## Functional Requirements Specification

**1. Introduction**

1.1 Purpose

This document provides a comprehensive functional and non-functional requirements specification for the seat booking system of Apache airlines. The system is intended to manage seat bookings for the newly acquired Burak757 passenger jets, allowing customers to book, check, and manage seat allocations efficiently.

2. **Functional Requirements**

2.1 Requirement 1: Seat Availability Check

Description:

The system must allow users to book a seat. A seat can be booked only if it is available (marked as "F"), and once booked, its status will change to "R".

2.2 Requirement 2: Seat Booking

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2.3 Requirement 3: Seat Cancellation  
Description:  
The system must allow users to cancel a booking. The cancellation process will free up a seat, changing its status from "R" to "F".

2.4 Requirement 4: View Booking State  
Description:  
The system must provide a functionality to view the current state of all seats in the aircraft, displaying whether each seat is free, reserved, an aisle, or a storage area.

2.5 Requirement 5: Data Integrity and Validation  
Description:  
The system must ensure that aisles ("X") and storage areas ("S") cannot be booked or cancelled. It should validate input to prevent invalid operations on these areas.

3. **Non-functional Requirements**

3.1 Performance

The system should handle multiple requests simultaneously and provide seat availability status and booking confirmations within 2 seconds under normal load conditions.

3.2 Usability

The system should provide an intuitive, easy-to-navigate user interface for both customers and administrators, requiring minimal training to use effectively.

3.3 Security

The system must ensure the security of customer data and transactions. It should implement strong authentication and data encryption to protect sensitive information.

3.4 Scalability  
The system should be scalable to accommodate the growing number of users and transactions as Apache airlines expands its operations.

4. **Assumptions and Constraints**

4.1 Assumptions

* The seat configuration of the Burak757 does not change frequently.
* Users have basic knowledge of how to use web or mobile applications for booking purposes.

4.2 Constraints

* The system must be developed and fully operational before the launch of the new Burak757 service.
* Budget limitations may restrict the choice of technology and resources available for the system's development and deployment.