR | Car brand (e.g., Toyota) |
| model | VARCHAR | Car model (e.g., Innova) |
| registrationNumber | VARCHAR | Unique car number |
| available | BOOLEAN | Shows if car is available |

Results / Output The system successfully performs CRUD operations on cars. Sample screenshots of API requests and database entries can be included here.

Conclusion The Car Rental System meets the objective of automating rental data management. It demonstrates the use of modern Java technologies with a modular and scalable design.

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