Marwadi University
Marwadi Chandarana Group

NAAC A+

FACULTY OF COMPUTER APPLICATIONS

A Python Project for Academic Year 2024 - 2025

AIRLINES RESERVATION

Subject Code: 05BC3404
Subject Name: Python Programing

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Introduction

- This project is a **console-based Airline Reservation System** developed in Python, designed to handle the core functionalities of passenger booking and record management. It uses Python's built-in csv module for file operations, storing data persistently in a CSV file named Airlines_Reservation.csv.

The system supports essential features for managing airline reservations, including:

- **Adding New Passengers**: Records passenger details such as name, email, age, travel route, date, gender, nationality, selected airline, and class.
- **Displaying Records**: Lists all stored passenger records in a readable format.
- **Searching**: Supports search functionality by both Receipt_No and passenger name.
- **Updating Records**: Allows updating an existing passenger's details.
- **Deleting Records**: Deletes a passenger's record based on their receipt number.
- **Counting**: Displays total passengers and aggregates passenger count per airline.
- **Clearing Records**: Provides an option to wipe all data, resetting the CSV with only headers.
- **Persistent Storage**: All passenger data is saved and managed through a CSV file, allowing the data to remain even after the program is closed.

Technical Information

Technologies Used

- **Programming Language:** Python 3.x
- **Data Storage:**CSV (Comma-Separated Values) and TXT FILE
- **Libraries Used:**
  - csv – For reading and writing data to CSV files.
  - os – For handling file operations.

Development Tools

- **Code Editor:**
  - Visual Studio Code (VS Code)
  - PyCharm
  - Any other Python-supported IDE
- **Version Control System:**
  - Git (optional, for tracking changes)

System Requirements

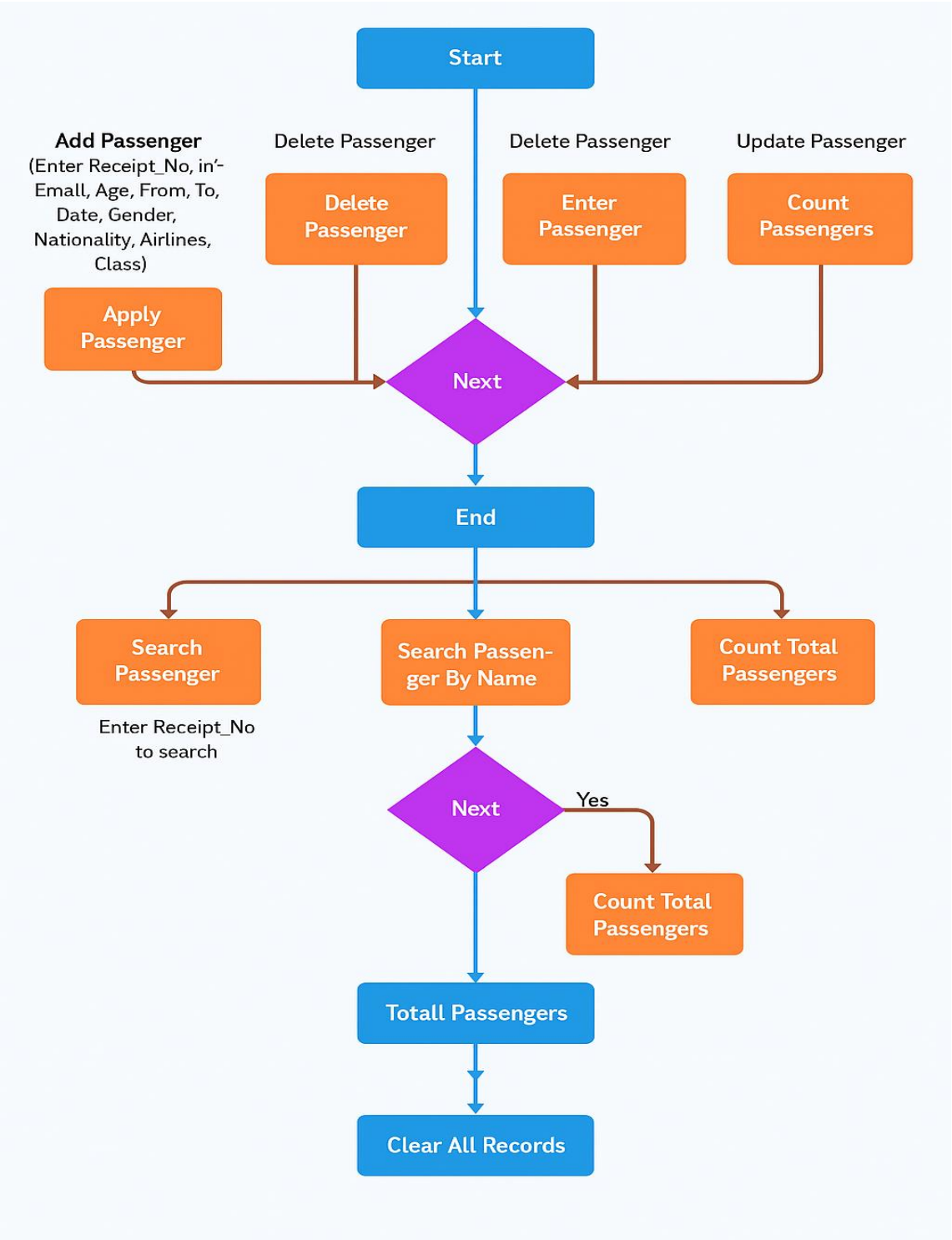
- **Software:**
  - Python 3.x (recommended)
  - Any text editor or IDE for code modifications
  - CLI for executing the program
- **Hardware:**
  - Any system capable of running Python
  - At least 512MB RAM (minimal requirement)
  - Minimal disk storage for CSV files

Project Structure

- The **airlines reservation.py** file contains all the core functionalities, including passenger management, reservation tracking, and data handling. The **Airlines_Reservation.csv** file acts as the primary database, storing all customer and order details persistently.

```
Airlines_Resevation/
├── airlines reservation.py  # Main script containing all functions
├── Airlines_Reservation.csv # Data storage file (created automatically if missing)
```

Diagram(s)



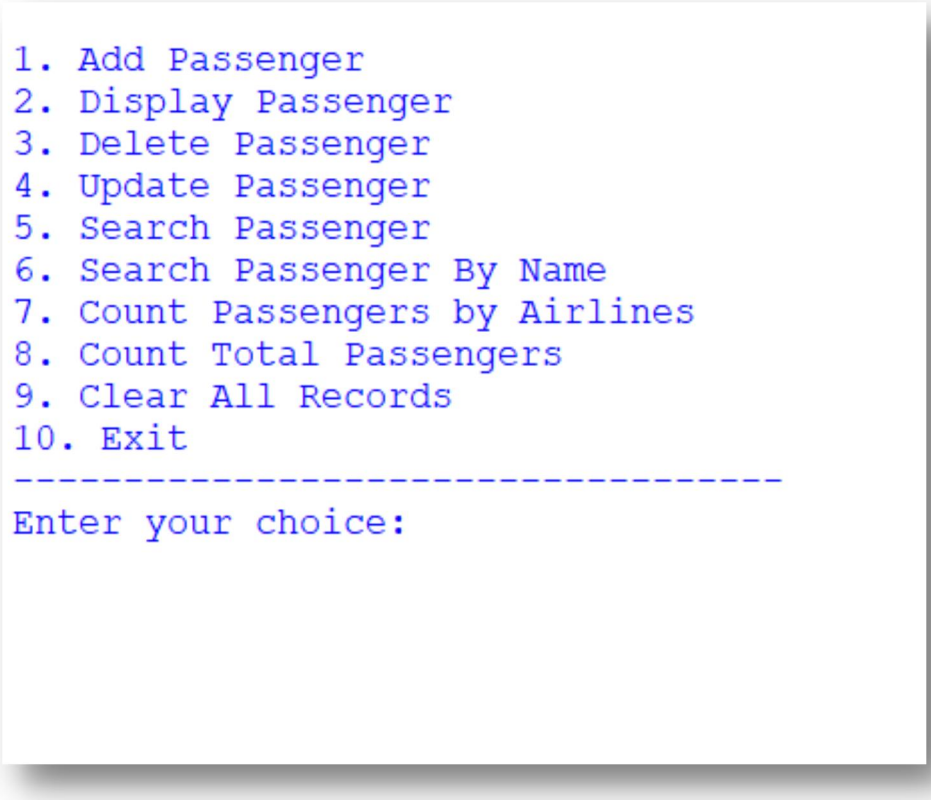
[Flow chart of Airlines Reservation]

Features

- Add, view, update, delete passenger details.
- Search passenger by name or receipt no.
- Count passenger by Airlines.
- Count total number of passengers.
- Clear all records.

Output Screenshots

Below are the screenshots of the system's functionality:



MAIN MENU

- **Adding a Passengers:**

```
Enter your choice: 1
Enter Receipt_No: 101
Enter Name: Hasti
Enter Email: hastitrambadiya@gmail.com
Enter Age: 21
Enter From: Rajkot
Enter To: Delhi
Enter Date: 21-04-2025
Enter Gender: Female
Enter Nationality: Indian
Enter Airlines: Indigo
Enter Class: First
Record added successfully.
```

- **Display Passengers:**

```
Receipt_No: 101
Name: Hasti
Email: hastitrambadiya@gmail.com
Age: 21
From: Rajkot
To: Delhi
Date: 20-06-2025
Gender: Female
Nationality: Indian
Airlines: Indigo
Class: First

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Receipt_No: 102
Name: Nandni
Email: nandnikorat@gmail.com
Age: 20
From: Rajkot
To: Mumbai
Date: 26-08-2025
Gender: Female
Nationality: Indian
Airlines: AirIndia
Class: Second
```

➢ Delete Passenger

```
Enter your choice: 3
Enter Receipt_No to delete: 102
Record deleted.
```

➢ Update Passenger:

```
Enter your choice: 4
Enter Receipt_No to update: 101
Enter New Name: Hasti Trambadiya
Enter New Email: hastitrambadiya22@gmail.com
Enter New Age: 20
Enter New From: Ahemdabad
Enter New To: Mumbai
Enter New Date: 29-05-2025
Enter New Gender: F
Enter New Nationality: Indiian
Enter New Airlines: AirIndia
Enter New Class: Second
Record updated successfully.
```

- **Search Passengers**

```
Enter your choice: 5
Enter Receipt_No to search: 101
Receipt_No: 101
Name: Hasti Trambadiya
Email: hastitrambadiya22@gmail.com
Age: 20
From: Ahemdabad
To: Mumbai
Date: 29-05-2025
Gender: F
Nationality: Indiian
Airlines: AirIndia
Class: Second
```

- **Search Passengers by Name:**

```
Enter your choice: 6
Enter Name to search: Hasti Trambadiya
Receipt_No: 101
Name: Hasti Trambadiya
Email: hastitrambadiya22@gmail.com
Age: 20
From: Ahemdabad
To: Mumbai
Date: 29-05-2025
Gender: F
Nationality: Indiian
Airlines: AirIndia
Class: Second
```

➢ **Count Passengers by Airlines:**

```
-----------------------------------
Enter your choice: 7
Passenger Count per Airline:
-----------------------------------
AirIndia: 1 passenger(s)
```

➢ **Count Total Passengers:**

```
-----------------------------------
Enter your choice: 8
Total number of passengers: 1
```

➢ **Clear all records:**

```
-----------------------------------
Enter your choice: 9
All records have been cleared.
```

Learning Objects

This project helps in understanding and developing essential programming skills:

1. File Handling in Python:
   Manage structured passenger data with CSV files (no external database required).
2. Input Validation Techniques:
   Ensure data integrity by validating email, age, and other user inputs.
3. CRUD Operations:
   Perform Create, Read, Update, and Delete operations on reservation records.
4. Menu-Driven Program Design:
   Create an interactive console-based user experience with menu navigation.
5. Error Handling and Debugging:
   Apply try-except blocks to catch and handle runtime errors effectively.
6. Use of External Libraries:
   Implement third-party libraries like tabulate for improved output formatting (optional).
7. Date and Time Management:
   Use Python's datetime module to manage and validate dates (planned enhancement).
8. Business Logic Implementation:
   Track bookings, filter data, and count passengers per airline for insights.
9. Data Exporting and Formatting:
   Support for data backups and human-readable text file outputs (planned enhancement).
10. Code Modularity and Maintainability:
    Write reusable, organized functions to support scalability and easier debugging.

Conclusion

- The **Airline Reservation** is a simple yet effective solution designed to manage passenger records without relying on complex databases. Utilizing Python's file handling capabilities and a structured CSV format, the system enables essential functionalities such as adding, updating, deleting, searching, and summarizing passenger data efficiently.

- Throughout the development of this project, we gained practical experience in file operations, menu-driven programming, and data validation. The system emphasizes the importance of structured data management and highlights how lightweight tools can still fulfill critical business needs.

- Looking ahead, the system can be further enhanced by incorporating a graphical user interface (GUI) to improve usability and accessibility. Additionally, migrating from CSV-based storage to a relational database system like SQLite or MySQL would significantly improve scalability, data integrity, and performance—making the system suitable for larger-scale deployment.