Software Specification Requirement

1. PROJECT NAME: Car Rental Management System
2. PROJECT IDEA: The Car Rental Management System is designed to streamline and automate the process of renting vehicles. It provides a comprehensive solution for managing customers, reservations, vehicles, feedback, and reporting. The system aims to enhance user experience by simplifying interactions such as account creation, vehicle search, and reservation, while also offering loyalty rewards and analytics for business decision-making.
3. PROJECT DRIVERS:
   1. The goal of the project: The goal of the Car Rental Management System is to provide a robust, user-friendly platform for managing the end-to-end process of vehicle rentals.
   2. Client: The organization or business, Customer: Individuals renting vehicles for personal or business purposes, Stakeholders: Business Owners/Management, Fleet Managers, Customer Service Staff, CRM Managers, Administrators
   3. Users of the project: primary: customers, internal users: Customer Service Staff, Fleet Managers, Administrators, other users: CRM Managers, System Maintenance Teams
4. PROJECT CONSTRAINTS:
   1. Mandated Constraints:

Mandated Technology or Solution:

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| Database | he system must use a relational database for secure and efficient data management, including vehicle inventory, customer data, and reservations. |
| Front-End Framework | A responsive web application developed using modern frameworks to ensure usability on both desktop and mobile devices. |
| Back-End Framework | The server-side logic should use a scalable and secure framework |
| Third-Party APIs | Integrate APIs for email notifications, payment gateways, and location-based services. |
| Security | Adherence to security standards such as GDPR for data protection and PCI DSS for payment security. |

Reasons for Technology Choices:

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| Relational databases provide strong integrity for managing vehicle availability and customer data. |
| Modern web frameworks ensure scalability, responsiveness, and a user-friendly interface. |
| Secure frameworks and APIs reduce the risk of breaches and enhance compliance with industry standards. |

* 1. Naming Conventions and Definitions

Glossary of Key Terms:

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| Customer Account | A user profile containing personal information and rental history. |
| Reservation | The booking of a vehicle for a specified rental period. |
| Fleet | The collection of vehicles available for rent. |
| Loyalty Points | Rewards earned by customers based on their rentals. |
| Rental Quote | The estimated cost of renting a vehicle, including service fees. |
| Vehicle Condition Log | Records of the vehicle's state during pickup and return. |
| Admin Dashboard | The interface for administrators to manage system data and reports. |

Naming Standards:

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| Variables in the system |
| API endpoints should follow RESTful conventions |
| Database table names must match entity names |

* 1. Relevant Facts and Assumptions

**Relevant Facts:**

* **Business Rules:**
* Reservations cannot overlap for the same vehicle.
* Late fees apply for vehicles returned after the agreed time.
* Damage charges are calculated based on predefined policies.
* **Customer Engagement:**
* Customers earn loyalty points for completed rentals.
* Feedback is optional but incentivized with loyalty
* Assumptions:
* The system will have a stable internet connection for real-time operations.
* Vehicles will be available for pickup only after identity verification.
* Maintenance logs will be updated promptly by fleet managers to ensure accurate availability.
* The customer base primarily consists of users familiar with online booking systems.

1. FUNCTIONAL REQUIREMENTS:
   1. The Scope of the Work

The Current Situation: The car rental process in the current state involves multiple manual and semi-automated tasks

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| Customer registration and management handled via basic data entry tools. |
| Vehicle reservations and availability often tracked manually or on outdated systems. |
| Feedback and loyalty points are inconsistently recorded or not tracked. |
| Reporting and analytics require significant manual effort to consolidate data. |

The Context of the Work: The project focuses on automating and optimizing workflows for vehicle rentals. The system integrates key functionalities into a single interface for customers and administrators, enabling

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| Seamless customer interactions for reservations, feedback, and loyalty tracking. |
| Centralized fleet management to monitor vehicle availability, condition, and maintenance. |
| Automated reporting for real-time business insights. |

Work Partitioning: The work is divided into the following modules

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| Customer Management | Account creation, updates, and history access. |
| Reservation Management | Vehicle search, booking, modification, and cancellation. |
| Fleet Management | Vehicle availability, condition logging, and maintenance scheduling. |
| Loyalty and Feedback | Points tracking, customer engagement, and feedback handling. |
| Reporting and Analytics | Generating reports for revenue, customer trends, and vehicle utilization. |
| Administrative Functions | Managing users, resolving conflicts, and ensuring compliance. |

* 1. The Scope of the Product

The Car Rental Management System automates key business processes while leaving specific tasks for users. The system’s boundary is defined by examining business use cases and determining which processes should be automated and which tasks require user intervention.

Actors and Use Cases:

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| Customer | Automated: Account creation, reservation, feedback submission, loyalty tracking.  Manual: Identity verification during vehicle pickup. |
| Customer Service Staff | Automated: Vehicle condition logging (once manually inspected)  Manual: Verifies customer identity and handles vehicle pickup/return. |
| Fleet Manager | Automated: Vehicle maintenance scheduling.  Manual: Inspects vehicle condition and manages maintenance logs. |
| Administrator | Automated: Reporting and analytics generation.  Manual: Manages user roles and resolves data issues. |

* 1. Atomic Functional Requirements Shell (Volere) (cards)















