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Computer Programming Laboratory III

Final Exam

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Computer Programming III Laboratory Project Report

Flight Reservation System

1) Aim of the project

The goal of the Flight Reservation System is to provide a streamlined and user-friendly platform for managing flight bookings and customer interactions. It focuses on simplifying the process of flight reservations, handling customer information, and offering real-time updates, with a commitment to enhancing the travel experience for passengers and operational efficiency for managers.

Implementation Summary:

- Implemented in C++ with a focus on object-oriented programming principles.
- Data persistence is achieved through file handling.
- User interfaces for both customers and managers to interact with the system.

2) Program Structs and Relationships

2.1) The main purpose of use of Person Object:

Represents individuals involved in the system, including customers and managers. Used for authentication and personal data management.

2.2) The main purpose of use of Customer and Manager Objects:

Subclasses of Person. Customers can make reservations, whereas managers handle administrative tasks like creating or deleting flights.

2.3) The main purpose of use of Flight Object:

Represents flight details such as flight ID, date, time, and capacity. Used for creating and managing flights.

2.4) The main purpose of use of Reservation Object:

Manages reservations, linking flights to passengers and handling reservation details like price and check-in status.

2.5) The main purpose of use of Passenger Object:

Represents the passengers on a flight, linked to a customer.

2) Rules

Reservation Constraints:

1) Customers cannot reserve the same flight more than once. This rule is to avoid duplicate bookings for the same individual.
2) Reservation IDs are unique for each booking, ensuring clear identification and management of reservations.

Flight Management:

3) Flights have a fixed capacity, and the system prevents overbooking by checking available seats before confirming a reservation.
4) Managers have the authority to delay flights. When a flight is delayed, notifications are sent to affected customers.

Pricing Strategy:

5) The pricing of reservations is dynamic and based on several factors: flight base fare, passenger type (adult or child), and ticket type (economy or first class).
6) Special discounts or surcharges can be applied based on promotional events or flight demands.

User Authentication and Access Control:

7) The system distinguishes between customers and managers, offering different functionalities and access levels to each.
8) Managers have broader access, including the ability to create or delete flights, manage customer information, and handle reservation details.

Data Integrity and Validation:

9) All input data from users are validated to ensure accuracy and consistency, such as checking for valid dates, times, and user credentials.
10) The system maintains data integrity by ensuring that operations like deleting a customer also handle related reservations and passenger details.

Check-In and E-Ticketing:

11) Customers can check in online for their flights. Once checked in, they cannot cancel their reservation.
12) E-tickets are generated for customers post reservation. These tickets contain all necessary flight and passenger information.

Class Diagram: