

Parking Lot Management System Requirements Document

1. Introduction:

The Parking Lot Management System is designed to efficiently manage parking spaces across multiple floors with various slots allocated for different types of vehicles. The system will provide a seamless experience for vehicle entry, token issuance, fee calculation, and exit, supporting both cash and online payment modes.

2. System Features:

2.1 Multiple Floors:

The system shall support multiple floors for parking, allowing efficient space utilization.

2.2 Vehicle-Specific Parking Slots:

Different types of vehicles (e.g., cars, motorcycles) shall have designated parking slots to ensure organized parking.

2.3 Token Generation:

A token shall be generated for each vehicle upon entry, serving as a reference for payment during exit.

2.4 Dynamic Fee Calculation:

The fee calculation algorithm shall be dynamic and configurable. The system will implement a "FeeCalculateStrategy" for flexibility in adjusting fee structures.

2.5 Payment at Exit:

Payment shall be collected at the time of exit, supporting both cash and online payment modes. For online payments, only a reference number needs to be stored.

2.6 Slot Assignment:

A parking slot shall be assigned to each vehicle at the time of entry, ensuring systematic parking.

2.7 Multiple Entry and Exit Gates:

The system shall accommodate multiple entry and exit gates for efficient traffic flow.

2.8 API for Slot Availability:

An API shall be provided to obtain the number of available slots for each type of vehicle, facilitating real-time information for users.

2.9 Configurable Slot Allocation:

The method of slot allocation shall be configurable, allowing customization based on specific requirements.

2.10 Type-Specific Slot Matching:

Only a slot designated for a particular type of vehicle should allow parking for the exact same type of vehicle.

3. Non-functional Requirements:

3.1 Performance:

The system shall handle a high volume of vehicles with minimal response time for token issuance and fee calculation.

3.2 Security:

The system shall implement robust security measures to protect user data, transactions, and access to sensitive information.

3.3 Reliability:

The system shall be highly reliable, minimizing downtime and ensuring consistent availability.

3.4 Scalability:

The architecture shall be scalable to accommodate future expansions and increased user loads.

3.5 Usability:

The user interface shall be intuitive and user-friendly for both operators and customers.

4. Conclusion:

The Parking Lot Management System aims to provide an efficient and organized solution for managing parking spaces, ensuring a seamless experience for both operators and users. The dynamic nature of fee calculation, multiple payment modes, and configurable slot allocation make the system adaptable to diverse parking scenarios.