**Vehicle Parking Management System – Agile Documentation**

1. **Project Overview**

The Vehicle Parking Management System aims to streamline the parking process by providing features such as user registration, parking slot management, vehicle entry and exit logging, reservation of slots, and billing. The system utilizes a REST API-based backend developed with Spring Boot and a React frontend.

1. **Team Structure**

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| --- | --- |
| **Role** | **Name** |
| Product Owner / Developer | Atharva Pimple |
| Scrum Master / Developer | Bhardwaj M |
| Developer | Vaishnavi P |
| Developer | Kapparapu Nikitha |

1. **Project Vision**

A system that simplifies vehicle parking by automating user registration, parking slot management, real-time tracking, reservations, and automated billing.

1. **Product Backlog**

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| --- | --- |
| **ID** | **User Story** |
| US1 | As a user, I want to register and login so that I can access parking features. |
| US2 | As an admin, I want to assign roles to users to control access. |
| US3 | As a staff/admin, I want to add/update/remove parking slots to manage capacity |
| US4 | As a User, I want to view available slots in real-time to know where I can park. |
| US5 | As a Staff, I want to log vehicle entry/exit so that slot status is updates. |
| US6 | As a user, I want to reserve a parking slot in advance to ensure availability. |
| US7 | As a user, I want to cancel/modify my reservations when plans change. |
| US8 | As a System, I want to calculate billing based on time and vehicle type. |
| US9 | As a user, I want to view and pay my parking bill. |
| US10 | As a developer, I want all APIs secured with role-based access and JWT. |
| US11 | As an admin, I want to view all logs, payments, and reservations. |

**5. Sprint Planning**

Sprint Duration: 1 weeks

Sprint Goal: Build a complete, user-friendly Vehicle Parking Management System that efficiently manages parking slots, users, reservations, vehicle logs, and billing with secure, real-time functionality across web interfaces.

**Sprint 1: Backend Setup & Database Design**

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| --- | --- | --- |
| **Developer** | **Module** | **Key Tasks** |
| Developer 1 | User Management | Set up Spring Boot project, configure dependencies, create database schema for users |
| Developer 2 | Vehicle Logging | Design database schema for Vehicle Logs |
| Developer 3 | Reservation System | Design database schema for reservation system |
| All Developers | Billing & Payments | Design database schema for invoices/payments |
| Developer 4 | Parking Slot Management | Design parking slot database schema collaboratively |

**Sprint 2: API Development & Authentication**

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| --- | --- | --- |
| **Developer** | **Module** | **Key Tasks** |
| Developer 1 | User Management | Implement user registration/login API, role-based access control (JWT authentication) |
| Developer 2 | Vehicle Logging | Develop REST APIs for vehicle entry/exit logging |
| Developer 3 | Reservation System | Develop APIs for reservation creation, modification, and cancellation |
| All Developers | Billing & Payments | Develop APIs for billing calculations and invoice generation |
| Developer 4 | Parking Slot Management | Implement APIs for parking slot management collectively |

**Sprint 3: Business Logic Implementation & API Integration**

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| --- | --- | --- |
| **Developer** | **Module** | **Key Tasks** |
| Developer 1 | User Management | Encrypt passwords, validate role-based access |
| Developer 2 | Vehicle Logging | Implement parking duration calculation, integrate slot status updates |
| Developer 3 | Reservation System | Implement logic for modifying/canceling reservations, integrate with parking slots |
| All Developers | Billing & Payments | Link payment methods & invoice generation, optimize security |
| Developer 4 | Parking Slot Management | Ensure smooth communication between all modules |

**Sprint 4: Deployment, Security & Testing**

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| --- | --- | --- |
| **Developer** | **Module** | **Key Tasks** |
| Developer 1 | User Management | Dockerize app, implement HTTPS security |
| Developer 2 | Vehicle Logging | Optimize vehicle logging API performance |
| Developer 3 | Reservation System | Secure reservation APIs, prevent overbooking |
| All Developers | Billing & Payments | Finalize payment security, prevent duplicate charges |
| Developer 4 | Parking Slot Management | Conduct collaborative QA Testing of parking slot operations |

**6. Daily Scrum Logs**

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| --- | --- | --- | --- |
| **Day** | **What was done** | **Plan for tomorrow** | **Any blockers?** |
| Day 1 | UI design setup | Complete login feature | None |
| Day 2 | Assigning roles for users | Add/update/remove parking slots feature | None |
| Day 3 | Vehicle entry/exit slot feature | Calculate billing feature | Minor UI bug |

**7. Sprint Review Summary**

Completed Features:

  - Vehicle Management: Add, Update, Delete Parking Slots.

  - Member Reserving Parking Slot History

  - Parking Bill Calculation

  - Efficient sprint planning