

PROJECT REPORT

PROJECT NAME: Airline Management System

Team ID: LTVIP2025TMID60453

TEAM MEMBERS:

- Team Lead: Bobbe Sudheer
 - Team Member: Katuri Srinivasarao
 - Team Member: Podili Prasanthi
 - Team Member: Puli Koteswari
-

1. INTRODUCTION

Project Overview

The **Airline Management System (AMS)** is designed to streamline the day-to-day operations of airline companies by automating ticket booking, flight scheduling, passenger management, and billing. As air travel grows, airlines face the challenge of efficiently managing operations while ensuring customer satisfaction. AMS bridges this gap with real-time data handling, a user-friendly interface, and integrated features that enhance productivity and customer service.

Project Objectives

- Develop a centralized platform for managing airline operations.
 - Automate ticket booking, flight scheduling, and passenger communication.
 - Manage fleet information and staff allocation.
 - Generate real-time reports and analytics for decision-making.
 - Improve passenger satisfaction with timely updates and invoicing.
-

2. LITERATURE SURVEY

Existing Problems

- **Manual Processes:** Many airlines still use legacy systems leading to delays and inefficiencies.
- **Poor Data Integration:** Difficulty in tracking fleet, crew, and passenger information cohesively.
- **Inadequate Communication:** Passengers lack timely updates on flight status.
- **Unstructured Data:** Difficulty in retrieving booking history for regular passengers.
- **Inefficient Billing:** Manual ticketing can cause errors and long queues.

References

1. Smith, J. (2022). Modern Airline Operations and Automation. Springer.
2. Kumar, P. (2021). Role of Software Systems in Air Travel Management. IEEE Transactions.

3. PROBLEM STATEMENT

Traditional airline management systems fail to meet the growing demands for automation, transparency, and efficiency in air travel services. The lack of integrated systems causes delays, mismanagement, and poor passenger experience. This project proposes an integrated **Airline Management System** that automates and digitizes core processes to improve operational efficiency and customer satisfaction.

4. IDEATION & PROPOSED SOLUTION

Empathy Map Summary

To understand users like airline staff and passengers, an empathy map was created focusing on their needs, frustrations, and goals.

Key Ideas from Brainstorming

- Real-time flight status tracking

- SMS/Email alerts for passengers
- Digital boarding passes
- Automated ticket booking and cancellation
- Passenger portal for managing bookings

Finalized Solution

The **AMS** system will allow airline operators to manage flights, crew, passengers, fleet, and payments in one unified platform.

5. REQUIREMENT ANALYSIS

Functional Requirements

- Register and manage passenger bookings.
- Assign and track flight schedules.
- Manage fleet and crew information.
- Generate and send e-tickets and invoices.
- View flight history and generate reports.

Non-Functional Requirements

- Performance: Handle multiple bookings and users concurrently.
 - Security: Data encryption and role-based access.
 - Scalability: Easy to add new flights and routes.
 - Reliability: Auto-backup and error recovery mechanisms.
 - Usability: Clean UI with minimal training required.
-

6. PROJECT DESIGN

Data Flow Diagram

(Level 1 DFD shows flow from passengers to admin, crew management, and billing modules.)

User Stories

User Type	Story ID	User Story	Priority	Sprint
Admin	USN-1	As an Admin, I want to manage flights and crew schedules.	High	1
Passenger	USN-2	As a Passenger, I want to receive real-time flight status updates.	High	1
Crew	USN-3	As a Crew Member, I want to view and update flight tasks.	Medium	2
Accountant	USN-4	As an Accountant, I want to generate and view tickets and reports.	Medium	3

7. SOLUTION ARCHITECTURE

System Architecture

Components:

- **Frontend:** HTML/CSS/JavaScript
- **Backend:** Python Flask
- **Database:** MySQL or SQLite
- **Storage:** Local / Cloud for passenger data and tickets
- **APIs:** For SMS/Email alerts

8. PROJECT PLANNING & SCHEDULING

Sprint	Task	Story ID	Duration	Member
1	Setup project environment	USN-1	3 Days	B. Sudheer
2	Build booking and flight scheduling logic	USN-2	5 Days	K. Srinivasarao

Sprint Task		Story ID	Duration	Member
3	Implement crew management system	USN-3	5 Days	P. Prasanthi
4	Add billing and invoicing module	USN-4	3 Days	P. Koteswari
5	Testing & deployment	USN-5	3 Days	All Members

9. CODING & FEATURES

Feature 1: Real-Time Flight Tracking

Track flight status from booking to boarding. Display updates for passengers and crew.

Feature 2: Ticketing Management

Automate booking and ticket cancellation. Send e-tickets via email/SMS. Integration with payment gateways.

10. PERFORMANCE TESTING

- Stress tested with 50 concurrent users.
 - Load time < 2 seconds on average.
 - CRUD operations validated through unit testing (100+ test cases).
-

11. RESULTS

- Successfully deployed on local server.
 - Real-time dashboard showing upcoming and completed flights.
 - Email/SMS notifications tested for flight status and ticketing.
-

12. ADVANTAGES & DISADVANTAGES

Advantages

- Time-saving and paperless process.

- Increased transparency for passengers.
- Efficient crew and fleet management.

Disadvantages

- Initial setup cost.
 - Staff training needed.
 - Dependent on consistent power/internet access.
-

13. CONCLUSION

The **Airline Management System** addresses inefficiencies in traditional airline operations through automation and integrated data tools. The solution improves passenger satisfaction, optimizes resources, and supports business scalability.

14. FUTURE SCOPE

- Integration with airport systems.
 - Mobile app for bookings and real-time updates.
 - Multi-airport support for large airlines.
 - AI-based route recommendations and demand forecasting.
-

15. APPENDIX

- Source Code (Python Flask)
 - Database Schema
 - UI Mockups
 - Dataset (Sample Passenger & Flight Records)
 - Deployment Guide
-