EAST WEST UNIVERSITY

Software Requirements Specification (SRS) Report

ON

Airline Management System

Submitted in partial fulfillment of the requirement for the Semester **Spring 2025**

COURSE CODE: **CSE412**; SECTION: **02**

Of

BACHELOR OF SCIENCE

IN

COMPUTER SCIENCE AND ENGINEERING

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1. Introduction

1.1 Project Overview

The Airline Management System is a web-based application designed to streamline airline operations and enhance the overall passenger experience.

As a **passenger,** I want a quick and straightforward way to find flights, compare prices and book tickets without unnecessary complexity. I expect to see the total price upfront, including taxes, baggage fee and any extras, with no hidden charges. I also want a variety of secure payment options, such as credit/debit cards, mobile banking and PayPal, to choose from. After booking, I want instant confirmation and immediate access to my e-ticket. I also want the flexibility to reschedule or cancel my flight easily, with clear refund policies in place. Real-time notifications about flight delays, cancellation and status updates are essential, along with the ability to select my seat through a graphical interface and add extras like baggage or meals. Frequent flyers will benefit from loyalty rewards, discounts and priority benefits. The system should have an easy-to-use, mobile-friendly interface that allows offline ticket access and responsive customer support via live chat, phone, and email.

As an **admin**, I need an intuitive dashboard to efficiently manage flights, schedules and passenger records. I want to see all relevant records displayed clearly in my dashboard and have the ability to add, modify, or cancel flights with automatic notifications sent to passengers. Efficient handling of customer support queries and real-time assistance is crucial. Additionally, the system should ensure secure and transparent payment and refund processes, while also allowing me to view and manage passenger feedback and reviews to improve our services.

1.2 Purpose and Scope

Purpose:

The purpose of this project is to develop an **Airline Management System** that automates airline booking and administration processes while enhancing the user experience. The system aims to eliminate inefficiencies, improve accuracy and reduce manual workload.

In Scope:

The system will provide the following functionalities:

- **For Passengers:**
    - Quick and hassle-free flight search and booking.
    - Transparent pricing with no hidden charges.
    - Multiple secure payment options.
    - Instant ticket generation and e-ticket access.
    - Easy rescheduling and refund processing.
    - User-friendly seat selection with a graphical interface.
    - Frequent flyer benefits, discounts and loyalty programs.
- **For Admins:**
    - Efficient management of flight schedules, passenger data, and bookings.
    - Easy addition, modification, or cancellation of flights.
    - Secure payment and refund handling.
    - Customer feedback and review management.
    - Flight Status Dashboard, Booking Analytics, Customer Support Analytics and Revenue and Payment Analytics.

Out of Scope:

- Real-time flight status notifications and alerts.
- Customer support via live chat, phone, and email.
- Mobile-friendly interface with offline ticket access
- Automated customer notifications for flight changes.

1.3 Stakeholders

Primary Stakeholders:

- **Passengers**: Individuals who book flights and use the platform for flight-related services.
- **Airline Administrators**: Staff responsible for managing flight schedules, bookings, and passenger records.

Secondary Stakeholders:

- **Travel Agencies**: Businesses that may use the platform to book flights for customers.
- **Payment Service Providers**: Entities handling secure financial transactions.
- **Developers & System Administrators**: Responsible for maintaining and upgrading the system.
- **Customer Support Teams**: Assisting passengers with queries, issues, and requests.

2. Requirements Engineering Process

2.1 Stakeholder Needs & Analysis

Primary Stakeholders:

- Passengers
- Admin (Airline staff)

Secondary Stakeholders:

- Payment Gateway Providers
- Developers & System Admins

Methods Used for Requirement Elicitation:

- **Interviews**: Conducted with potential users (passengers and admins) to understand expectations.
- **Competitive Analysis**: Researched existing airline booking systems to identify strengths and gaps.

2.2 List of Requirements

Functional Requirements (FRs):

1. Users should be able to register and log in securely.
2. The system shall support flight search with filters such as date, time, class, destination, and airline.
3. The system shall display real-time seat availability for selected flights.
4. The system shall allow users to book flights and receive e-tickets instantly upon payment.
5. The system should support multiple secure payment options.
6. The system shall allow users to cancel or modify bookings and handle refunds as per the policy.
7. Passengers should receive notifications for booking confirmations.
8. The system shall provide extra baggage and meal preference options during the booking process.
9. The system should include a loyalty program for frequent flyers.
10. The system shall allow users to view travel history and manage their bookings.
11. The system should support the use of offers, discounts, and promo codes during booking.
12. The system shall provide a Flight Status Dashboard displaying real-time updates (on-time, delayed, canceled) and send alerts to users.
13. The system shall support multi-city flight bookings.
14. The system shall allow users to submit feedback and rate their experience.
15. The system shall provide information about baggage policies and airport facilities.
16. The system shall allow hotel bookings to be made along with or independent of flight reservations.
17. The admin panel shall allow administrators to add, update, and cancel flights.
18. The admin panel shall enable management of customer support tickets.
19. The admin panel shall display customer feedback and reviews for action.

20. The admin panel shall provide analytics on Bookings, Payments, Flight status, Revenue breakdown and payment methods, Customer support (e.g., query distribution, resolution time)

Non-Functional Requirements (NFRs):

1. The system shall run on the web.
2. The passwords shall be encrypted by the system.
3. It shall work fluently in case of many users and data.
4. The website shall have a user-friendly interface that is easy to navigate.
5. The system shall provide regular backups to prevent data loss.
6. It shall maintain the transactions flawlessly so that no error occurs.
7. The website shall respond to user requests within a specified time to get a smooth experience.

Extraordinary Requirements (Wow Factors):

1. The system should include a Price Prediction Tool that uses machine learning to suggest the cheapest times to book flights.
2. The system should provide Personalized Travel Suggestions based on a user's past behavior and preferences.

2.3 House of Quality (QFD Integration)

Customer Requirements (CRs) List

1. Quick and hassle-free booking
2. Transparent pricing with no hidden charges
3. Flexible and secure payment options
4. Real-time flight updates and notifications
5. Easy cancellation and refund process
6. Seat selection and add-on services (meals, baggage)
7. Reliable and responsive customer support
8. Discounts and loyalty rewards
9. Personalized travel suggestions

10. Price prediction insights

Engineering (Technical) Requirements (TRs) List

1. Secure authentication system
2. Efficient database management
3. Payment gateway integration
4. Notification and alert system
5. Seat selection and add-on services logic
6. Customer support ticketing system
   Dynamic pricing and discount engine
7. Loyalty rewards engine
8. Machine learning for price prediction
9. User behavior analytics for personalization

QFD Matrix (House of Quality)

User Requirement	Performance	Security	Usability	Reliability	Scalability	Speed	Customer Support	Aesthetic Design	Notifications	Loyalty Program	Discount Offers	Price Prediction Tool	Personalized Travel Suggestions
Register and log in securely	Medium	Strong	Medium	Medium	Medium	Medium	Medium	Medium	Weak	Weak	Weak	Weak	Weak
Search flights with filters	Strong	Medium	Strong	Strong	Medium	Medium	Medium	Medium	Weak	Weak	Weak	Weak	Weak
Display real-time seat availability	Strong	Medium	Strong	Strong	Medium	Strong	Medium	Medium	Medium	Weak	Medium	Medium	Medium
Book flights and receive e-tickets	Strong	Strong	Strong	Strong	Medium	Strong	Medium	Medium	Strong	Weak	Medium	Weak	Weak
Secure multiple payment options	Medium	Strong	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Weak	Medium	Weak	Weak

Cancel/modify bookings & refund policy	Medium	Strong	Medium	Strong	Medium	Medium	Medium	Medium	Strong	Weak	Weak	Weak	Weak
Notifications for booking confirmations	Medium	Medium	Strong	Strong	Medium	Strong	Strong	Medium	Strong	Weak	Medium	Medium	Medium
Seat selection & add-on services	Medium	Medium	Strong	Medium	Medium	Medium	Medium	Strong	Medium	Medium	Medium	Weak	Weak
Loyalty program for frequent flyers	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Strong	Medium	Weak	Medium
Discounts & promo codes	Medium	Medium	Strong	Medium	Medium	Medium	Weak	Strong	Medium	Medium	Strong	Weak	Weak
Add/update/cancel flights (Admin)	Medium	Strong	Medium	Strong	Strong	Medium	Medium	Weak	Weak	Weak	Weak	Weak	Weak
Hotel booking integration	Medium	Medium	Strong	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Weak	Medium
Real-time flight status & alerts	Medium	Medium	Medium	Strong	Medium	Strong	Medium	Medium	Strong	Weak	Weak	Weak	Weak
Display baggage & airport info	Medium	Medium	Strong	Medium	Medium	Medium	Weak	Medium	Medium	Weak	Weak	Weak	Weak
Feedback & rating system	Medium	Medium	Strong	Strong	Medium	Medium	Strong	Medium	Medium	Weak	Weak	Weak	Weak
Personalized travel suggestions	Medium	Medium	Strong	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Weak	Strong
Price prediction for cheapest times	Medium	Medium	Medium	Medium	Medium	Medium	Weak	Medium	Medium	Medium	Medium	Strong	Medium

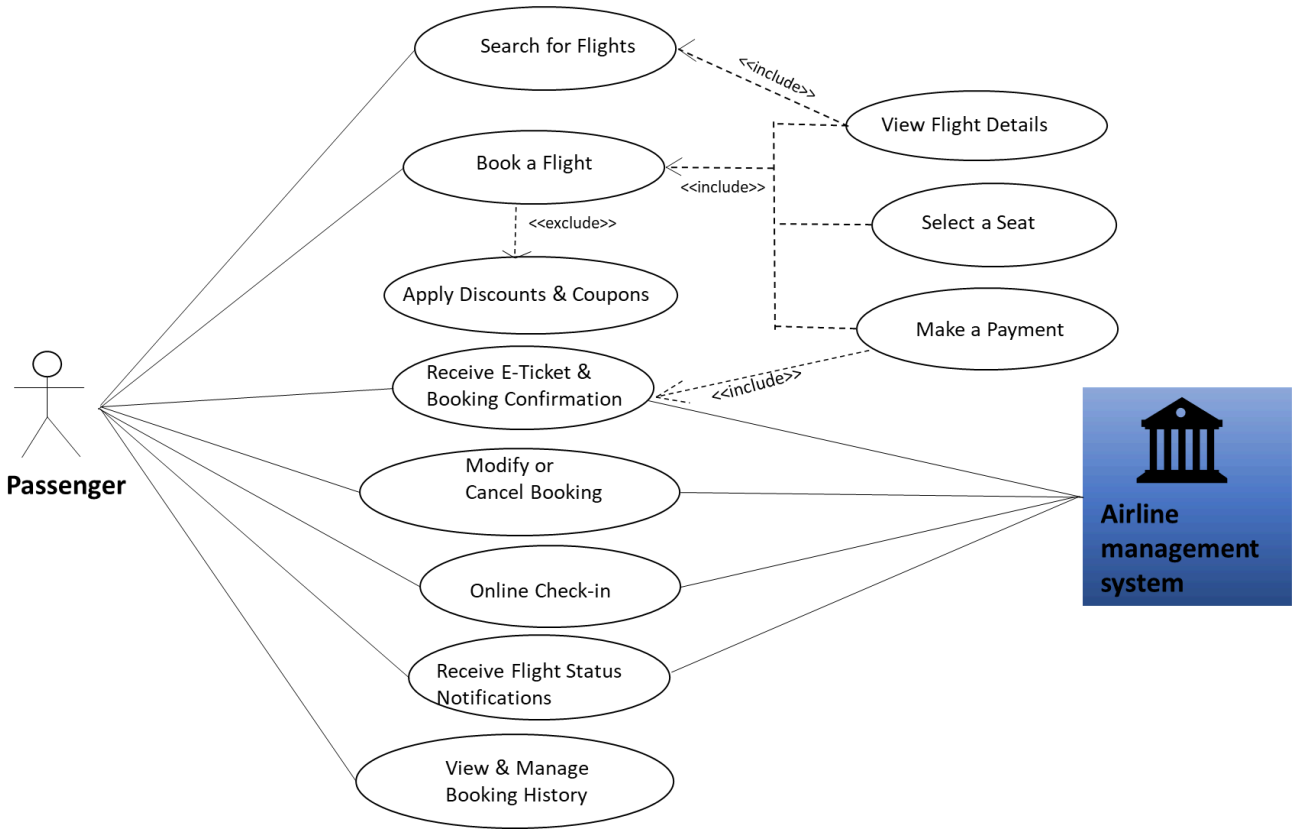
3. Requirements Modeling

3.1 Use Case Diagram

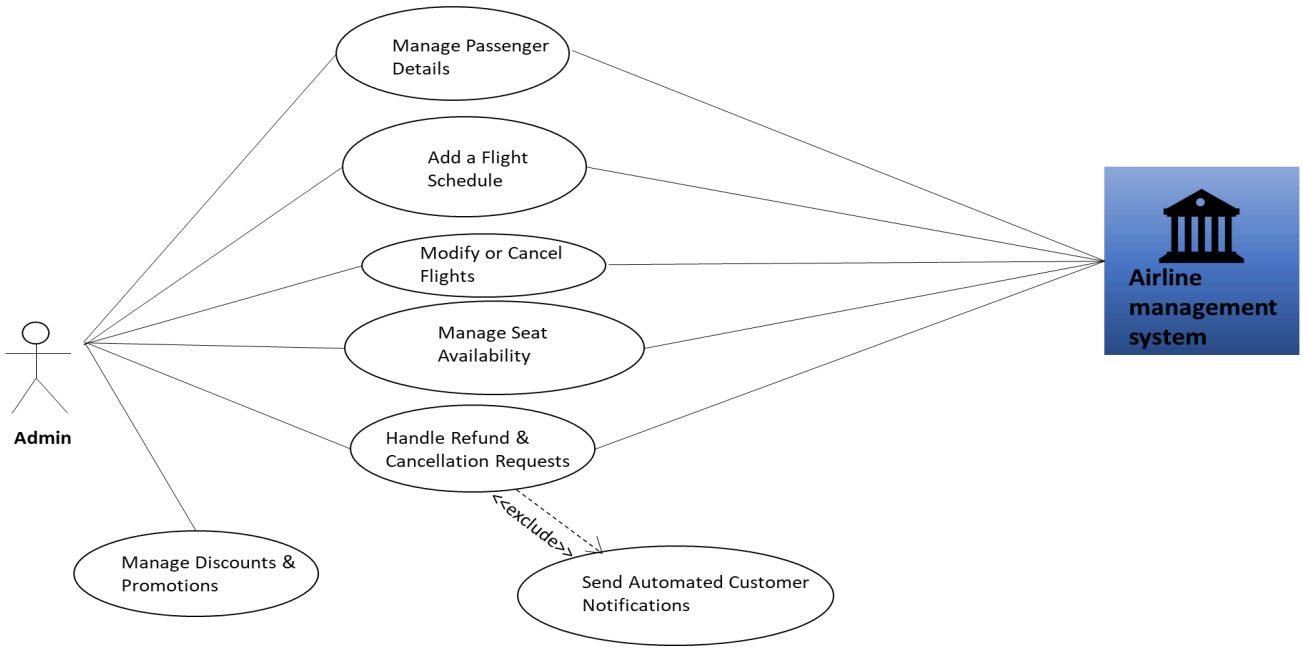
Actors:

- Passenger (End User)
- Admin (Airline Staff)

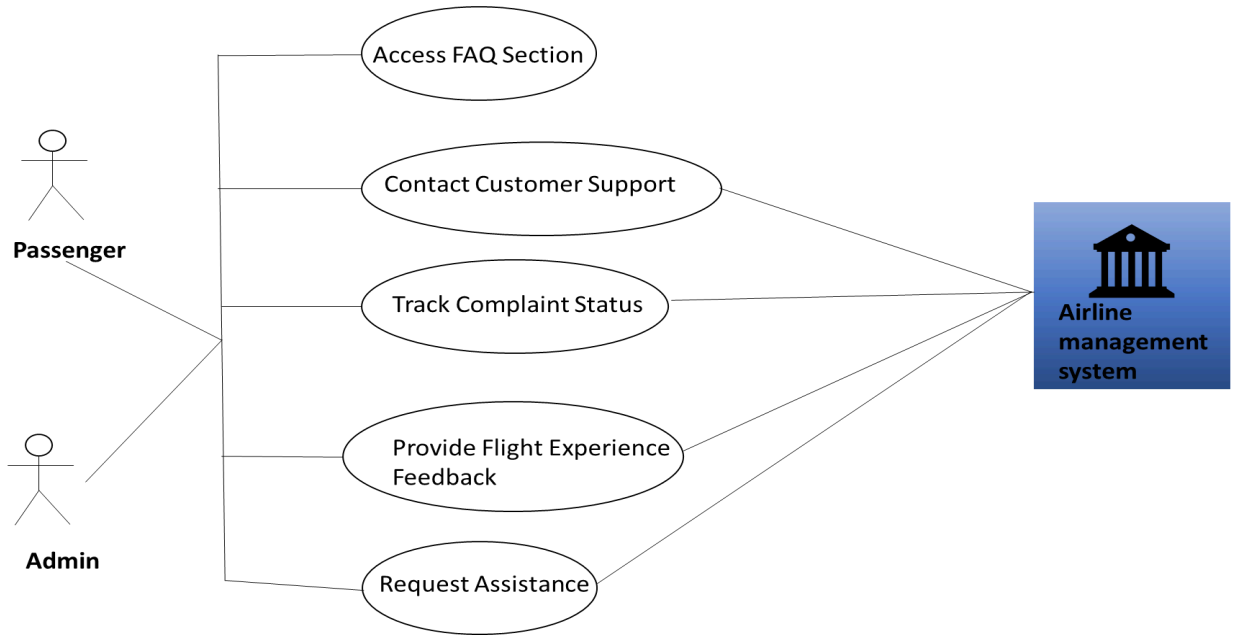
Use Case Diagram (Passenger)



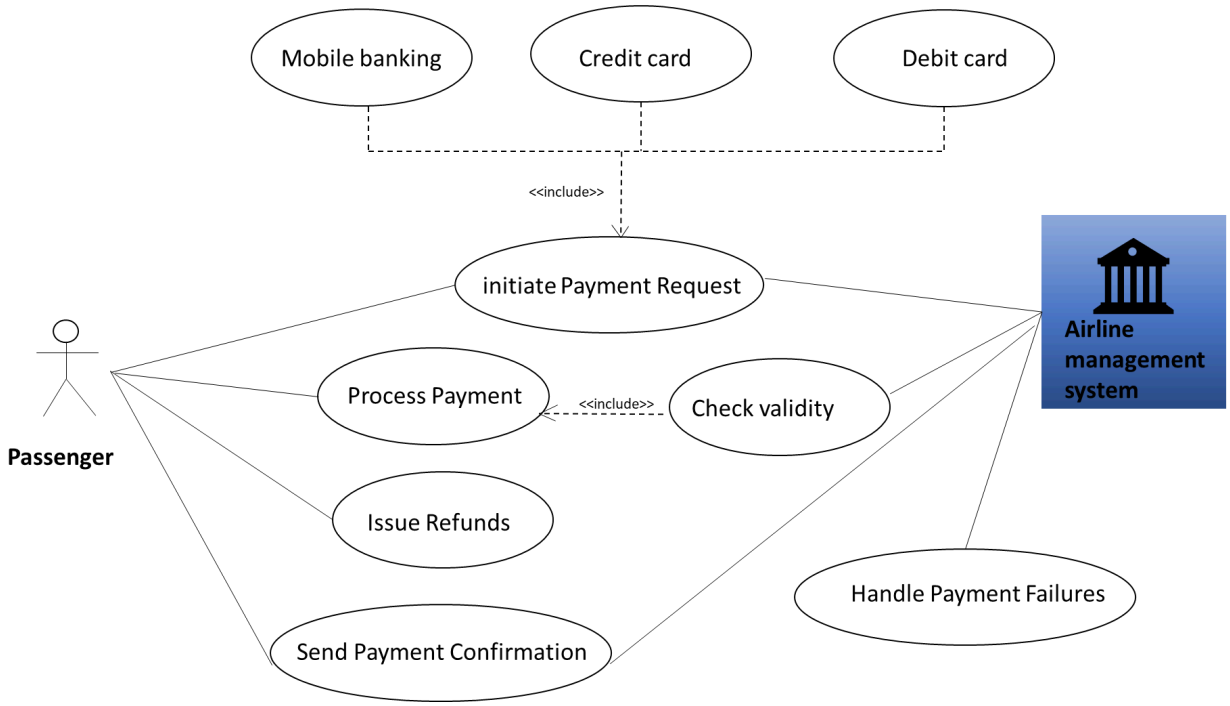
Use Case Diagram (Admin)



Use Case Diagram (Customer Support & Feedback)

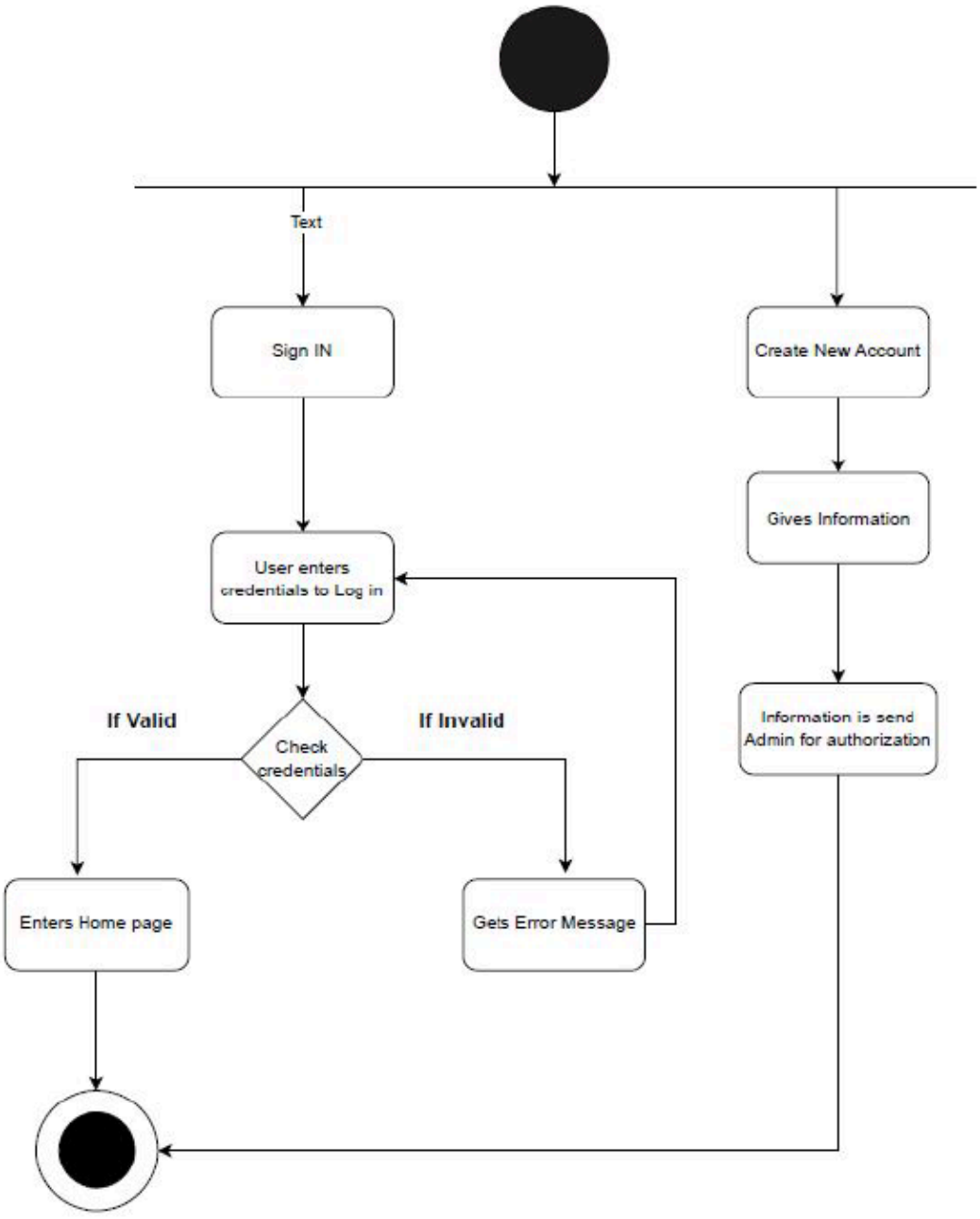


Use Case Diagram (Payment Processing)

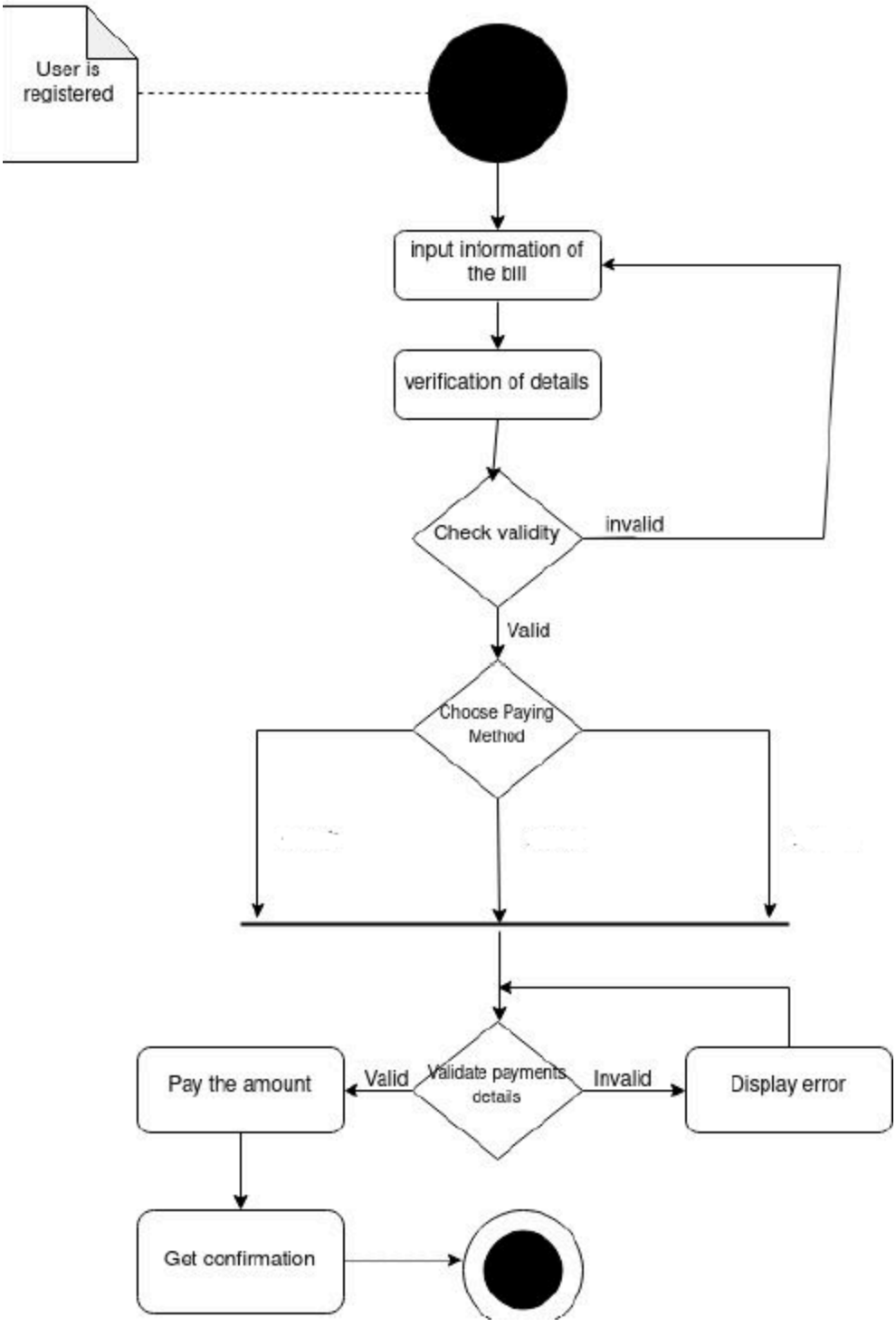


3.2 Activity diagram

Activity Diagram for Log In

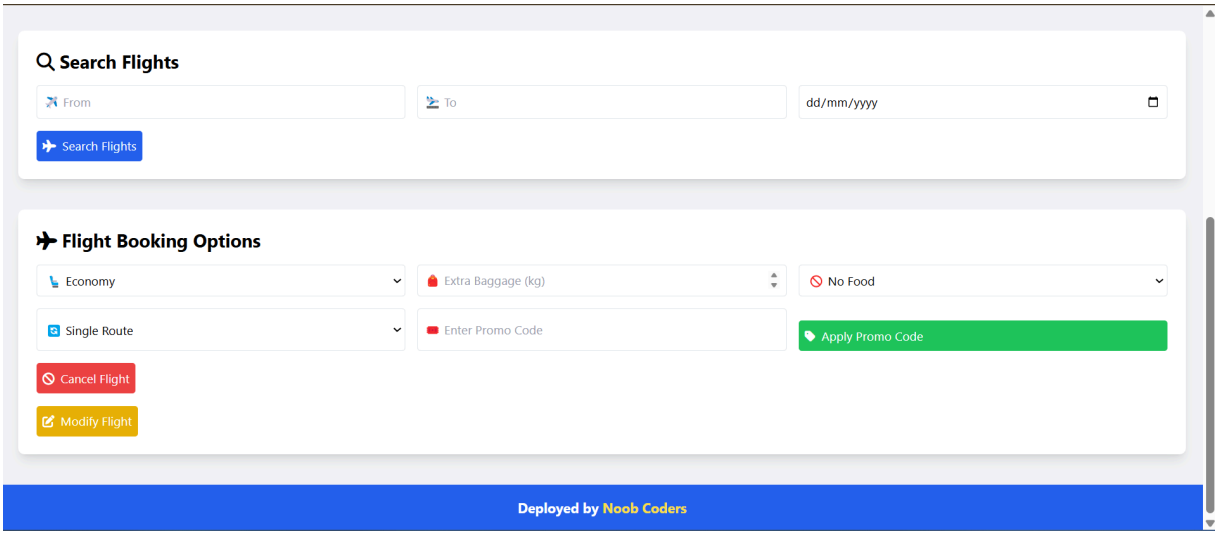


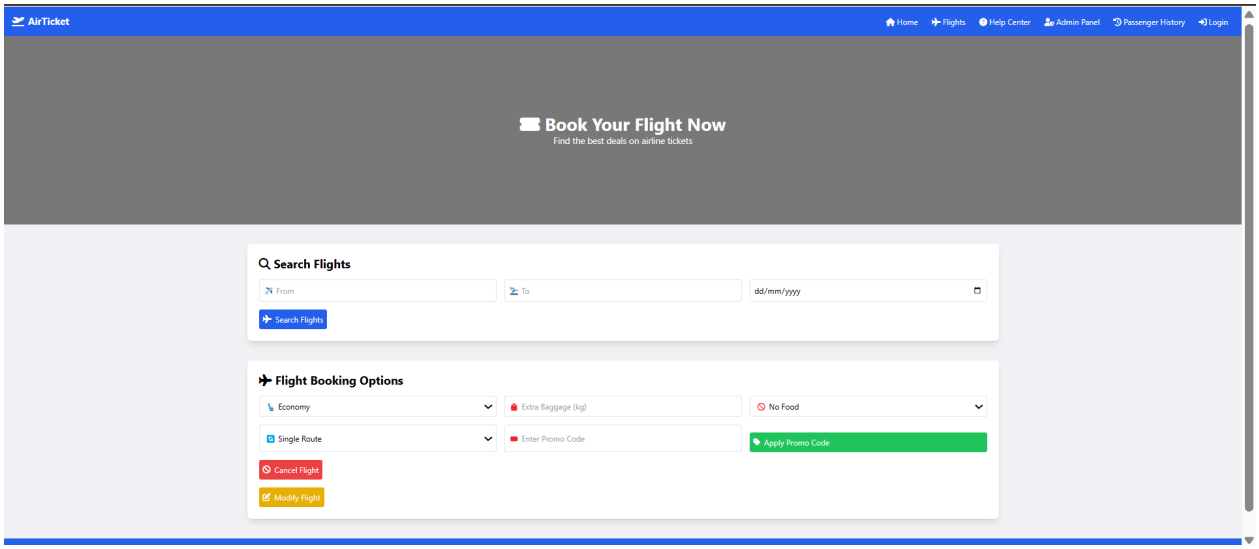
Activity Diagram for Pay Bill

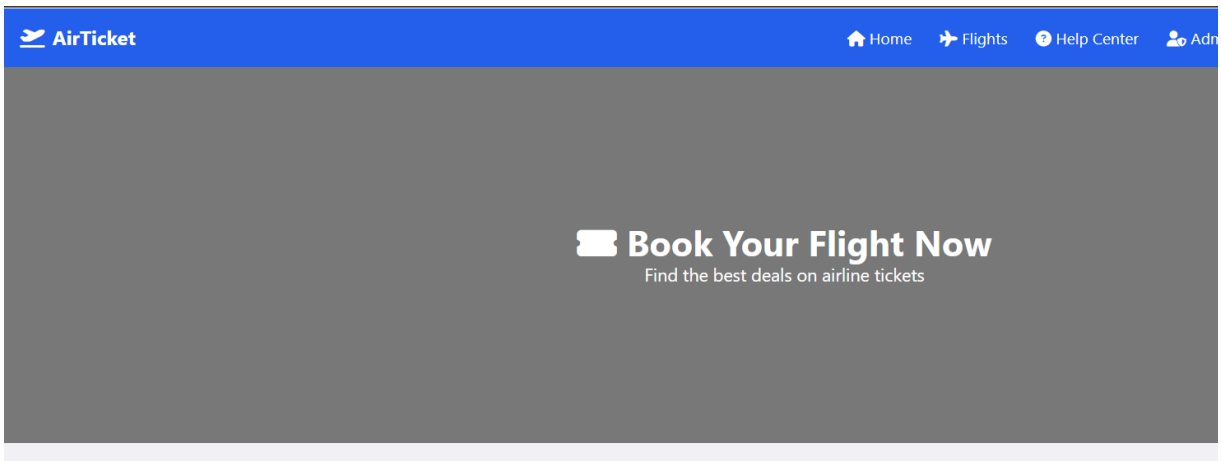


3.3 Prototyping using wireframes

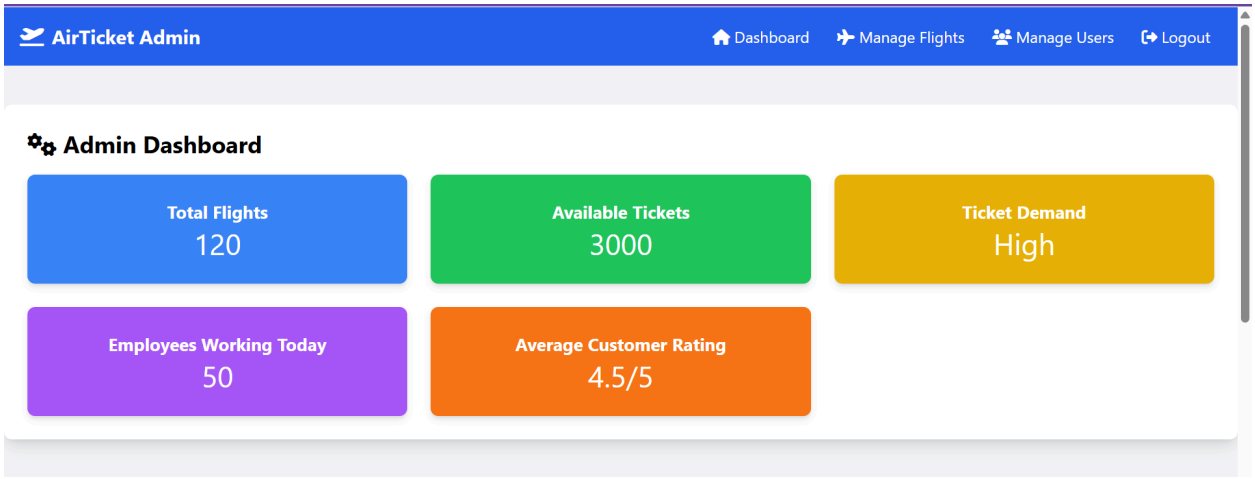
For Passengers







FOR ADMIN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Manage Users
Logout
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Ticket Demand
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Employees Working Today
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Average Customer Rating
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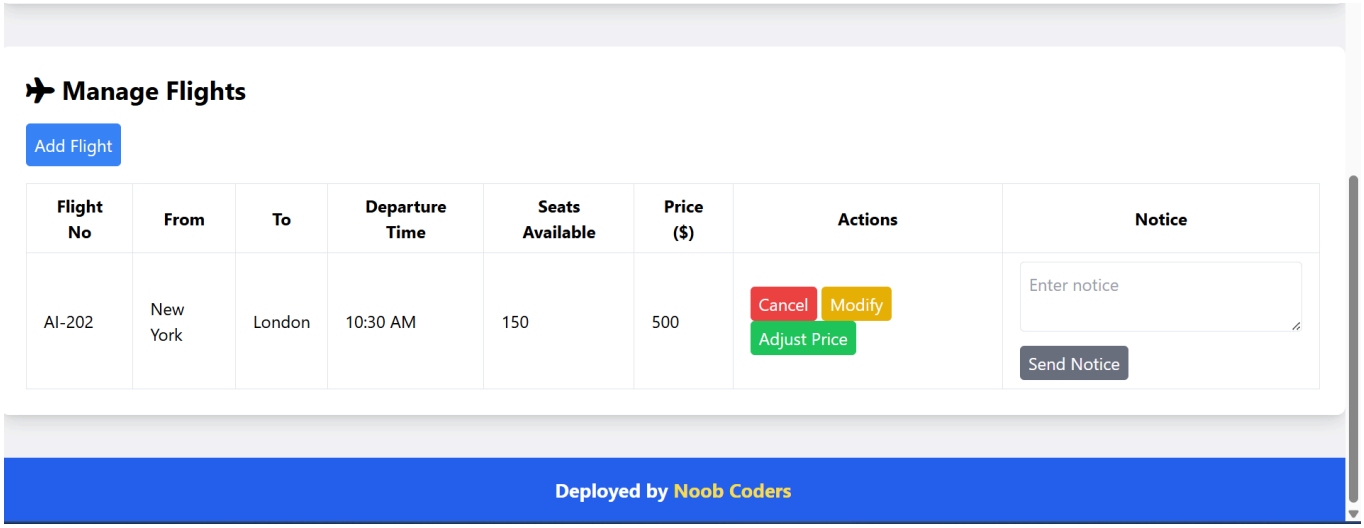
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To
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Cancel
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Adjust Price
Enter notice
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Deployed by Noob Coders