

# Flight Management System - Requirements Document

## 1. Introduction

### 1.1 Purpose

The Flight Management System is designed to handle airline operations, including flight scheduling, booking, passenger management, and payment processing.

### 1.2 Scope

This system will manage airline details, flights, passengers, airports, bookings, pricing, penalties, and payments.

## 2. System Requirements

### 2.1 Functional Requirements

#### *2.1.1 Airline Management*

- Add, update, and remove airlines.
- Store flight name, number, and available seats.
- Maintain timestamps for creation and updates.

#### *2.1.2 Airport Management*

- Store airport details (name, code, country, city).
- Manage relationships with flights and schedules.

#### *2.1.3 Flight Management*

- Create, modify, and delete flights.

- Store airline associations and segment details.
- Track flight status and onboarding times.

#### ***2.1.4 Flight Scheduling***

- Maintain flight schedule with trip details.
- Assign trip types and timestamps.

#### ***2.1.5 Booking & Passenger Management***

- Allow customers to book flights.
- Store customer details and booking statuses.
- Support group bookings.

#### ***2.1.6 Pricing & Payment Processing***

- Store pricing for different flight segments.
- Process payments and track payment history.
- Support multiple currencies.

#### ***2.1.7 Penalty & Refunds***

- Manage cancellation and no-show penalties.
- Store penalty percentages for different classes and seasons.

### **2.2 Non-Functional Requirements**

- **Scalability:** System should support high traffic.
- **Security:** Secure user authentication and payment processing.
- **Availability:** Ensure high uptime for booking services.
- **Performance:** Optimize query execution for booking transactions.

## **3. Data Model**

### **3.1 Key Tables & Relationships**

- **Airline:** Stores airline and flight details.
- **Airport:** Stores airport information.

- **Flight:** Manages flights and schedules.
- **Booking:** Tracks customer flight reservations.
- **Payment:** Stores payment transaction details.
- **Flight Cancellation Penalty:** Handles refund calculations.

## 4. User Roles & Permissions

- **Admin:** Manage flights, bookings, and pricing.
- **Customer:** Search flights, book tickets, and make payments.
- **Airline Staff:** Manage flight schedules and passenger records.