

AIRLINE RESERVATION SYSTEM

FILE STRUCTURES LABORATORY WITH MINI PROJECT REPORT

Submitted to

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CERTIFICATE

Certified that the project work titled “**Airline Reservation system**” is carried out by **Mr. Anvith V K, USN:4SU20IS005, Mr. Hitesh Kumar K, USN: 4SU20IS014, Mr. Jnanesh M, USN: 4SU20IS015, and Mr. Mallikarjunabuparada, USN: 4SU20IS020** are bonafied students of SDM Institute of Technology, Ujire, in partial fulfillment for requirement for VI semester **Mobile Application Development Mini-Project** in Information Science and Engineering of Visvesvaraya Technological University, Belagavi during the year 2022-2023. It is certified that all the corrections/suggestions indicated for Internal Assessment have been incorporated in the report deposited in the departmental library. The report has been approved as it satisfies the academic requirements in respect of mini project work prescribed for the said Laboratory.

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Abstract

The Airline Reservation System project aims to develop a comprehensive and efficient software system for managing airline reservations. The project's primary objective is to design and implement a file structure that supports the storage and retrieval of airline reservation data. This involves creating an organized and optimized data storage mechanism to handle large volumes of reservation information, such as passenger details, flight schedules, seat availability, and booking records. To achieve this objective, the project adopts a file structure approach, which involves structuring and organizing the data within files and directories. The chosen file structure aims to optimize data access, minimize storage space requirements, and ensure efficient retrieval and modification of reservation data.

Furthermore, the project aims to enhance the overall user experience by implementing intuitive user interfaces and incorporating features such as real-time seat availability updates and secure payment processing. These enhancements will enable customers to easily book flights, select preferred seats, and make payments securely through the system.

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Introduction

1.1 Over View Of File Structure

The file structure is the organization of Data in secondary storage device in such a way that minimizes the access time and the storage space. A file structure is a combination of representations for data in files and of operations for accessing the data. An improvement in file structure design may make an application hundreds of times faster. The details of the representation of the data and the implementation of the operations determine the efficiency of the file structure for particular applications.

A file structure allows applications to read, write and modify data. It might also support finding the data that matches some criteria or reading through the data in some particular order. As we move through the development in file tree structures over the last three decades, watching file structures design evolve as it address dynamic files first sequentially, then through tree structures and finally through direct access. We see that the same design problems tool keep emerging.

When data is stored in hard disk, it becomes difficult to access the data stored in them at the rate the processor can afford to process them. The mismatch between the data access speed and data processing are handled in many ways. A hardware based solution where the speed of data transfer between disks and processor in increased could be a solution. But at the programming level, a different approach is used to handle this problem. The emerging solution to handle the bottleneck created by slow data transfer is dealt in the subject named File Structure. Traditionally, file structure is referred to a combination of representation to for data in files and operations for accessing it.

Literature Review

2.1 About the Programming Language C++

In the program “Time Complexity of Search and Traverse of a Key in secondary indexing”, we have used C++ as a medium to compile and run the program because of its versatile uses in the industry.

It was designed with a bias toward system programming and embedded, resource constrained and large systems, with performance, efficiency and flexibility of use as its design highlights. C++ has also been found useful in many other contexts, with key strengths being software infrastructure and resource-constrained applications, including desktop applications, servers (e.g. e-commerce, web search or SQL servers), and performance-critical applications. C++ is a compiled language, with implementations of it available on many platforms. Many vendors provide C++ compilers, including the Free Software Foundation, Microsoft, Intel, and IBM.

2.2 About Dev-C++

Dev-C++ is a full-featured Integrated Development Environment (IDE) for the C/C++ programming language. As similar IDEs, it offers to the programmer a simple and unified tool to edit, compile, link, and debug programs. It also provides support for the management of the files of a program in “projects” containing all the elements required to produce a final executable program. Dev-C++ uses Mingw port of GCC (GNU Compiler Collection) as a compiler. It can create native Win32 executables, either console or GUI, as well as DLLs and static libraries. Dev-C++ can also be used in combination with Cygwin or any other GCC based compiler. In this session, we will use Mingw --included in the default Dev-C++ distribution-- to create console C programs.

Dev-C++ features are:

- Support GCC based compilers (Mingw included)
- Integrated debugging (with GDB)
- Support for multiple languages (localization)
- Class Browser
- Debug variable Browser
- Code Completion
- Function Listing
- Project Manager
- Customizable syntax highlighting editor
- Quickly create Windows, console, static libraries and DLL
- Make file creation
- Edit and compile Resource files –

Problem Statement

3.1 Problem statement

Design and implement an Airline Reservation System that allows users to book flights, view flight details, and perform administrative tasks. The system should provide a user-friendly interface for both customers and administrators. Users should be able to register by providing their personal details such as name and contact number. Registered users should be able to log in using their credentials. Users should be able to search for flights based on departure and arrival locations, select a flight for booking, book tickets by providing passenger details and making payment.. After selecting a flight he should be able to choose their preferred seat from the available seats. Users can be cancel their booked tickets and receive a refund based on the cancellation policy.

An administrator should have a separate login to access administrative functionalities. He should be able to add new flights, update flight details, delete existing flights, view user details, delete user accounts, and handle user-related operations. The admin mode should be password protected to ensure authorized access. The system should ensure the privacy and security of user data, such as passwords and personal information. The Airline Reservation System should fulfill these requirements, providing a seamless and efficient experience for users to book and manage their flights while providing the necessary administrative tools for system management.

3.2 Objectives

To provide some amount of automation in airlines management.

To help airlines system in making their business more efficient.

An added attraction for their potential customers.

It will also show the attitude of the management that they are aware to the newly introduced technology and ready to adopt them.

Requirement Specification

4.1 Hardware Requirements

- Processor : Intel Core i3
- Processor Speed : 2.20 GHz
- Processor Type : 64-bit Operating System
- RAM : 4GB
- Hard disk Utilization :1TB

4.2 Software Requirements

C++: C++ is standardized by the International organization of Standardization(ISO) with the latest version ratified and published by ISO in December 2017. The C++ programming language was initially standardized in 1998 as ISO/IEC 14882:1998, which was then amended by the C++ 03, C++11 and C++14 standards.

System Design and Data Flow**5.1 System Design**

The designing of Airline Reservation System consist of flight records and passenger record.

Flight Information:

Flight Information has the details of Flight no, Flight code, Source, Destination, Arrival time, Departure, Price, and Availability with the help of Flight number we can get the information of Flight and we can delete Flight record.

Flight No.	Flight code	Source	Destination	Arrival time	Departure	Price	Availability
------------	-------------	--------	-------------	--------------	-----------	-------	--------------

Fig 5.1 Variable length record for Flight Information.

Passengers Information:

Passenger Information has the details of Passenger Id, Passenger Name, Mobile no., Address, Flight No., Seat No. with the help of Passenger Id we can get the information of Passenger and we can delete Passenger record.

Passenger Id	Passenger Name	Mobile no.	Address	Flight No.	Seat No.
--------------	----------------	------------	---------	------------	----------

Fig 5.2 Variable length record for Passengers Information.

5.2 Data Flow Diagram

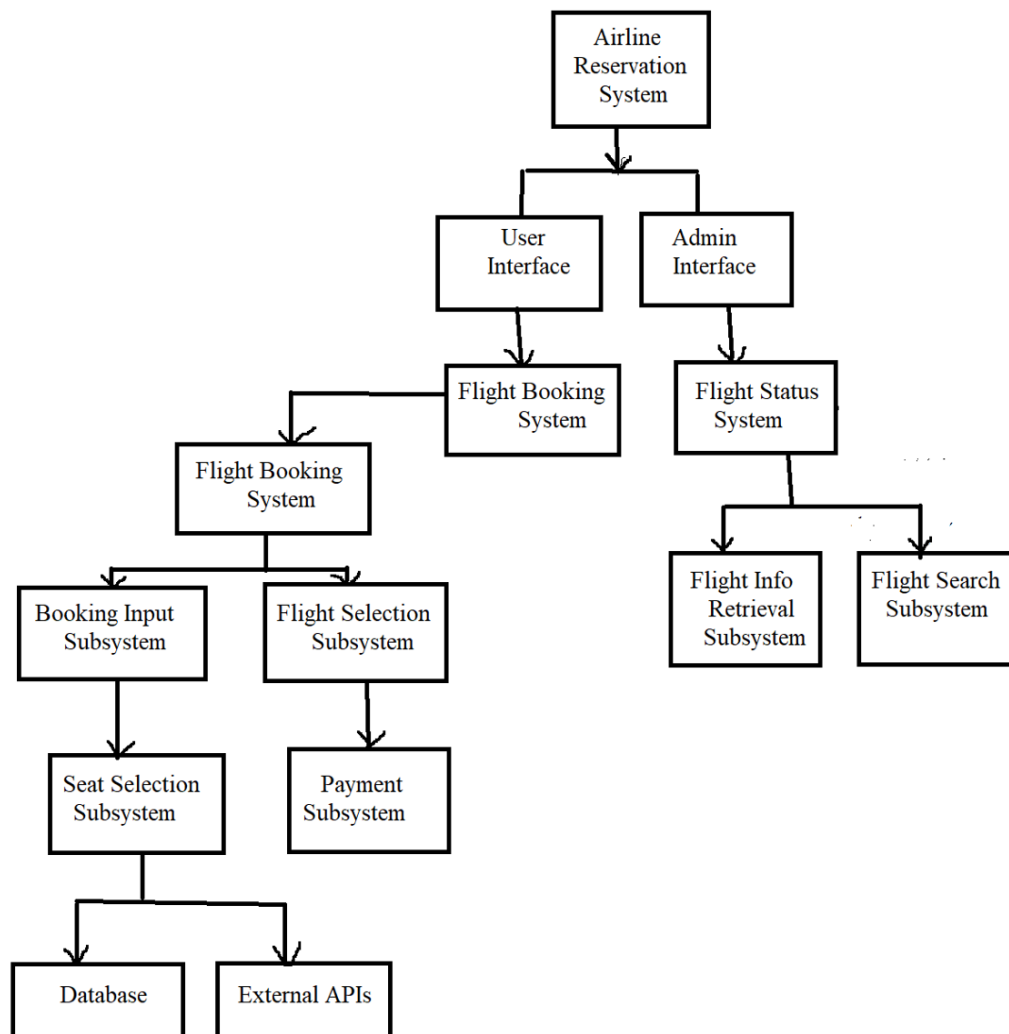


Fig 5.3 Data flow diagram for Airline reservation system

Implementation

6.1 Functions:

Functions of different form are used during the implantation of **Airline reservation system**.

Some of them are listed below:

Main Method():The program starts in the `main` function, where the user is presented with a menu to choose between the Admin and User mode or to exit the program. If the user selects the Admin mode, they are prompted to enter a password. If the password is correct, the user is granted access to the admin menu, which provides options such as adding a flight, deleting a flight, modifying flight details, displaying flight details, searching for a flight, logging out, or exiting the program.

Admin: Admin menu, the respective functions are called based on the user's choice. For example, to add a flight, the `addFlight` function is called. It prompts the user to enter details such as flight number, flight code, source, destination, date, arrival time, departure time, price, and availability. The flight details are then stored in a file named "FlightRecord.txt". Similarly, the Admin menu allows for other operations like deleting a flight, modifying flight details, displaying flight details, and searching for a flight. Each operation has a corresponding function defined in the `Flight` class.

User: If the user selects the User mode, they are prompted to either register or log in. The user registration involves entering a name and password, which are stored in a file named "ULogin.txt". After successful registration or login, the user gains access to the user menu. The User menu provides options to display flights, book a ticket, cancel a ticket, show the ticket details, log out, or exit the program. The User menu functions, similar to the Admin menu, call corresponding functions in the `Flight` class to perform the desired operations. For example, the `displayFlight` function displays the available flights to the user.

The program continues to run in a loop until the user chooses to log out or exit the program. The user can navigate between menus by selecting options. Overall, the program uses file handling to store flight and user details. It utilizes functions to encapsulate different functionalities and maintain code modularity. The program separates the Admin and User functionalities, providing different menus and options for each role.

6.2 Sequence Diagram:

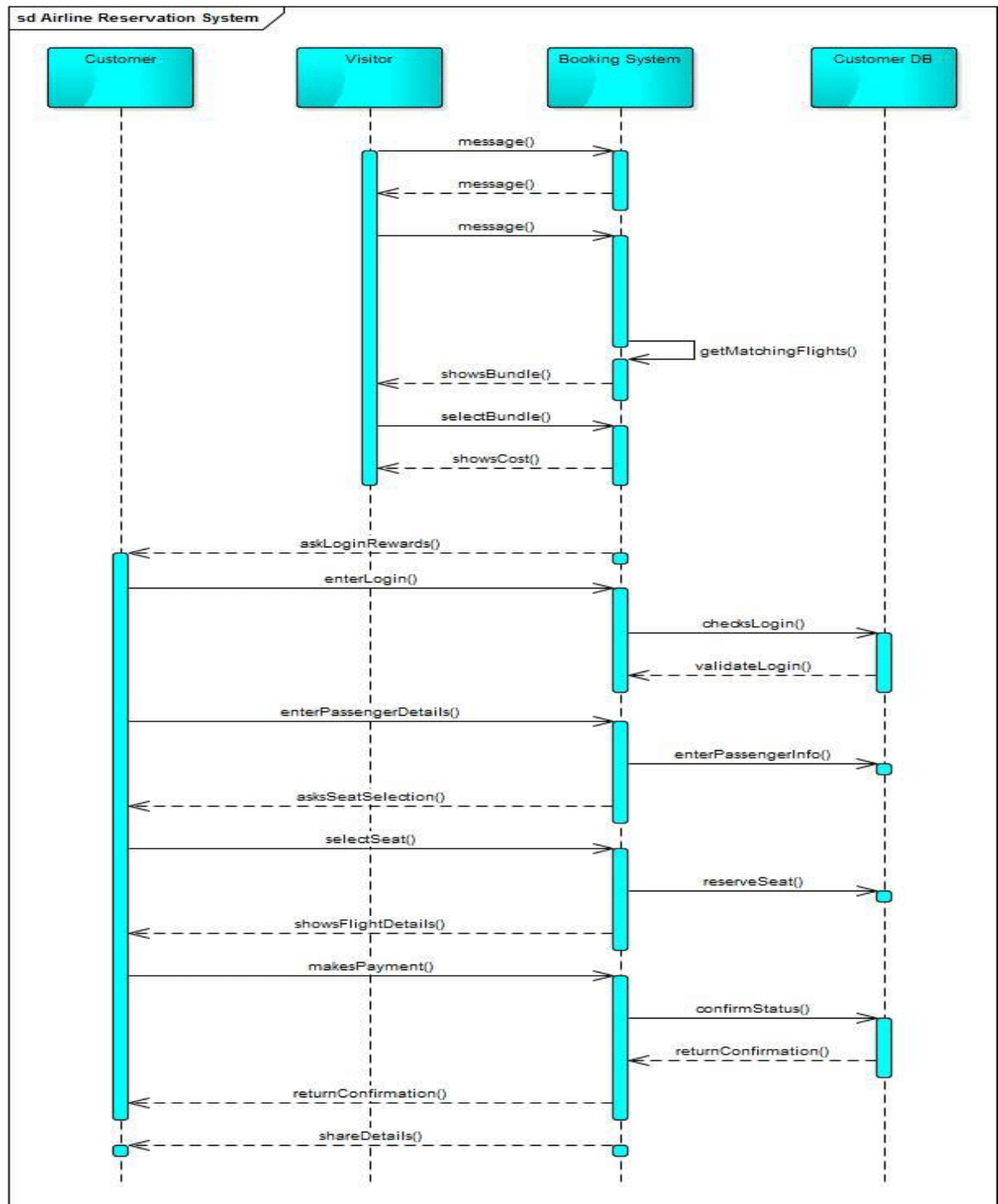
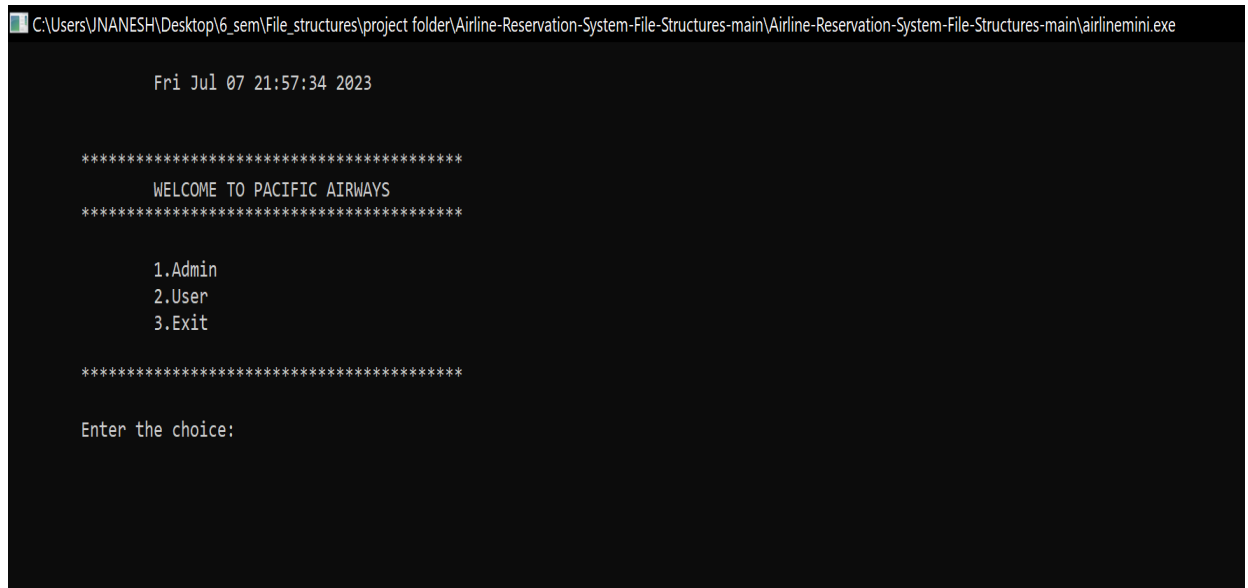


Fig 6.1 Sequence diagram for airline reservation system

Results

7.1 Snapshots:



```

C:\Users\UNANESH\Desktop\6_sem\File_structures\project folder\Airline-Reservation-System-File-Structures-main\Airline-Reservation-System-File-Structures-main\airlinemini.exe

Fri Jul 07 21:57:34 2023

*****
WELCOME TO PACIFIC AIRWAYS
*****

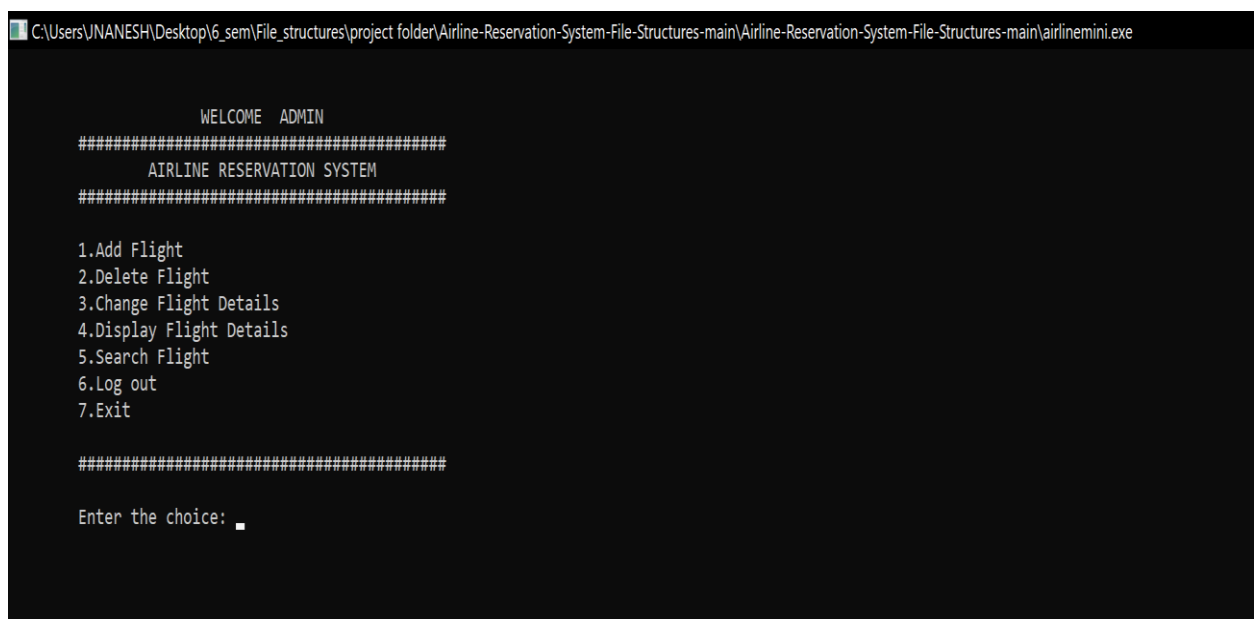
1.Admin
2.User
3.Exit

*****

Enter the choice:

```

Fig 7.1 Airline Reservation Menu



```

C:\Users\UNANESH\Desktop\6_sem\File_structures\project folder\Airline-Reservation-System-File-Structures-main\Airline-Reservation-System-File-Structures-main\airlinemini.exe

WELCOME ADMIN
#####
AIRLINE RESERVATION SYSTEM
#####

1.Add Flight
2.Delete Flight
3.Change Flight Details
4.Display Flight Details
5.Search Flight
6.Log out
7.Exit

#####

Enter the choice: █

```

Fig 7.2 Admin menu

```
C:\Users\JNANESH\Desktop\6_sem\File_structures\project folder\Airline-Reservation-System-File-Structures-main\Airline-Reservation-System-File-Structures-main\airlinemini.exe

*****ADD FLIGHT DETAILS*****

Enter Flight No.      : f019
Enter Flight Code     : g625
Choose Source        :
    1.Bangalore
    2.Bhubaneswar
    3.Chennai
    4.Delhi
    5.Kochi
    6.Mumbai
    7.Siliguri
    8.Visakhapatnam
    Enter your choice: 1
Choose Destination    :
    1.Bangalore
    2.Bhubaneswar
    3.Chennai
    4.Delhi
    5.Kochi
    6.Mumbai
    7.Siliguri
    8.Visakhapatnam
    Enter your choice: 4
Enter Date(dd/mm/yyyy) : 142412
Enter Arrival Time(hh:mm) : 52618
Enter Departure Time(hh:mm) : 102511
Enter Price            : 52000
Enter Availability(YES/NO) : YES

Confirm?(y/n):
```

Fig 7.3 Add Flight Details

```
C:\Users\JNANESH\Desktop\6_sem\File_structures\project folder\Airline-Reservation-System-File-Structures-main\Airline-Reservation-System-File-Structures-main\airlinemini.exe

*****FLIGHT DETAILS*****

1
    Flight No.      : f102
    Flight Code     : IA
    Source          : Mumbai
    Destination     : Delhi
    Date            : 28/08/2021
    Arrival Time    : 10:20
    Departure Time  : 11:00
    Price           : 999
    Availability    : no

2
    Flight No.      : f103
    Flight Code     : abc
    Source          : Mumbai
    Destination     : Bhubaneswar
    Date            : 30/08/2021
    Arrival Time    : 10:00
    Departure Time  : 10:45
    Price           : 1399
    Availability    : NO
```

Fig 7.4 Flight Details

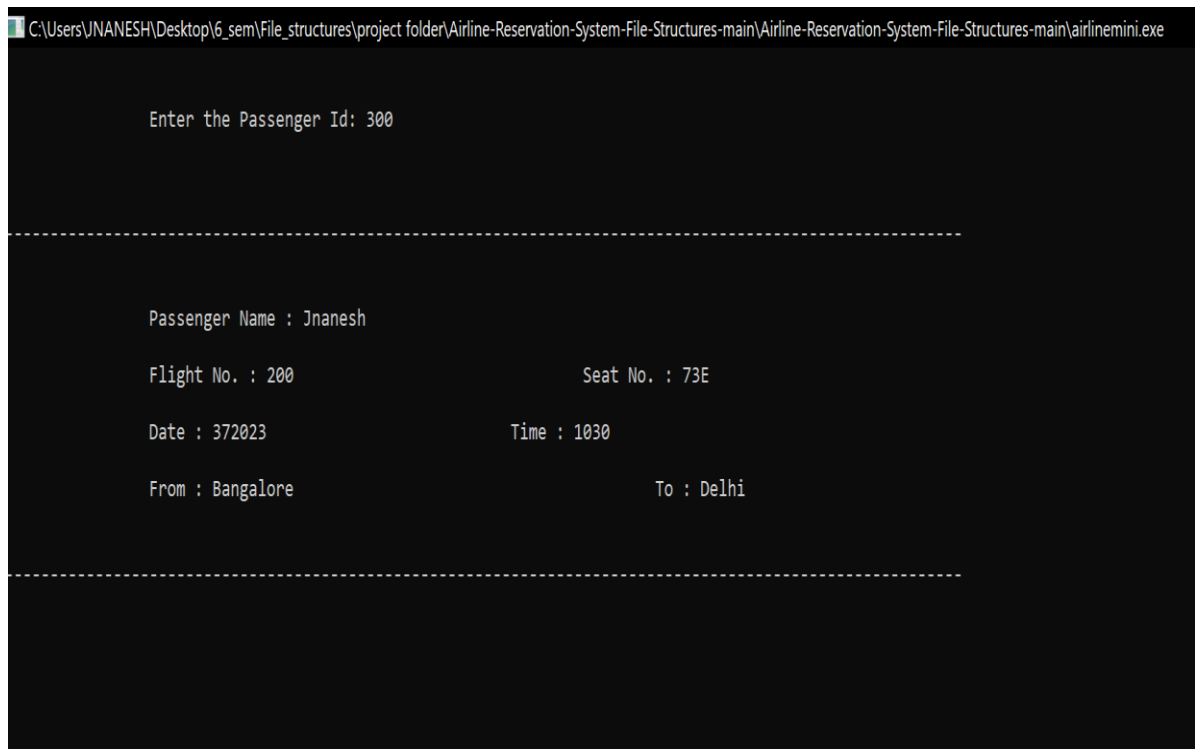


Fig 7.8 Booked Ticket

Conclusion

The current state of the airline reservation system presents various challenges that hinder its efficiency and fail to meet the evolving needs of airlines and passengers. Limited accessibility, slow processing times, inadequate integration with other systems, complex user interfaces, and a lack of personalization are among the key issues faced by the system. However, by implementing an enhanced solution, these challenges can be overcome.

An effective problem solution for the airline reservation system includes the implementation of a user-friendly online booking platform, improved processing efficiency, seamless integration with other systems, intuitive user interfaces, and personalized services. These solutions will enhance accessibility, streamline processes, improve communication, reduce errors, and provide tailored experiences to passengers. By addressing these challenges and implementing the proposed solutions, the airline industry can significantly improve the reservation system. This will lead to enhanced customer satisfaction, increased revenue opportunities, streamlined operations, and a more seamless and personalized experience for passengers. Ultimately, an upgraded airline reservation system will contribute to the overall growth and success of the airline industry.

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Personal Profile



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Prof. Harsha Nagaraj Honnu received B.E. degree in Computer Science and Engineering from GEC, Karwar in the year 2015, and MTech. in Software Engineering from NMAMIT, Nitte in 2017. He has 6+ years of teaching experience.

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