# System Requirements Documentation

## Parking Lot Management System

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## 1. Introduction

The Parking Lot Management System is designed to help drivers and managers effectively manage parking spot availability, reservations, and user roles. It allows users to locate, reserve, and manage parking spots and managers to monitor and update parking availability.

## 2. Customer Problem Statement

Many parking lots do not have an organized system for tracking the availability of parking spaces and reservations. As a result, drivers often face challenges in finding available spots, leading to frustration and congestion. Additionally, managers find it difficult to monitor and update the status of parking spots. This system addresses these issues by implementing a digital solution for real-time parking lot management.

## 3. System Requirements

- Java Development Kit
- MySQL Database Server
- JDBC Driver for MySQL

## 4. Functional Requirements

- Users should be able to view available parking spots.
- Users should be able to reserve a parking spot.
- Users should be able to cancel a reservation.
- Managers should be able to add, update, or remove parking spots.
- The system should allow managers to view and manage all reservations.

- The system should connect to a central database for storing user, parking, and reservation data.

### Non-Functional Requirements

- The system must be accessible via a terminal-based interface.
- Data should be stored in a MySQL database.
- The system should provide real-time updates on parking spot availability.
- The system should handle concurrent user interactions without errors.

### Functional Requirement Specification

| Requirement | Description |
|---|---|
| View Parking Spots | Drivers can check available parking spots. |
| Reserve a Parking Spot | Drivers can book a parking spot. |
| Cancel a Reservation | Drivers can cancel their reservations. |
| Manage Parking Spots | Managers can add, update, or remove parking spots. |
| View and Manage Reservations | Managers can track and modify reservations. |

## 5. User Interface Specification

```
PARKING LOT MANAGEMENT SYSTEM
1 - View Parking Spots
2 - Add a Reservation
3 - Update Parking Spot Availability
4 - Delete a Reservation
5 - Exit
Choose an option: 1
Connected to MySQL
Connected to MySQL
Fetching Parking Spots...
Parking Spots List:
---------------------------------
ID: 1 | Spot Number: A1 | Availability: Available
ID: 2 | Spot Number: A2 | Availability: Available
ID: 3 | Spot Number: B1 | Availability: Available
ID: 4 | Spot Number: A3 | Availability: Available

PARKING LOT MANAGEMENT SYSTEM
1 - View Parking Spots
2 - Add a Reservation
3 - Update Parking Spot Availability
4 - Delete a Reservation
5 - Exit
Choose an option: 2
Enter User ID: 1
Enter Parking Spot ID: 3
Connected to MySQL
New reservation added successfully.
Reservation added. Returning to menu...
```

```
PARKING LOT MANAGEMENT SYSTEM
1 - View Parking Spots
2 - Add a Reservation
3 - Update Parking Spot Availability
4 - Delete a Reservation
5 - Exit
Choose an option: 3
Enter the Parking Spot ID to update: 1
Is the spot available? (true/false): true
Connected to MySQL
Parking spot updated successfully.

PARKING LOT MANAGEMENT SYSTEM
1 - View Parking Spots
2 - Add a Reservation
3 - Update Parking Spot Availability
4 - Delete a Reservation
5 - Exit
Choose an option: 4
Enter Reservation ID to delete: 1
Connected to MySQL
Reservation deleted successfully.
```

**6. Project Plan**

Phase 1: Initial Planning & Setup (Weeks 1-2)

Phase 2: Core Feature Implementation (Weeks 3-5)

Phase 3: Enhancements & Fixes (Weeks 6-7)

Phase 4: Implementation (Weeks 8-9)

Phase 5: Final Testing & Documentation (Weeks 10-11)

Phase 6: Demo & Submission (Week 12)