FLIGHT TICKET BOOKING SYSTEM USING JAVA
PROJECT REPORT

Submitted by

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BONAFIDE CERTIFICATE

Certified that this Project Report for the course **21CSC203P-ADVANCED PROGRAMMING PRACTICE** titled **"FLIGHT TICKET BOOKING SYSTEM USING JAVA"** is the bonafide work done by:

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who completed the project under my supervision. Certified further, that to the best of my knowledge the work reported herein does not form part of any other work.

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ACKNOWLEDGEMENT

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1. ABSTRACT

The Airplane Ticket Booking System is a Java project designed to facilitate the efficient and convenient booking of airline tickets. The system aims to provide a user-friendly interface and reliable functionalities for customers to search for flights, make bookings, and process payments seamlessly.

The project leverages object-oriented programming principles to achieve code modularity, reusability, and maintainability. It utilizes the Java language, which offers a powerful and efficient platform for developing robust software systems.

The system's key features include a comprehensive flight search functionality that enables users to specify their travel preferences, such as departure and destination airports, dates, and passenger details. The system then retrieves relevant flight information from a database and presents it to the user in an organized manner.

To ensure data integrity and security, the system incorporates appropriate measures, including encryption techniques and authentication protocols. User information, flight details, and booking records are stored and managed efficiently in a structured database.

The Airplane Ticket Booking System project emphasizes a user-centric design approach, aiming to enhance the overall user experience. The system provides clear and intuitive interfaces for users to navigate through the booking process effortlessly.

Moreover, the project focuses on error handling and exception management to handle unexpected scenarios effectively. By implementing robust error handling mechanisms, the system ensures a smooth and uninterrupted user experience.

Overall, the Airplane Ticket Booking System implemented as a Java project offers a comprehensive and efficient solution for managing flight reservations. It addresses the key aspects of flight search, booking management, payment processing, and data security, aiming to optimize the booking process for both customers and airline administrators.

2. INTRODUCTION

The airplane booking system is a Java project designed to streamline and automate the process of reserving seats on flights. It aims to provide a user-friendly interface for customers to search for available flights, select seats, and make reservations easily and efficiently.

The project utilizes object-oriented programming principles to create various classes and functions that facilitate the booking process. It maintains a comprehensive database of flights, including information such as flight numbers, departure and arrival times, destinations, and seat availability. The system allows users to search for flights based on their preferred criteria, such as date, time, and destination.

To enhance security and prevent unauthorized access, the system incorporates user authentication and validation mechanisms. Only registered users with valid credentials can log in and make bookings. Additionally, the system provides options for customers to view their reservation history, modify existing reservations, and cancel bookings if needed.

The airplane booking system also includes features to generate invoices and process payments securely. It supports different payment methods, such as credit cards or online banking, ensuring a smooth and reliable transaction process.

Overall, the airplane booking system project in Java aims to simplify the flight reservation process for both customers and airline staff. It combines efficient data management, user- friendly interfaces, and secure transaction processing to create a reliable and convenient platform for booking flights and managing reservations.

3. LITERATURE SURVEY

1. **"A Systematic Review on Online Airline Reservation System"**
   Authors: Manisha Agarwal, Anuradha Prajapati and Kirti Dhirani
   Publication Year: 2018
   We referred to this research paper to understand the concepts of Java for using them in our project for developing a simple code for Online Ticket Booking System.

2. **"Flight Reservation System"**
   Authors: Abhay Tiwari and Ashima Mehta
   Publication Year: 2023
   We referred to this book to understand the various techniques of developing database of travellers in Java. Also, we saw and learnt some other functions that we have used in the project.

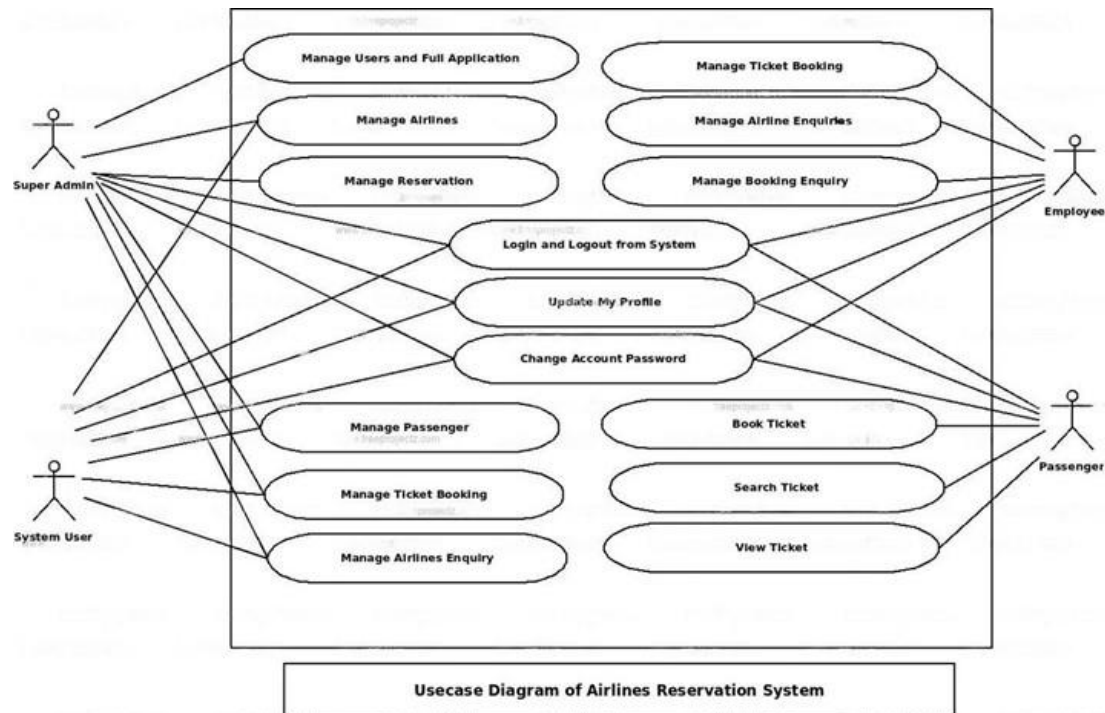3. **"Airline Reservation System"**
   Authors: T. S. S. N. Sailaja, V. Krishna and V. Surya Indira
   Publication Year: 2012
   We referred to this paper to understand who to use if-else, while statement, switch function, constructors and many others.

4. DIAGRAMS

A) USE CASE DIAGRAM

Usecase Diagram of Airlines Reservation System

B) CLASS DIAGRAM

Class Diagram of Airlines Reservation System
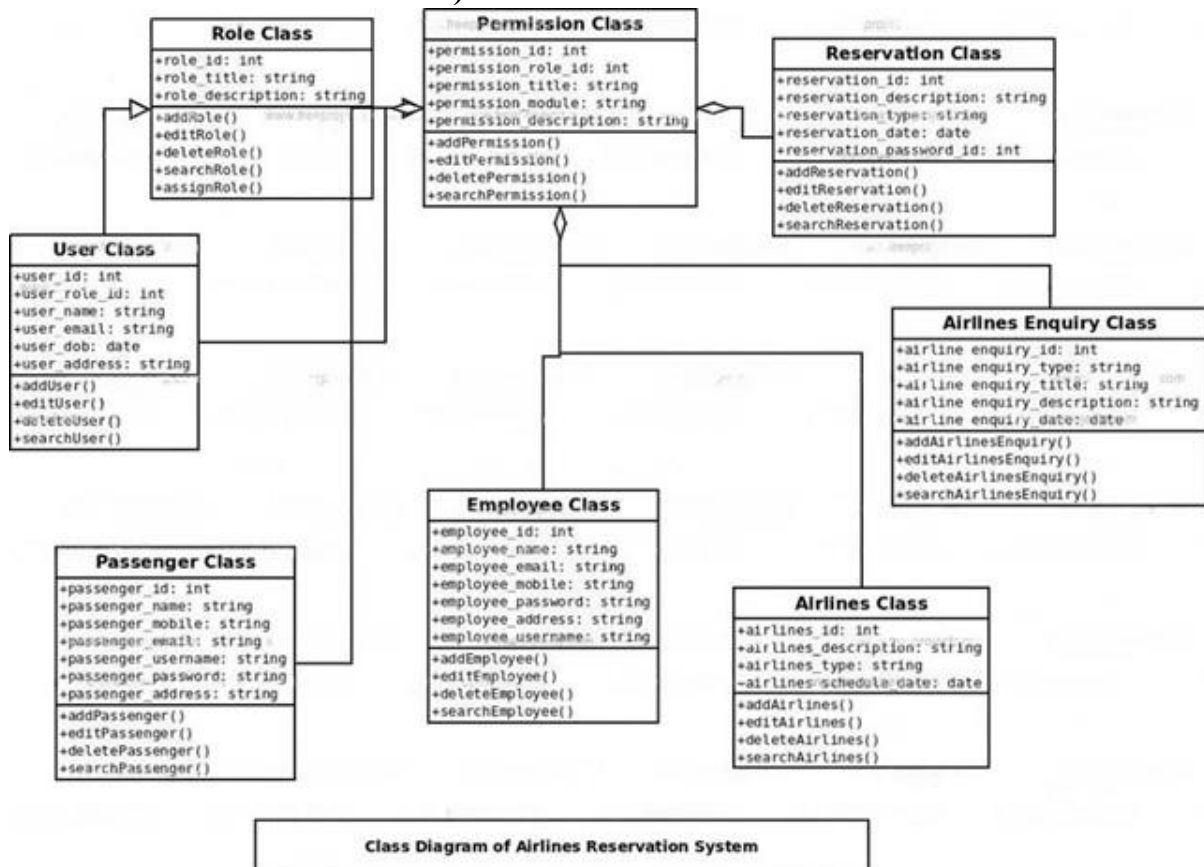
C) COMPONENT DIAGRAM
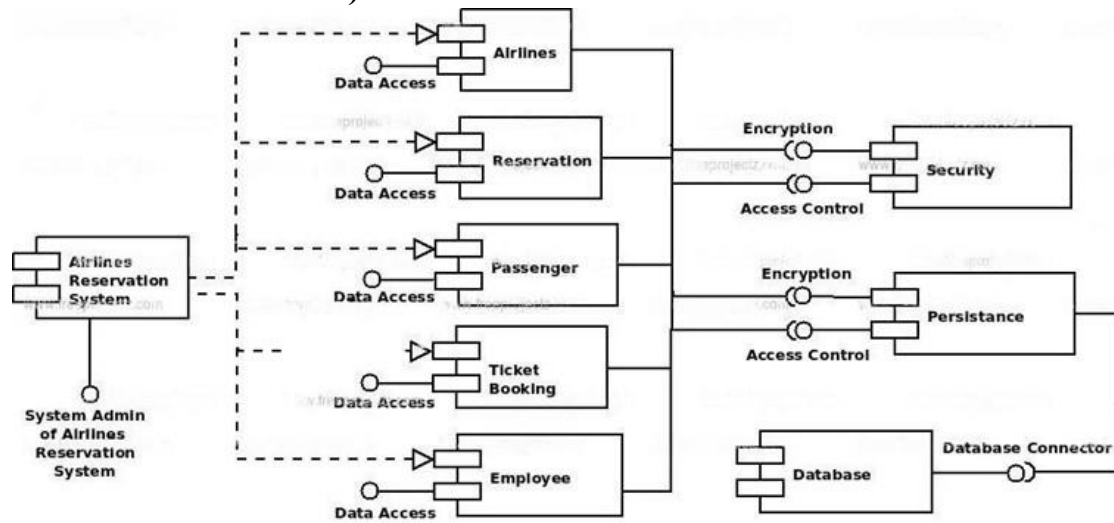
Component Diagram of Airlines Reservation System

D) ACTIVITY DIAGRAM
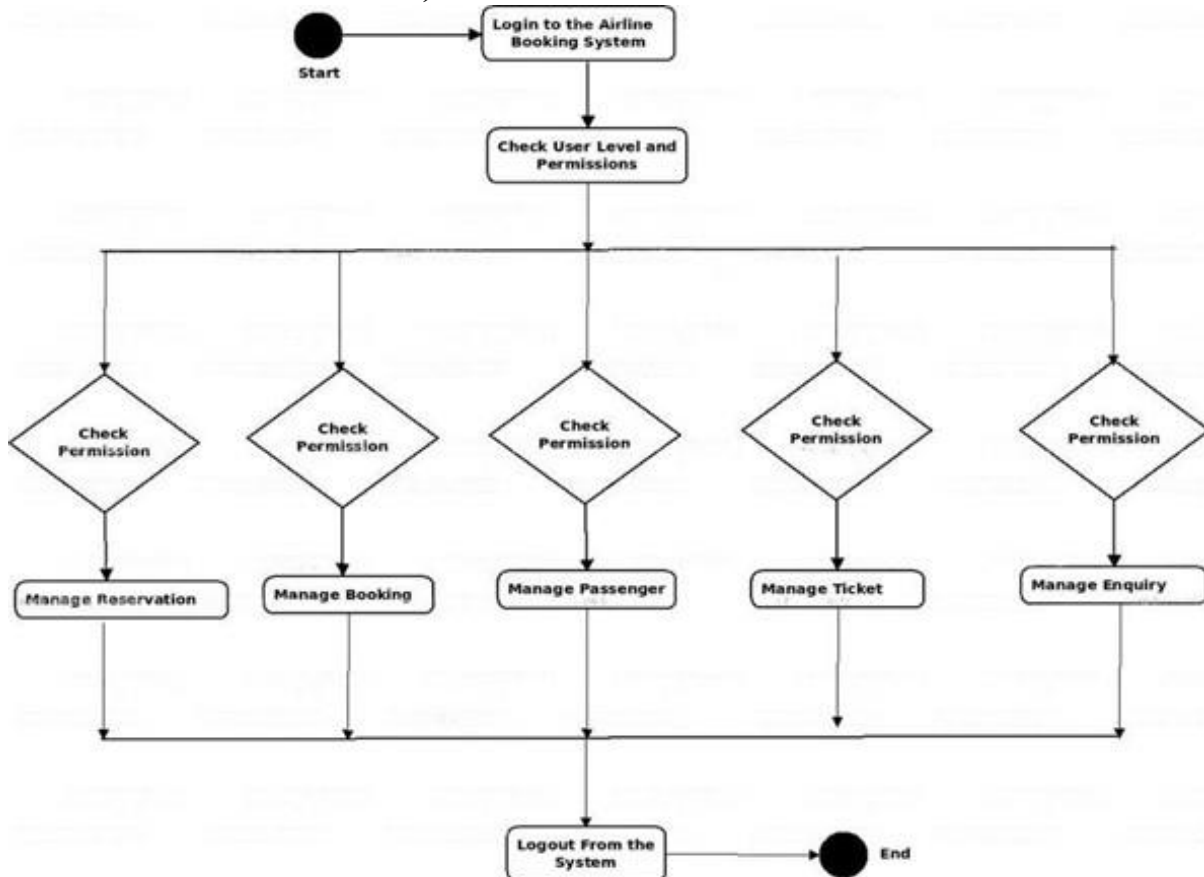
Activity Diagram for Airline Booking System

E) SEQUENCE DIAGRAM

Sequence Diagram of Airline Reservation System
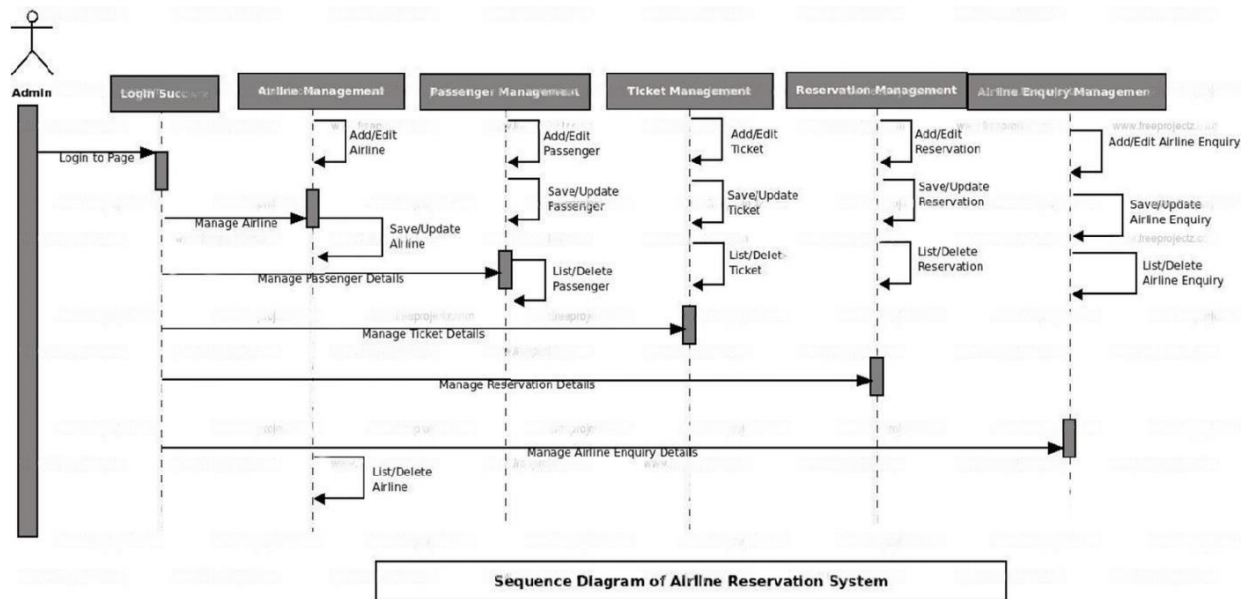
F) COLLABORATION DIAGRAM

9
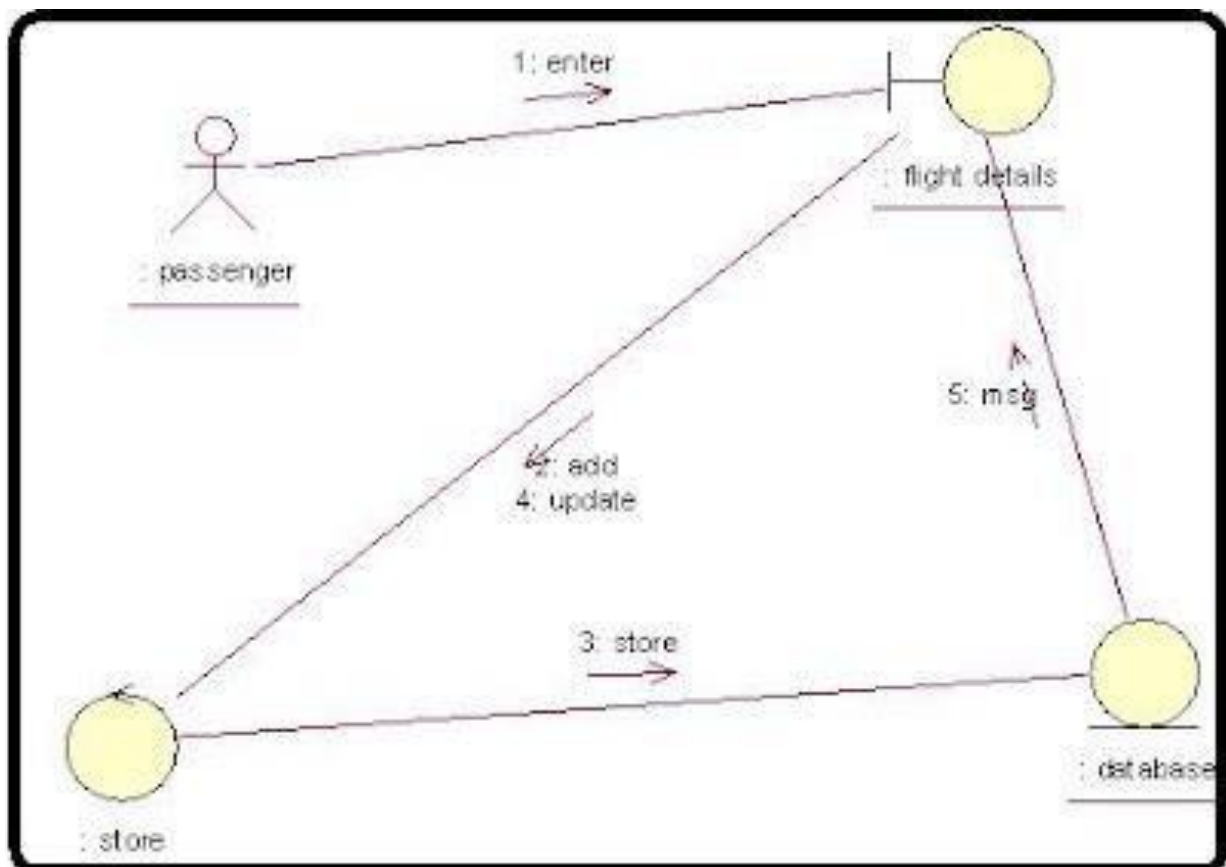
5. SYSTEM REQUIREMENTS

- Class Definition

- Instance Variables Constructor

- Booking Function

- View Function

- Edit Function

- Cancellation Function

- Feedback Function

- Main Function

- Loop and Menu

- Java Development Kit

- Integrated Development Environment (IDE)

6. CODE

```java
import java.util.*;

class FlySRM
{
    String from, to, feedback;

    Scanner sc;

    int day, month, year, num, fclass, amt, booking, meal,
luggage, ff, offer, date_fee; //global variables

    FlySRM() //constructor to initialize global variables
    {
        sc=new Scanner(System.in);

        from="";

        to=""; day=0; month=0; year=0; num=0; fclass=0; amt=0;
booking=0; meal=0; luggage=0; ff=0; offer=0; date_fee=0;

        feedback="You have not given a feedback as of now!\n";

    }

    void book() //function to book flights
    {
        if(booking==1)
        {
            System.out.print("You already have a booking with
flySRM!\n");

            return;

        }
        System.out.print("From: ");

        from=sc.nextLine();

        System.out.print("To: ");

        to=sc.nextLine();

        System.out.print("Date: ");

        day=sc.nextInt();

        month=sc.nextInt();

        year=sc.nextInt();
```

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```java
        if(day<0 || month<0 || year<0 || (month==2 && day>29)
|| ((month==4 || month==6 || month==9 || month==11) && day>30)
|| day>31)

        { //checking if the entered date is valid or not

            System.out.print("Invalid date entered! Please try
again from the main menu!\n");

            return;

        }

        System.out.print("Which class do you want to fly?");

        System.out.print("\n1) Executive\n2) Business\nOther)
Economy\n\nEnter your choice by entering the code: ");

        fclass=sc.nextInt();

        System.out.print("Number of Passengers: ");

        num=sc.nextInt();

        if(fclass==1)

        amt=num*10000;

        else if(fclass==2)

        amt=num*7500;

        else

        amt=num*5000;

        System.out.print("Do you want to book a meal? Press 1
to select YES, any other key for NO: ");

        meal=sc.nextInt();

        System.out.print("Do you want extra luggage weight?
Press 1 to select YES, any other key for NO: ");

        luggage=sc.nextInt();

        System.out.print("Are you a frequent flyer? Press 1 to
select YES, any other key for NO: ");

        ff=sc.nextInt();

        System.out.print("We have some special offers for you!
Select ONE that is applicable with the given codes, or press
any other key to proceed");

        System.out.print("\n1) Student Offer\n2) Defence
Personnel Offer\n3) First Time flySRM Customer Offer\n4)
Elders Offer\nEnter your choice: ");
```

```java
        offer=sc.nextInt();

        booking=1; //setting booking to TRUE

        if(offer==1) //offers

        {

                System.out.print("You have selected the STUDENT
OFFER! You have received extra luggage priveliges and a
discount of Rs.500 per pax!\n");

                amt=amt-num*500;

                luggage=1;

        }

        else if(offer==2)

        {

                System.out.print("You have selected the DEFENCE
PERSONNEL OFFER! You have received a FREE MEAL and an upgrade
to BUSINESS CLASS!\n");

                meal=1;

                fclass=2;

        }

        else if(offer==3)

        {

                System.out.print("You are a FIRST TIME flySRM
CUSTOMER! Please enjoy a FREE MEAL from our side and a
discount of flat Rs.1000!\n");

                meal=1;

                amt=amt-1000;

        }

        else if(offer==4)

        {

                System.out.print("You have selected the ELDERS
OFFER! Please enjoy the comfort of BUSINESS CLASS and a
discount of flat Rs.1500!\n");

                fclass=2;

                amt=amt-1500;

        }
```

```java
        else if(ff==1)

        {

            System.out.print("Thank you for trusting flySRM!
You have received a free upgrade to BUSINESS CLASS on the
house!\n");

            fclass=2;

        }

        System.out.print("Please pay Rs."+amt+" through any
method like debit card, credit card or UPI in the next 5
minutes.");

        System.out.print("\n\nThank you for booking your
flight with flySRM! Looking forward to seeing you in the skies
with us!");

        System.out.print("\n\nDo you want to see a summary of
your booking?");

        System.out.print("\nPress 1 to see booking summary or
any other to proceed to the main menu...");

        int ch=sc.nextInt();

        if(ch==1) //viewing it once after booking

        view();

    }

    void view() //viewing booking details

    {

        if(booking==1)

        {

            System.out.print("Your booking\n\n");

            System.out.print("From: "+from);

            System.out.print("\nTo: "+to);

            System.out.print("\nDate of Departure: "+day+" /
"+month+" / "+year);

            System.out.print("\nClass: ");

            if(fclass==1)

            System.out.print("Executive");

            else if(fclass==2)
```

```java
            System.out.print("Business");

            else

            System.out.print("Economy");

            System.out.print("\nNumber of Passengers: "+num);

            System.out.print("\nMeal: ");

            if(meal==1)

            System.out.print("YES");

            else

            System.out.print("NO");

            System.out.print("\nExtra Luggage: ");

            if(luggage==1)

            System.out.print("YES");

            else

            System.out.print("NO");

            System.out.print("\nAmount: Rs."+amt);

            System.out.print("\nYour Feedback: "+feedback);

            System.out.print("\n\nSeats are assigned on a
first come-first serve basis for free.");

            System.out.print("\n\nExtra luggage and meal costs
will be assigned at the check-in counter if applicable.");

        }

        else

        {

            System.out.print("\nYou don't have an active
booking with us right now!");

            System.out.print("\nDo you want to book a flight?
Press 1 for YES, any other key for NO: ");

            int ch=sc.nextInt();

            if(ch==1)

            book();

        }

    }
```

```java
    void edit() //editing global variables if required
    {
        System.out.print("\nWhat do you want to edit?");
        System.out.print("\n1) Date\n2) Class\n3) Meal\n4)
Luggage\n5) Offer\n\nUse the codes to select or press any
other key to go back to the main menu: ");
        int ch=sc.nextInt();
        switch(ch)
        {
            case 1:
            System.out.print("\nEnter the new Date: ");
            day=sc.nextInt();
            month=sc.nextInt();
            year=sc.nextInt();
            if(day<0 || month<0 || year<0 || (month==2 &&
day>29) || ((month==4 || month==6 || month==9 || month==11) &&
day>30) || day>31)
                {
                    System.out.print("Invalid date entered! Please
try again from the main menu!\n");
                    return;
                }
            System.out.print("Since you changed the date, an
extra fee of Rs.750 has been applied per pax\n");
            amt=amt+num*750;
            date_fee=750;
            break;
            case 2:
            System.out.print("\nWhich class do you want to
fly?");
            System.out.print("\n1) Executive\n2)
Business\nOther) Economy\n\nEnter your choice by entering the
code: ");
            fclass=sc.nextInt();
```

```java
            break;

            case 3:

            System.out.print("\nDo you want to book a meal?
Press 1 to select YES, any other key for NO: ");

            meal=sc.nextInt();

            break;

            case 4:

            System.out.print("\nDo you want extra luggage
weight? Press 1 to select YES, any other key for NO: ");

            luggage=sc.nextInt();

            break;

            case 5:

            if(fclass==1)

            amt=num*10000;

            else if(fclass==2)

            amt=num*7500;

            else

            amt=num*5000;

            System.out.print("We have some special offers for
you! Select ONE that is applicable with the given codes, or
press any other key to proceed");

            System.out.print("\n1) Student Offer\n2) Defence
Personnel Offer\n3) First Time flySRM Customer Offer\n4)
Elders Offer\nEnter your choice: ");

            offer=sc.nextInt();

            if(offer==1)

            {

                System.out.print("You have selected the
STUDENT OFFER! You have received extra luggage priveliges and
a discount of Rs.500 per pax!");

                amt=amt-num*500;

                luggage=1;

            }

            else if(offer==2)
```

```java
        {
                System.out.print("You have selected the
DEFENCE PERSONNEL OFFER! You have received a FREE MEAL and an
upgrade to BUSINESS CLASS!");

                meal=1;

                fclass=2;

        }

        else if(offer==3)

        {

                System.out.print("You are a FIRST TIME flySRM
CUSTOMER! Please enjoy a FREE MEAL from our side and a
discount of flat Rs.1000!");

                meal=1;

                amt=amt-1000;

        }

        else if(offer==4)

        {

                System.out.print("You have selected the ELDERS
OFFER! Please enjoy the comfort of BUSINESS CLASS and a
discount of flat Rs.1500!");

                fclass=2;

                amt=amt-1500;

        }

        else if(ff==1)

        {

                System.out.print("Thank you for trusting
flySRM! You have received a free upgrade to BUSINESS CLASS on
the house!");

                fclass=2;

        }

        amt+=date_fee;

        break;

    }
```

```java
        System.out.print("Please pay Rs."+amt+" through any
method like debit card, credit card or UPI in the next 5
minutes.");

        System.out.print("\n\nThank you for booking your
flight with flySRM! Looking forward to seeing you in the skies
with us!");

        System.out.print("\n\nDo you want to see a summary of
your updated booking?");

        System.out.print("\nPress 1 to see booking summary or
any other to proceed to the main menu...");

        ch=sc.nextInt();

        if(ch==1)

        view();

    }

    void cancel() //cancelling the booking

    {

        System.out.print("\nDo you want to cancel the booking
made for "+num+" pax on "+day+" / "+month+" / "+year+" from
"+from+" to "+to+"?");

        System.out.print("\nPress 1 to CANCEL THE BOOKING, or
any other key to proceed to the main menu: ");

        int ch=sc.nextInt();

        if(ch==1)

        {

            System.out.print("You have cancelled the booking
:-<\nSee you soon on flySRM!\n");

            booking=0;

        }

    }

    void customer_feedback()

    {

        System.out.print("Please enter your feedback here: ");

        feedback=sc.nextLine();

        System.out.print("Thank you for giving us for valuable
feedback!\n");
```

```java
    }

    public static void main(String args[]) //main function to
call other functions

    {

        Scanner in=new Scanner(System.in);

        int i=1, ch;

        FlySRM obj=new FlySRM(); //class object to call
functions

        while(i!=0) //will run as long as you enter a non-menu
value

        {

            System.out.print("WELCOME TO THE flySRM EASY
TICKET BOOKING SYSTEM!");

            System.out.print("\n\nHow can we help you
today?\n\nI want to");

            System.out.print("\n1) Book a Flight...");

            System.out.print("\n2) View my Booking...");

            System.out.print("\n3) Edit my Booking...");

            System.out.print("\n4) Cancel my Booking...");

            System.out.print("\n5) Give Feedback for
flySRM...");

            System.out.print("\n\nPress the numbers to select
an option, or press any other key to exit: ");

            ch=in.nextInt();

            switch(ch) //simple switch case to pick the
function to be called

            {

                case 1:

                obj.book();

                break;

                case 2:

                obj.view();

                break;

                case 3:
```

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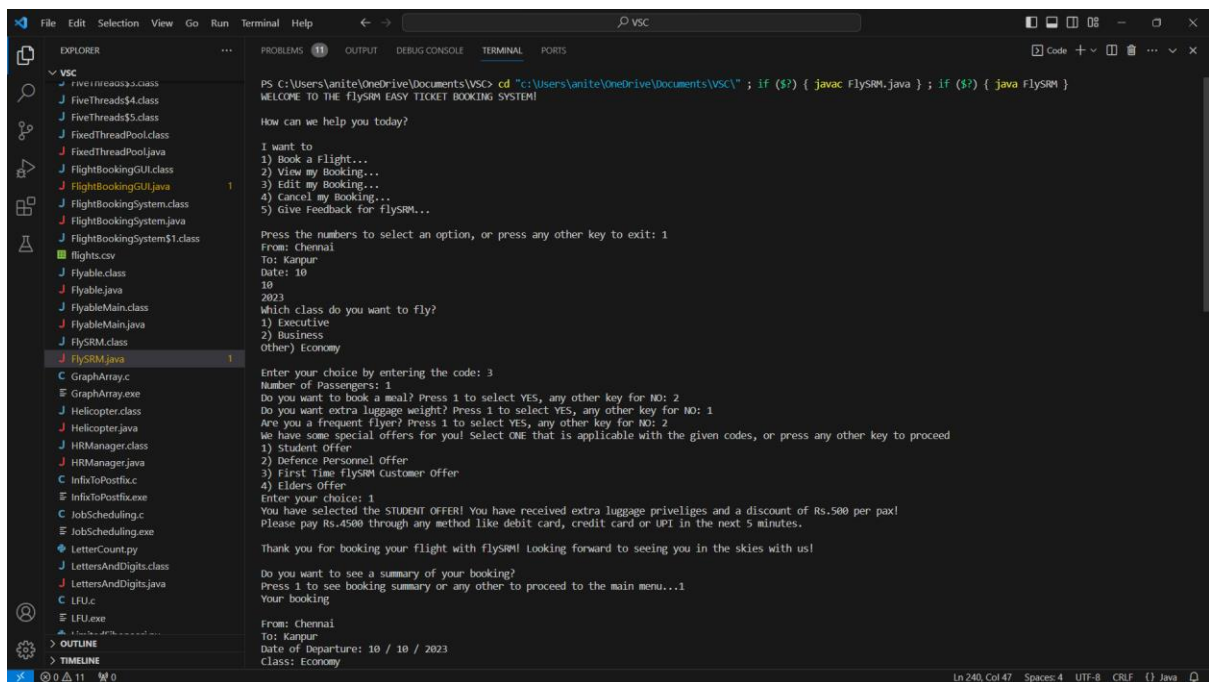
```java
                obj.edit();

                break;

                case 4:

                obj.cancel();

                break;

                case 5:

                obj.customer_feedback();

                break;

                default:

                i=0;

                break;

            }

        }

        System.out.print("\n\nThank you for considering
flySRM! See you soon!");

    }

}
```

7. OUTPUTS

EXPLORER
∨ VSC
  J FiveThreads$3.class
  J FiveThreads$4.class
  J FiveThreads$5.class
  J FixedThreadPool.class
  J FixedThreadPool.java
  🟩 flights.csv
  J Flyable.class
  J Flyable.java
  J FlyableMain.class
  J FlyableMain.java
  J FlySRM.class
  J FlySRM.java   1
  C GraphArray.c
  ≡ GraphArray.exe
  J Helicopter.class
  J Helicopter.java
  J HRManager.class
  J HRManager.java
  C InfixToPostfix.c
  ≡ InfixToPostfix.exe
  C JobScheduling.c
  ≡ JobScheduling.exe
  🐍 LetterCount.py
  J LettersAndDigits.class
  J LettersAndDigits.java
  C LFU.c
  ≡ LFU.exe
  🐍 LimitedFibonacci.py
  C LRU.c
  ≡ LRU.exe
  J MathsOverloading.class
  J MathsOverloading.java
  > OUTLINE
  > TIMELINE

PROBLEMS 10   OUTPUT   DEBUG CONSOLE   TERMINAL   PORTS

```
4) Luggage
5) Offer

Use the codes to select or press any other key to go back to the main menu: 1

Enter the new Date: 9
11
2023
Since you changed the date, an extra fee of Rs.750 has been applied per pax
Please pay Rs.5250 through any method like debit card, credit card or UPI in the next 5 minutes.

Thank you for booking your flight with flySRM! Looking forward to seeing you in the skies with us!

Do you want to see a summary of your updated booking?
Press 1 to see booking summary or any other to proceed to the main menu...1
Your booking

From: Chennai
To: Kanpur
Date of Departure: 9 / 11 / 2023
Class: Economy
Number of Passengers: 1
Meal: NO
Extra Luggage: YES
Amount: Rs.5250
Your Feedback: You have not given a feedback as of now!


Seats are assigned on a first come-first serve basis for free.

Extra luggage and meal costs will be assigned at the check-in counter if applicable.WELCOME TO THE flySRM EASY TICKET BOOKING SYSTEM!

How can we help you today?

I want to
1) Book a Flight...
2) View my Booking...
3) Edit my Booking...
4) Cancel my Booking...
5) Give Feedback for flySRM...

Press the numbers to select an option, or press any other key to exit: 6


Thank you for considering flySRM! See you soon!
PS C:\Users\anite\OneDrive\Documents\VSC>
```
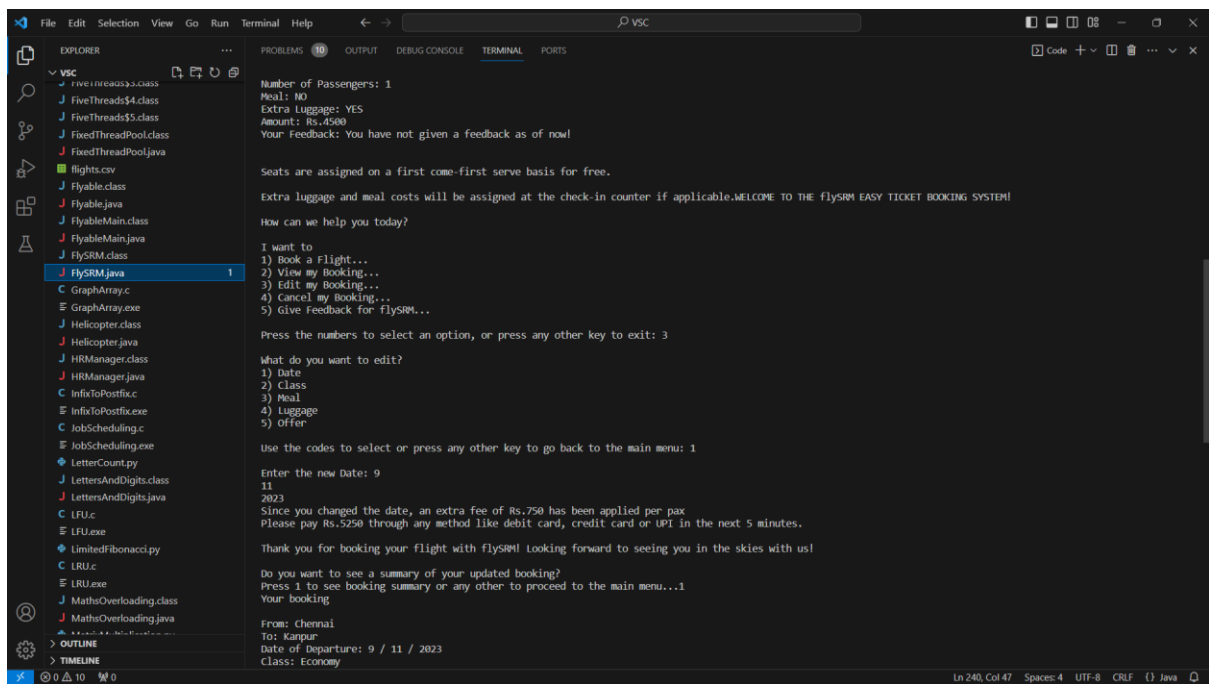
8. CONCLUSION

In conclusion, the airplane booking system implemented as a Java project provides a comprehensive solution for managing flight reservations and facilitating the booking process. Through the project, various key features and functionalities have been developed to enhance the overall user experience and streamline the booking workflow.

The system incorporates a user-friendly interface that allows customers to search for flights based on their preferences, including departure and destination airports, dates, and passenger details. The implemented algorithms efficiently process the user inputs and retrieve relevant flight information from the database.

The Java project demonstrates effective handling of data management, including the storage and retrieval of flight information, user details, and booking records. The system ensures data integrity and security through appropriate measures, such as encryption and authentication protocols.

Furthermore, the project incorporates payment processing functionality, enabling users to securely make online payments for their bookings. Integration with external payment gateways ensures a seamless and reliable transaction process.

Throughout the development of the project, emphasis has been placed on code modularity, reusability, and maintainability. Object-oriented programming principles have been applied to design classes and structures that promote code organization and ease of maintenance.

In summary, the Java airplane booking system project provides a robust and efficient solution for managing flight reservations. By incorporating essential features such as flight search, booking management, payment processing, and data security, the system aims to enhance the overall user experience and optimize the booking process for both customers and airline administrators.

9. REFERENCES

1. **"A Systematic Review on Online Airline Reservation System"**
   Authors: Manisha Agarwal, Anuradha Prajapati and Kirti Dhirani
   Publication Year: 2018

2. **"Flight Reservation System"**
   Authors: Abhay Tiwari and Ashima Mehta
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