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# **Computer Programming Laboratory III**

#### Final Exam

#### 18/01/2024

# **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).
- 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:**

