AIRLINE RESERVATION SYSTEM

PROJECT REPORT

18CSC202J- OBJECT ORIENTED DESIGN AND PROGRAMMING LABORATORY

(2018 Regulation)

II Year/ III Semester

Academic Year: 2022 -2023

By

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BONAFIDE

This is to certify that **18CSC202J - OBJECT ORIENTED DESIGN AND PROGRAMMING LABORATORY** project report titled "**AIRLINE RESERVATION SYSTEM"** is the bonafide work of **KAMYA OJHA (RA2111003010343), UJJWAL SHARMA (RA2111003010310), PALAASH SURANA (RA2111003010319)** who undertook the task of completing the project within the allotted time.

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About the course: -

18CSC202J- Object Oriented Design and Programming are 4 credit courses with **L T P C as 3-0-2-4**
(Tutorial modified as Practical from 2018 Curriculum onwards)

Objectives:

The student should be made to:

- Learn the basics of OOP concepts in C++
- Learn the basics of OOP analysis and design skills.
- Be exposed to the UML design diagrams.
- Be familiar with the various testing techniques

Course Learning Rationale (CLR): The purpose of learning this course is to:

1. Utilize class and build domain model for real-time programs
2. Utilize method overloading and operator overloading for real-time application development programs
3. Utilize inline, friend and virtual functions and create application development programs
4. Utilize exceptional handling and collections for real-time object-oriented programming applications
5. Construct UML component diagram and deployment diagram for design of applications 6.Create programs using object-oriented approach and design methodologies for real-time application development

Course Learning Outcomes (CLO): At the end of this course, learners will be able to:

1. Identify the class and build domain model
2. Construct programs using method overloading and operator overloading
3. Create programs using inline, friend and virtual functions, construct programs using standard templates
4. Construct programs using exceptional handling and collections
5. Create UML component diagram and deployment diagram
6. Create programs using object-oriented approach and design methodologies

COURSE ASSESSMENT PLAN FOR OODP LAB

S.No	List of Experiments	Course Learning Outcomes (CLO)	Blooms Level	PI	No of Programs in each session
1.	Implementation of I/O Operations in C++	CLO-1	Understand	2.8.1	10
2.	Implementation of Classes and Objects in C++	CLO-1	Apply	2.6.1	10
3,	To develop a problem statement. 1. From the problem statement, Identify Use Cases and develop the Use Case model. 2. From the problem statement, Identify the conceptual classes and develop a domain model with a UML Class diagram.	CLO-1	Analysis	4.6.1	Mini Project Given
4.	Implementation of Constructor Overloading and Method Overloading in C++	CLO-2	Apply	2.6.1	10
5.	Implementation ofOperator Overloading in C++	CLO-2	Apply	2.6.1	10
6.	Using the identified scenarios, find the interaction between objects and represent them using UML Sequence diagrams and Collaboration diagrams	CLO-2	Analysis	4.6.1	Mini Project Given
7.	Implementation of Inheritance concepts in C++	CLO-3	Apply	2.6.1	10
8.	Implementation of Virtual function & interface concepts in C++	CLO-3	Apply	2.6.1	10
9.	Using the identified scenarios in your project, draw relevant state charts and activity diagrams.	CLO-3	Analysis	4.6.1	Mini Project Given
10.	Implementation of Templates in C++	CLO-3	Apply	2.6.1	10
11.	Implementation of Exception of Handling in C++	CLO-4	Apply	2.6.1	10
12.	Identify the User Interface, Domain objects, and Technical Services. Draw the partial layered, logical architecture diagram with UML package diagram notation such as Component Diagram, Deployment Diagram.	CLO-5	Analysis	4.6.1	Mini Project Given
13.	Implementation of STL Containers in C++	CLO-6	Apply	2.6.1	10
14.	Implementation of STL associate containers and algorithms in C++	CLO-6	Apply	2.6.1	10
15.	Implementation of Streams and File Handling in C++	CLO-6	Apply	2.6.1	10

LIST OF EXPERIMNENTS FOR UML DESIGN AND MODELLING:

To develop a mini-project by following the exercises listed below.

1. To develop a problem statement.
2. Identify Use Cases and develop the Use Case model.
3. Identify the conceptual classes and develop a domain model with UML Class diagram.
4. Using the identified scenarios, find the interaction between objects and represent them using UML Sequence diagrams.
5. Draw relevant state charts and activity diagrams.
6. Identify the User Interface, Domain objects, and Technical services
7. Draw the partial layered, logical architecture diagram with UML package diagram notation.

Suggested Software Tools for UML:

StarUML, Rational Suite, Argo UML (or) equivalent, Eclipse IDE and Junit

ABSTRACT

This is an airline reservation system written in C++20. This project is a simple idea with a sophisticated execution.

Users that hop onto the platform may log in using existing credentials or create a new account with minimal effort. All credentials are stored and maintained on the platform's database for authentication.

Once logged in, the user is greeted by the main profile window from where they may

- Check existing bookings, made using the platform.
- Initiate a new booking using searching for flights given fixed criteria such as arrival and departure times, flight class, meal preferences, etc.
- Logout, and thereby exiting the platform

Checking existing bookings:
Data fetched from the platform's bookings database is displayed in a tabular form containing all essential details regarding the flight. The user may also cancel an existing active booking.

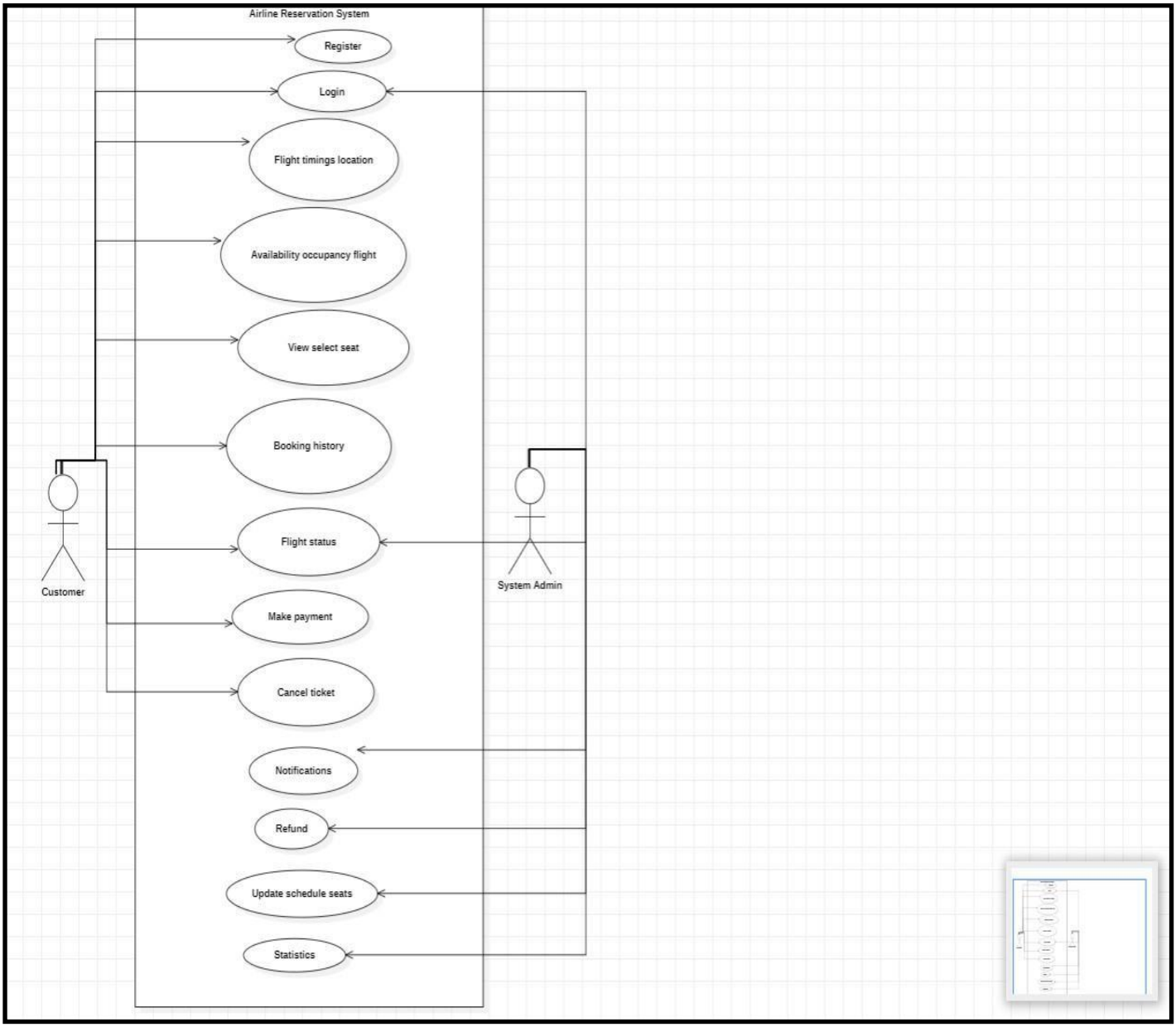
Searching for flights:
Criteria filled in by the user are processed and cross-referenced with the airlines' flight databases to yield accurate results for onward and return trip flights. The user may choose from the list of flights according to their needs and proceed to checkout. If the user has opted for online payment, the bank transaction window shows up holding an array of payment options such as credit, debit, UPI or wallet. They may then complete the transaction and reserve the seat, failing which the reservation is withdrawn and the checkout cancelled, bringing the user back to their main profile window.

MODULE DESCRIPTION

Systems known as airline reservation systems (ARS) enable airlines to market their inventory (seats). It includes data on prices and schedules as well as a database of issued tickets and reservations (or passenger name records) (if applicable). ARSs are a component of passenger service systems (PSSs), which are software programs that facilitate direct passenger communication.

The computer reservations system finally replaced ARS (CRS). A specific airline's reservations are processed by a computer reservation system that connects to a global distribution system (GDS), which enables travel agencies and other distribution channels to process reservations for the majority of major airlines through a single system.

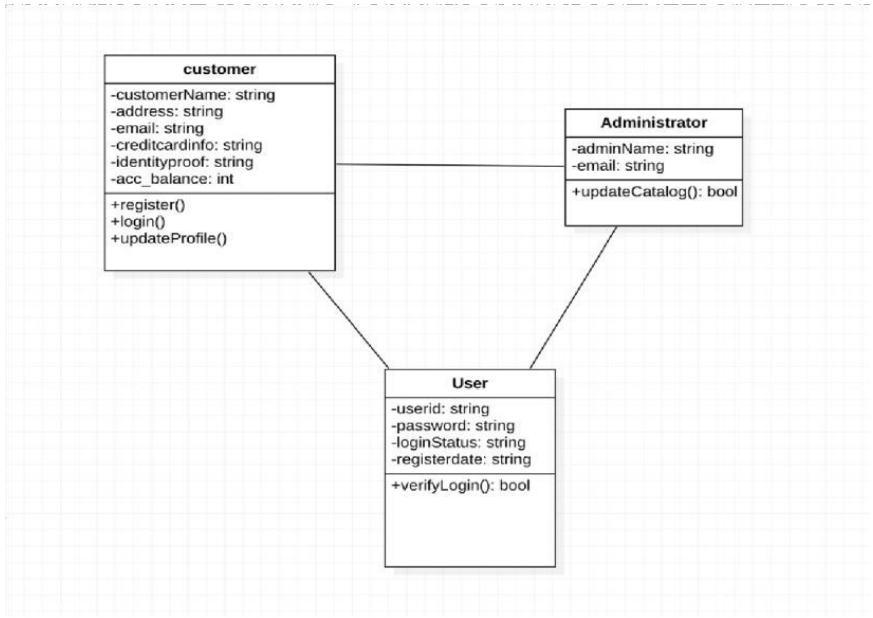
Use case diagram with explanation



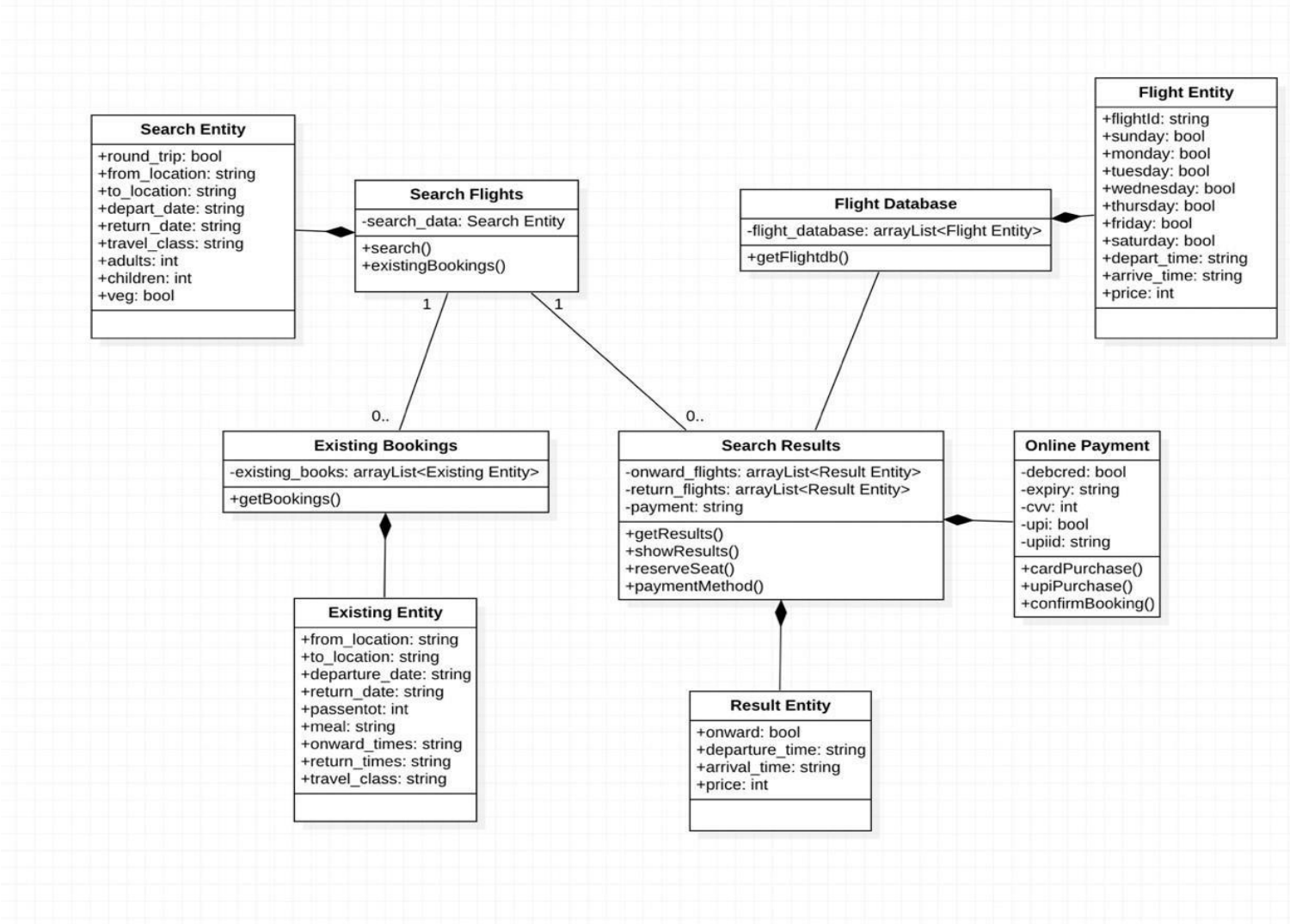
The use cases in the diagram represents the main processes in AIRLINE MANAGEMENT SYSTEM. Then they will be broken down into more specific use cases depending on the included processes of the main use case. Each of these use cases explains how the system handles the actions or scenarios requested by the user.

Class diagram with explanation

Login:



Airline Reservation:



Class Diagrams

This class diagram consists of 3 classes.

Association in used in the diagram.

The customer class is responsible for credential input and profile updating,

the User class is responsible for verifying credentials entered and the Administrator class is responsible for updating the user catalogue.

Airline Reservation:

The class diagram consists of 5 principal classes and 4 subsidiary classes.

Association and Aggregation are used in the diagram. The Search Flights class may take in criteria and initiate a search as well as go to the existing bookings page.

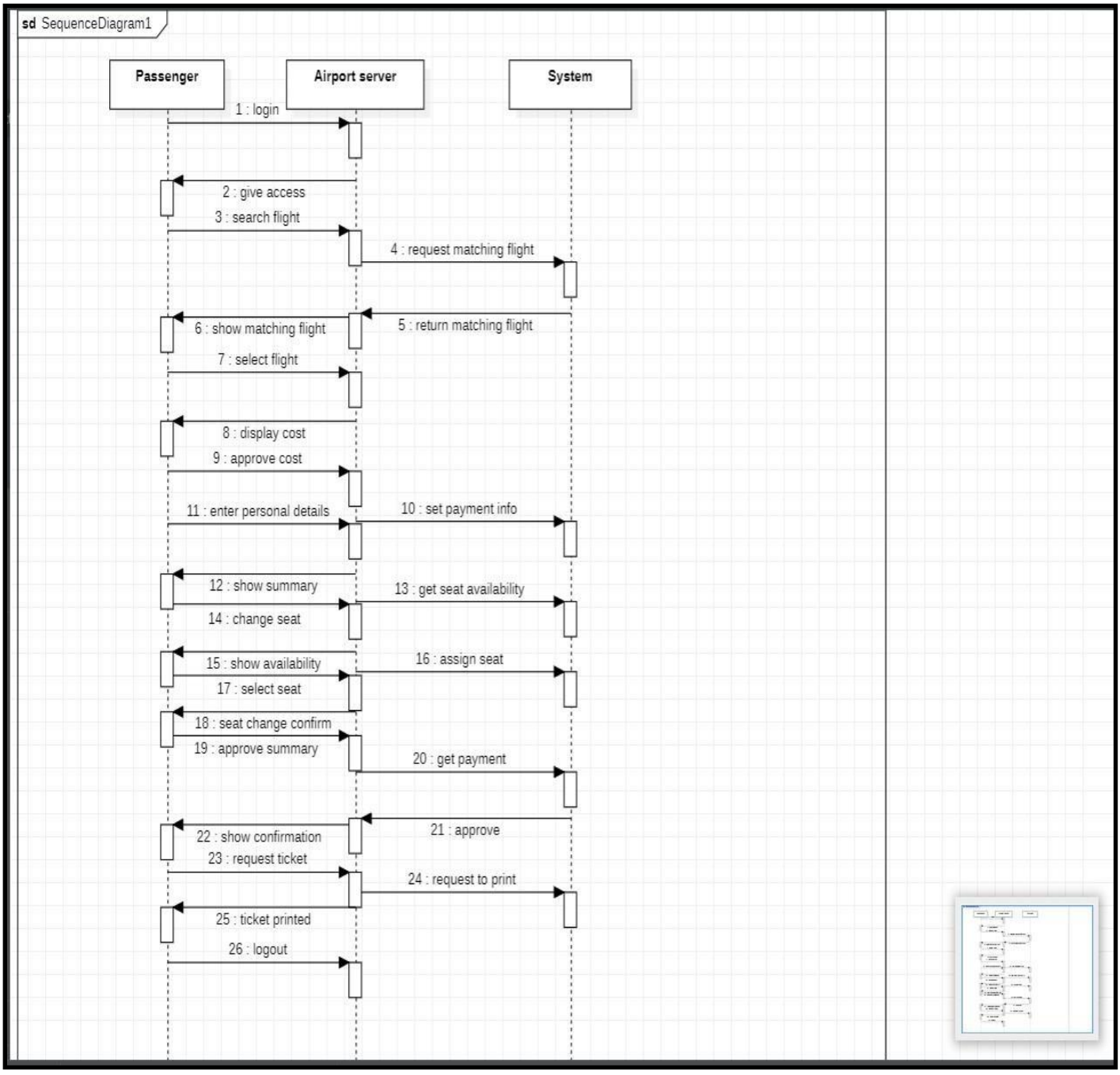
The Existing Bookings class is used to display all bookings made by the user on the platform, both active and inactive ones.

The Search Results class displays all available flights according to the user's criteria and the user may proceed to checkout.

The Online Payment Class is responsible for handling all payment operations pertaining to the booking being made securely.

The Flight Database class is responsible for storing, updating and maintaining all user data such as profile information and bookings made.

Sequence diagram with explanation

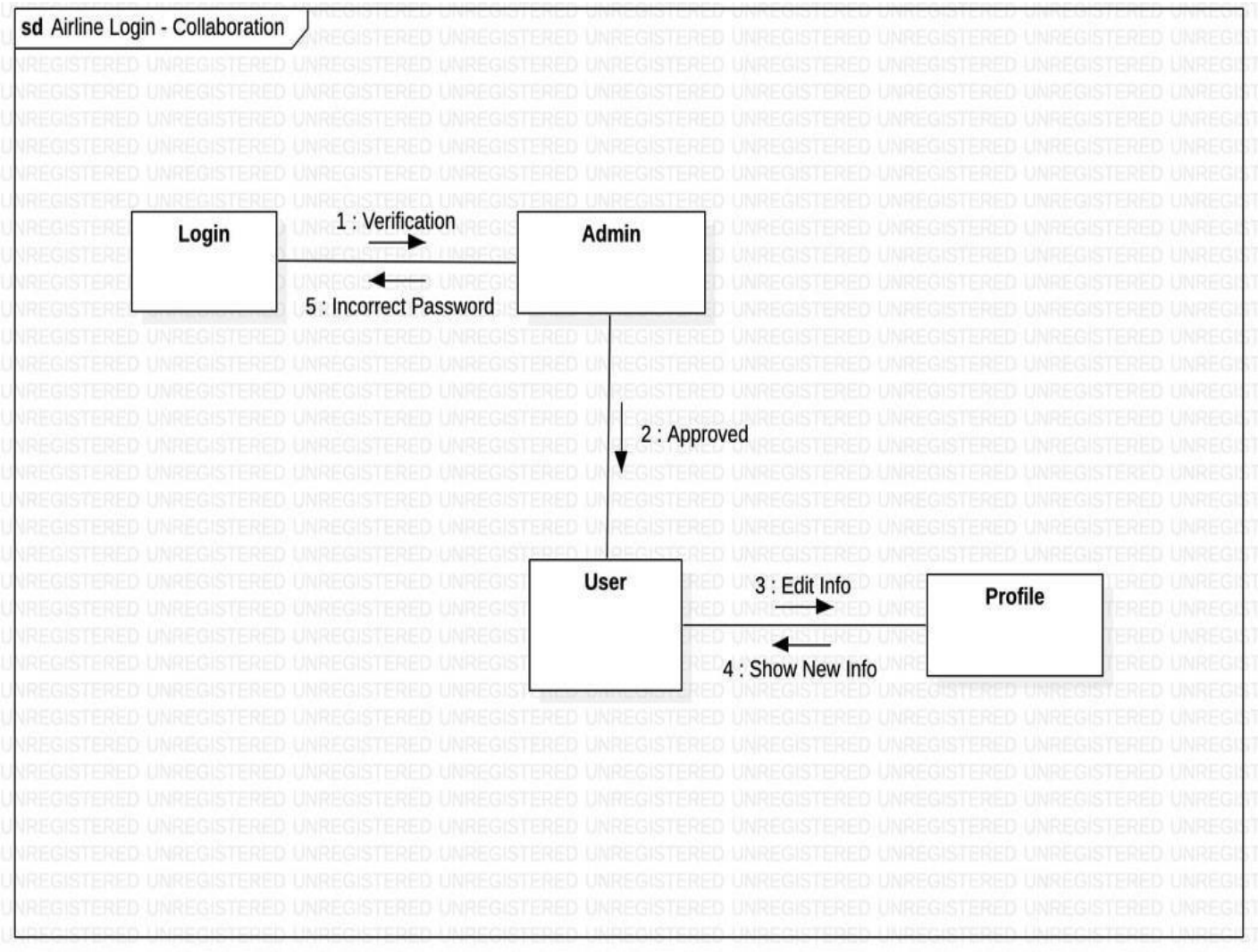


A sequence diagram is a Unified Modeling Language (UML) diagram that illustrates the sequence of messages between objects in an interaction. A sequence diagram consists of a group of objects that are represented by lifelines, and the messages that they exchange over time during the interaction.

Collaboration diagram with explanation

Login:

This collaboration diagram consists of 4 lifelines. The Login lifeline is responsible for credential input and updating profile and passwords, the Admin lifeline is responsible for verifying credentials entered and the User lifeline is invoked on a successful login.



Airline Reservation:

The collaboration diagram consists of 6 lifelines.

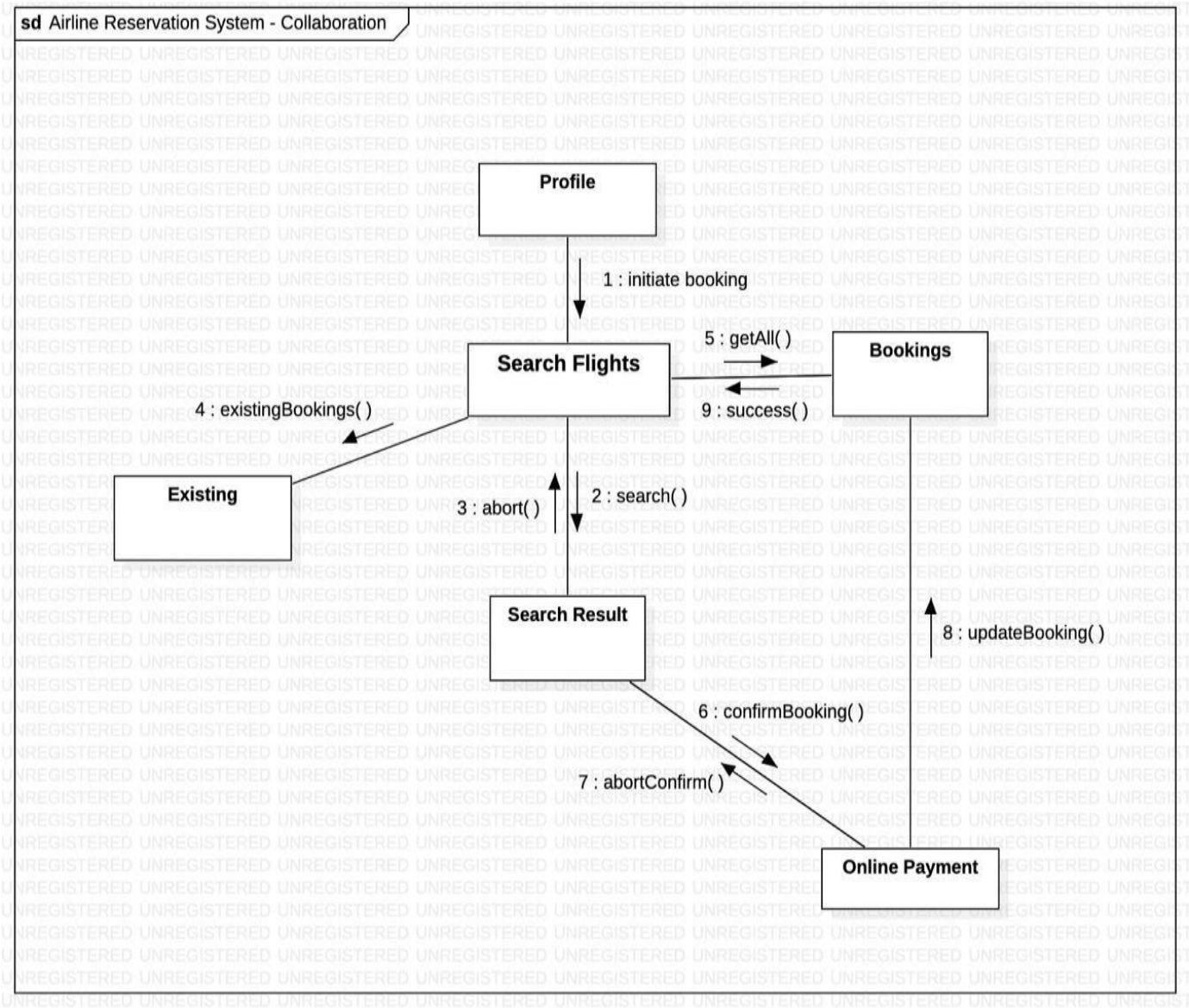
The Search Flights lifeline may take in criteria and initiate a search as well as go to the existingbookings page.

The Existing Bookings lifeline is used to display all bookings made by the user on the platform,both active and inactive ones.

The Search Results lifeline displays all available flights according to the user's criteria and the usermay proceed to checkout.

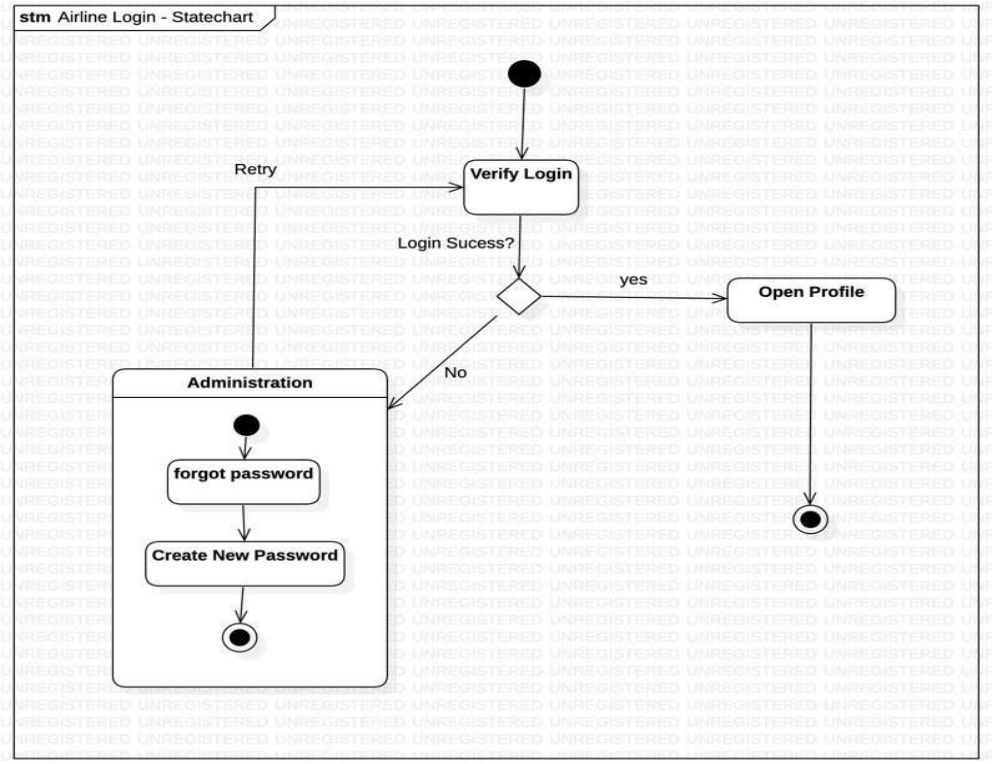
The Online Payment lifeline is responsible for handling all payment operations pertaining to thebooking being made securely.

The Bookings lifeline is responsible for storing, updating and maintaining all user data such asprofile information and bookings made.

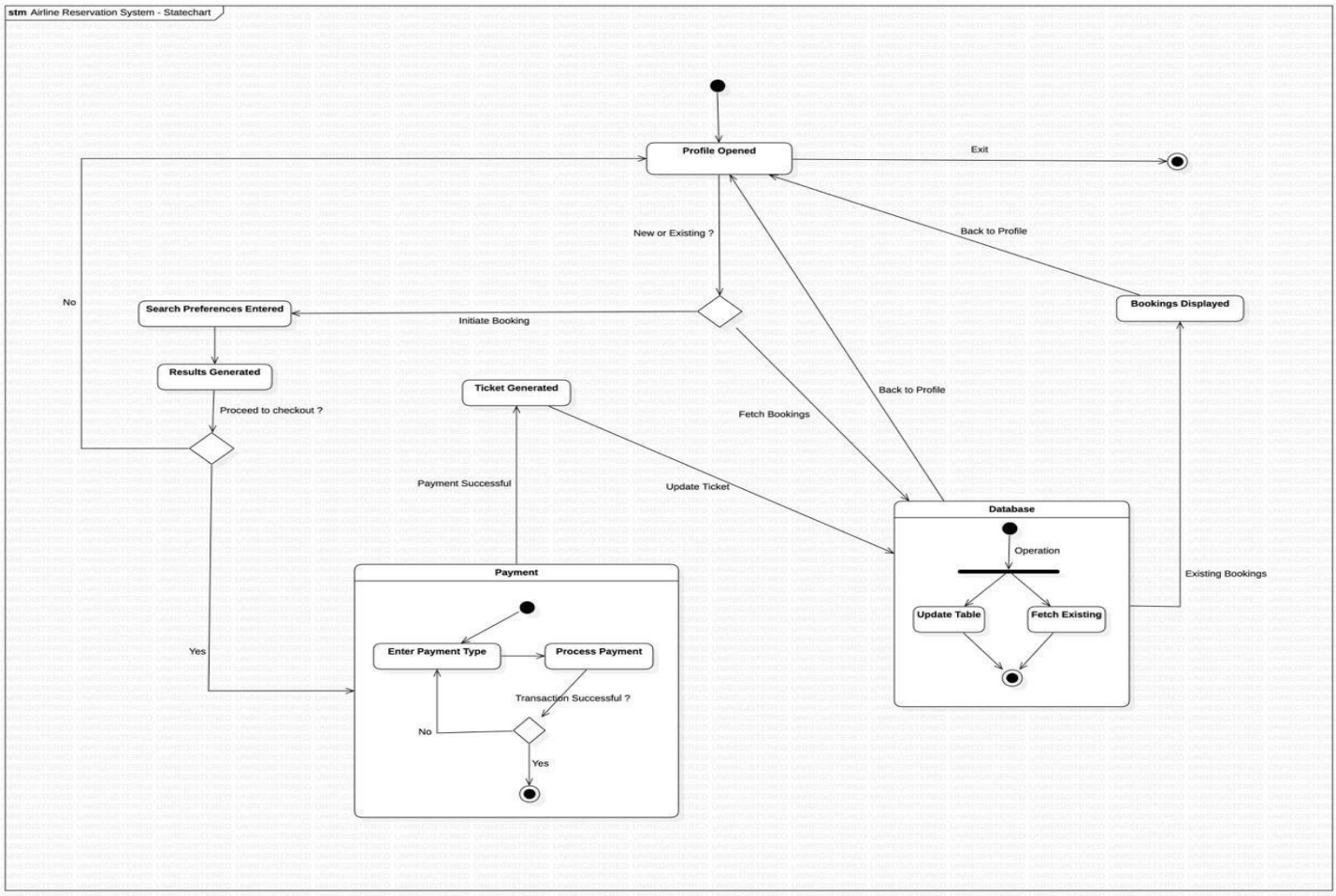


State chart diagram with explanation

Login:



Airline Reservation System:



Login System:

The state chart diagram consists of 2 states and 1 composite state.

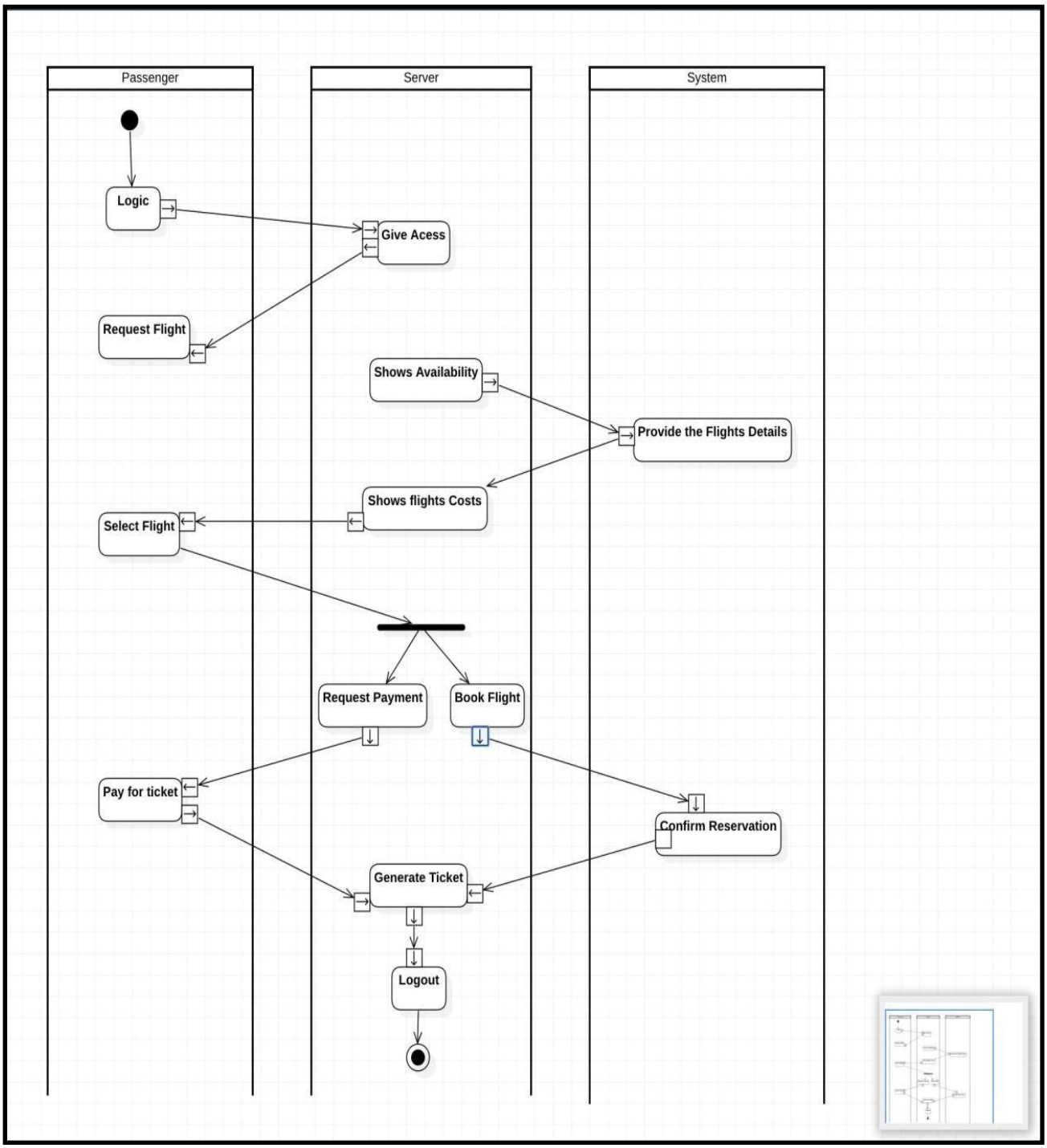
1. User may enter password
2. If password is correct, user is authenticated and may access their profile.
3. If the password is wrong, user may opt to change their password and proceed to authentication.
4. Once authenticated, user may access their profile.

Airline Reservation:

The state chart diagram consists of 5 states and 2 composite states.

1. From the main page, if the user choses to make a new booking
    a. If booking is initiated, search criteria is entered by the user.
    b. The user may select from the flights provided.
    c. If the user decides to abort the booking, they are redirected back to the homepage, but if the user proceeds to check-out, they are redirected to the payment portal.
    d. If transaction is successful, the booking is updated in the flight database. Else, the user is either prompted to retry or redirected to the homepage.
2. If the user choses to view existing bookings
    a. All bookings details made on the platform are fetched from the database and displayed to the user.

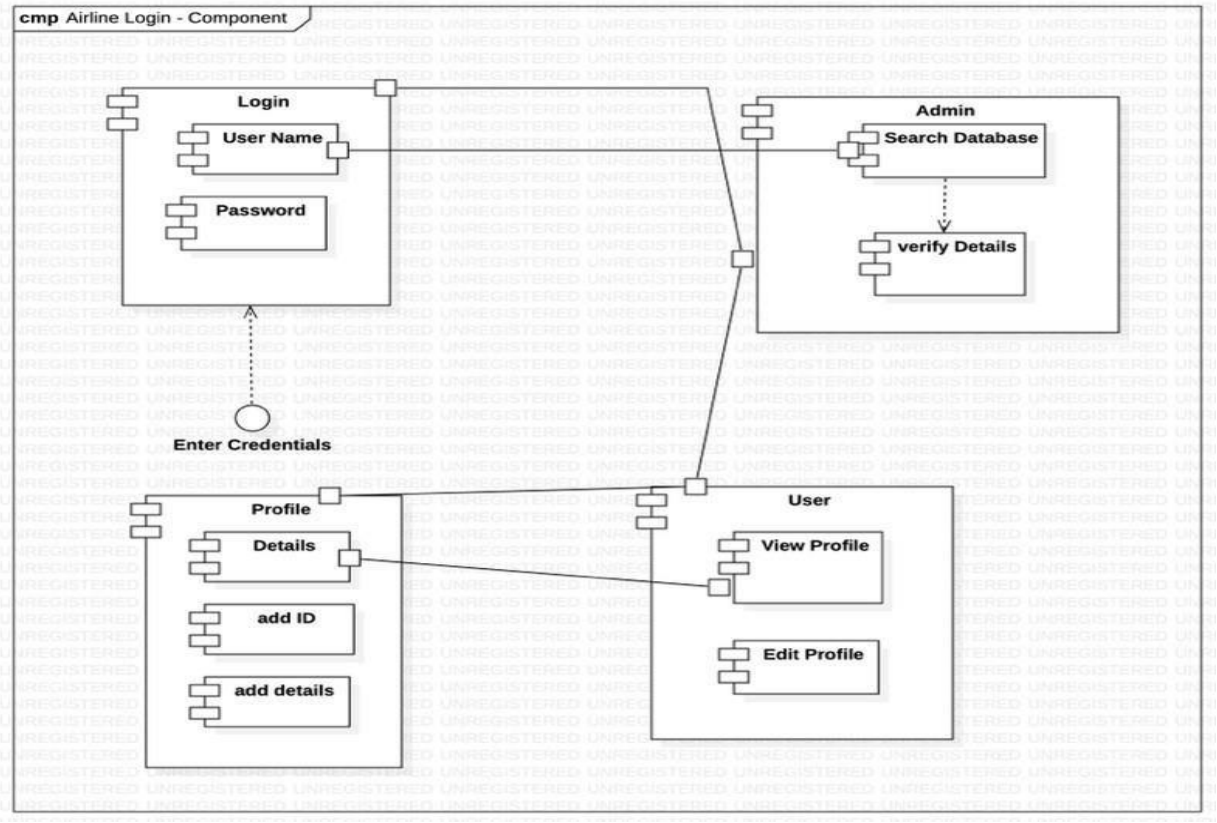
Activity diagram with explanation



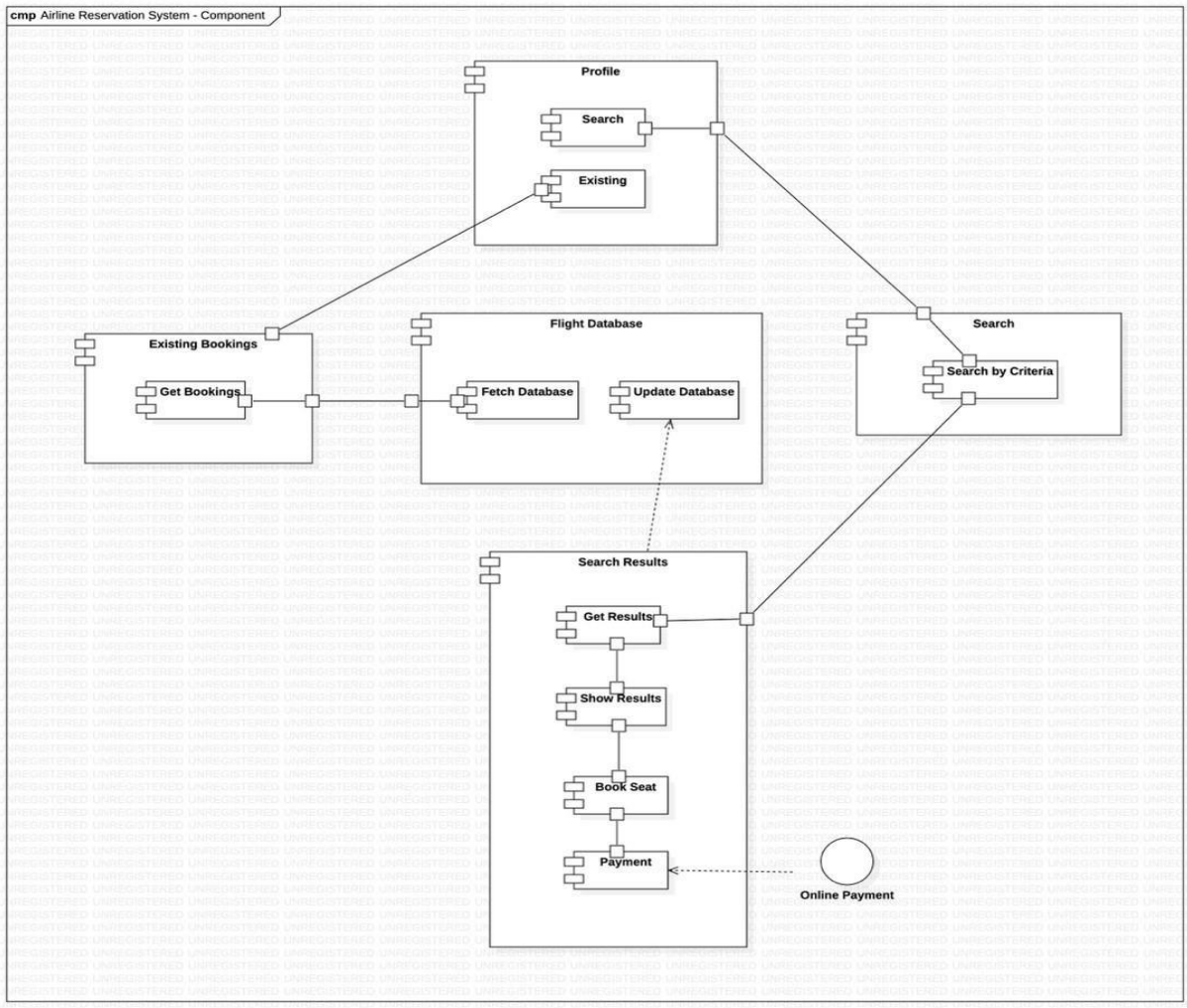
Activity diagram is basically a flow chart to represent the flow form one activity to another activity. The activity can be described as an operation of the system. In this case it is an activity diagram with swim lane. This diagram shows the flow between passenger, server and system.

Component Diagram with explanation

Login:



Airline reservation:


cmp Airline Reservation System - Component
Profile
Search
Existing
Existing Bookings
Get Bookings
Flight Database
Fetch Database
Update Database
Search
Search by Criteria
Search Results
Get Results
Show Results
Book Seat
Payment
Online Payment

II Explanation – Component Diagrams

Login:

The component diagram consists of 4 base components and 9 sub components.

The diagram starts with interface where the user enters their credentials in login page which is verified by the admin database. After verification the user is redirected to user page where they can view or update their profile.

Airline Reservation:

The component diagram consists of 5 base components and 10 sub components.

The user may choose to view existing bookings or make a new booking from the Profile component. The Search component may take in criteria and initiate a search.

The Search Results component displays all available flights according to the user's criteria and the
user may proceed to checkout.

The Online Payment component is responsible for handling all payment operations pertaining to the booking being made securely.

The Existing Bookings component is used to display all bookings made by the user on the platform, both active and inactive ones.

The Flight Database component is responsible for storing, updating and maintaining all user data such as profile information and bookings made.

Deployment diagram with explanation

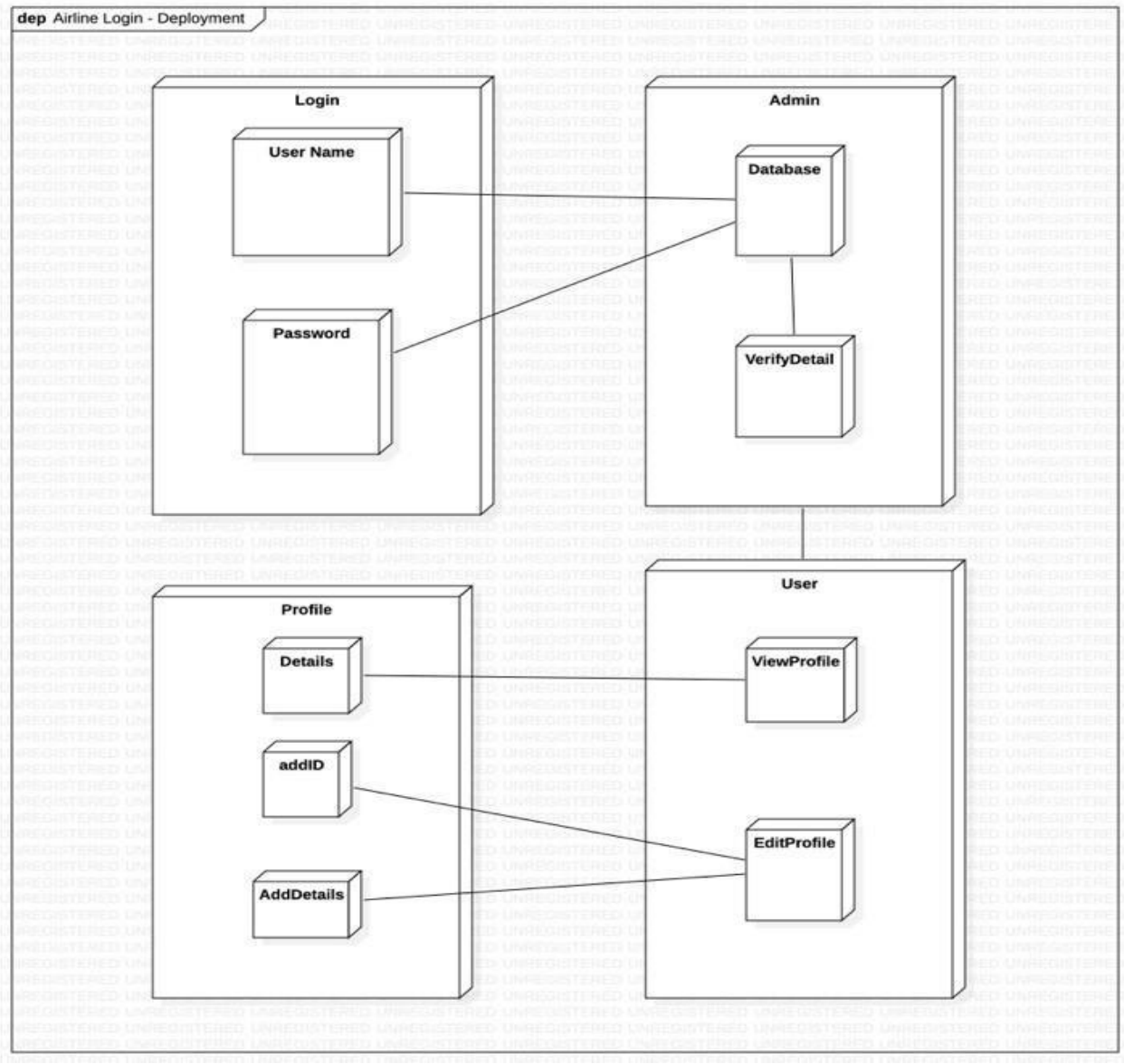
III Explanation – Deployment Diagrams

Login:

The deployment diagram consists of 4 base nodes and sub nodes.

The diagram starts with interface where the user enters their credentials in login page which is verified by the admin database. After verification the user is redirected to user page where they can view or update their profile.

Login:



Airline reservation:

Airline Reservation:

The component diagram consists of 5 base nodes and sub nodes.

The user may choose to view existing bookings or make a new booking from the Profile node.

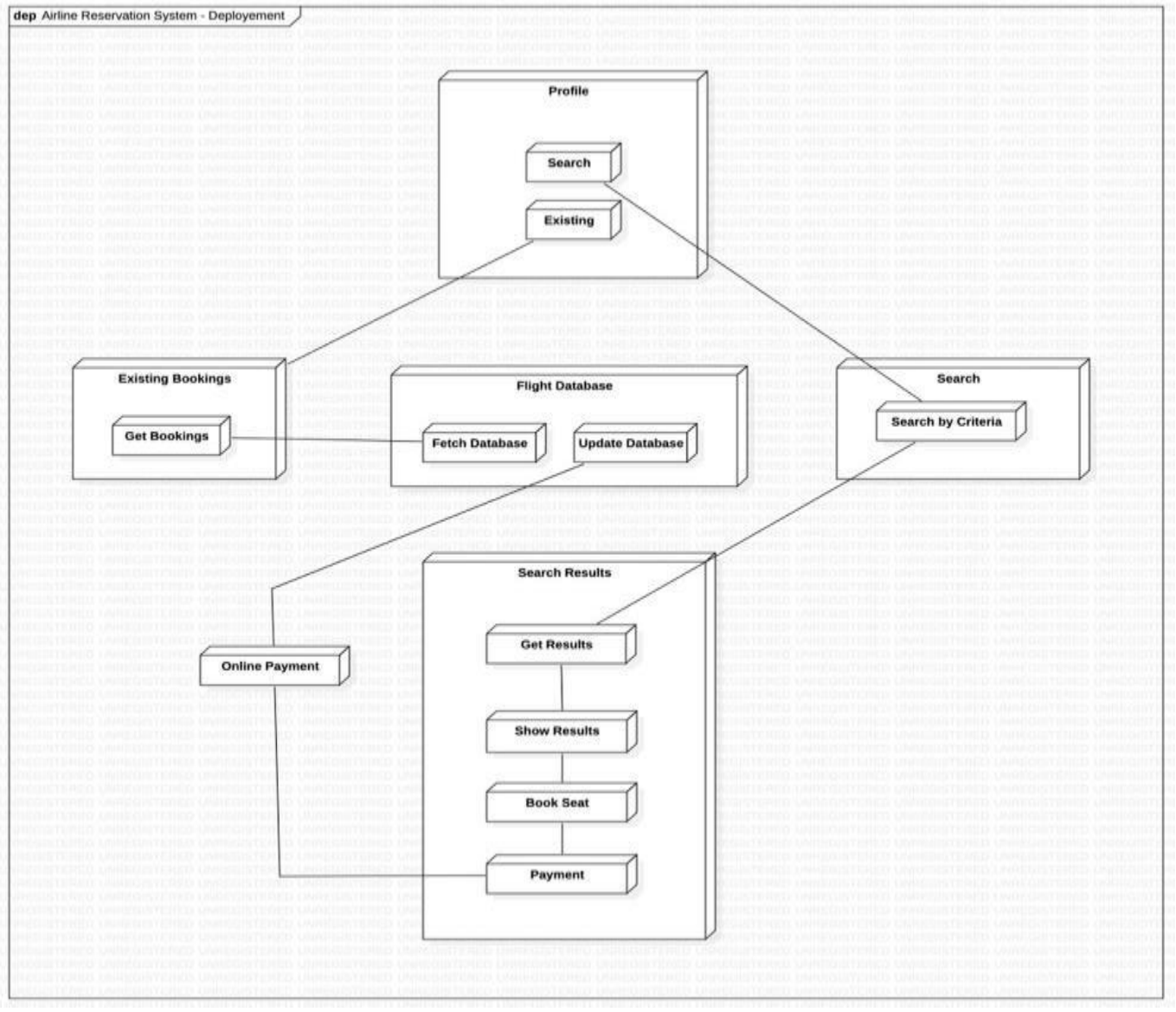
The Search node may take in criteria and initiate a search.

The Search Results node displays all available flights according to the user's criteria and the user may proceed to checkout.

The Online Payment node is responsible for handling all payment operations pertaining to the booking being made securely.

The Existing Bookings node is used to display all bookings made by the user on the platform, both active and inactive ones.

The Flight Database node is responsible for storing, updating and maintaining all user data such as profile information and bookings made.

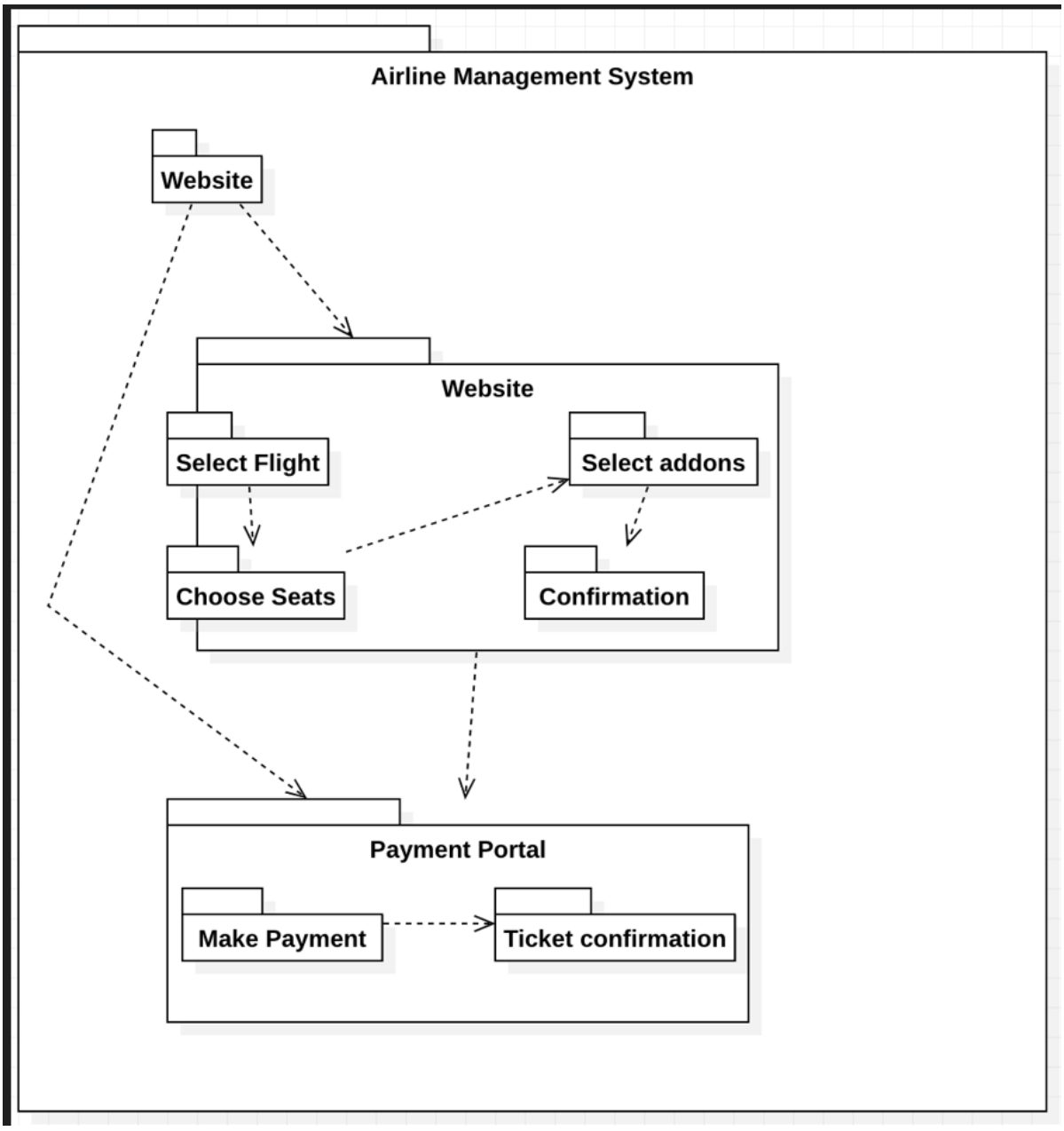


IV Explanation –Package Diagram

A package is a grouping of model elements. Package diagrams can use packages that represent the different layers of a software system to illustrate the layered architecture of a software system. Packages themselves may contain other packages. A package may contain both subordinate packages and ordinary model elements. All UML model elements and diagrams can be organized into packages.

A package is represented as a folder, shown as a large rectangle with a tab attached to its upper left corner. If contents of the package are not shown, then the name of the package is placed within the large rectangle. If the contents of the package are shown, then the name of the package may be placed on the tab. The contents of the package are shown within the large rectangle.

Packages can be used to designate not only logical and physical groupings but also use-case groups. A use-case group, as the name suggests, is a package of use cases.



C++ Code

```
#include <iostream>
#include <fstream>
#include <string.h>
using namespace std;
int glob=0;
int global=10;
//================================================================================
//================================================================================
//================================================================================
//================================================================================
class d_booking
{
protected:
 int pnr;
 char f_d[10],toja[7],tojd[7];
 long int doj;
 int choice,src,dest;
public:
 void d_pnr()
 {
 glob++;
 pnr=glob;
 }
 int j_detail() // function declaration and definition for domestic
journey
 {
 cout << "\n================================================" << endl
;
 cout << "\nEnter Date Of Journey (DDMMYY)\n>>> ";
 cin >> doj;
 cout << "\n=========================" << endl ;
 cout << "\n\1.Delhi(1) \t\2.Mumbai(2) \t\3.Bangalore(3)
\t\4.Chennai(4)" << endl << endl;
 cout << "Enter Source\n>>> ";
 cin >> src;
 cout << "\nEnter destination\n>>> ";
 cin >> dest;
 cout << "\n=========================" << endl ;
 if((src==1 && dest==2) || (src==2 && dest==1))
 {
 cout << "Flights Found" << endl << endl;
 cout << "Airline:\tDeparture:\tArrival:\tPrice:\t\tCategory:\n";
 cout << "\1.Air
```

```
India(1)\t08:00\t\t11:05\t\tRs.5000\t\tRefundable\n";
 cout <<
"\2.Spicejet(2)\t14:00\t\t17:05\t\tRs.5500\t\tRefundable\n";
cout << "\3.Jet
Airways(3)\t19:00\t\t22:05\t\tRs.6000\t\tRefundable\n";
 }
 else if((src==1 && dest==3) || (src==3 && dest==1))
 {
 cout << "Flights Found" << endl << endl;
 cout << "Airline:\tDeparture:\tArrival:\tPrice:\t\tCategory:\n";
cout << "\1.Air
India(1)\t08:00\t\t11:05\t\tRs.5000\t\tRefundable\n";
 cout <<
"\2.Spicejet(2)\t14:00\t\t17:05\t\tRs.5500\t\tRefundable\n";
cout << "\3.Jet
Airways(3)\t19:00\t\t22:05\t\tRs.6000\t\tRefundable\n";
 }
 else if((src==1 && dest==4) || (src==4 && dest==1))
 {
 cout << "Flights Found" << endl << endl;
 cout << "Airline:\tDeparture:\tArrival:\tPrice:\t\tCategory:\n";
cout << "\1.Air
India(1)\t08:00\t\t11:05\t\tRs.4000\t\tRefundable\n";
 cout <<
"\2.Spicejet(2)\t14:00\t\t17:05\t\tRs.4250\t\tRefundable\n";
cout << "\3.Jet
Airways(3)\t19:00\t\t22:05\t\tRs.6100\t\tRefundable\n";
 }
 else if((src==2 && dest==3) || (src==3 && dest==2))
 {
 cout << "Flights Found" << endl << endl;
 cout << "Airline:\tDeparture:\tArrival:\tPrice:\t\tCategory:\n";
cout << "\1.Air
India(1)\t08:00\t\t11:05\t\tRs.5400\t\tRefundable\n";
 cout <<
"\2.Spicejet(2)\t14:00\t\t17:05\t\tRs.2500\t\tRefundable\n";
cout << "\3.Jet
Airways(3)\t19:00\t\t22:05\t\tRs.2890\t\tRefundable\n";
 }
 else if((src==2 && dest==4) || (src==4 && dest==2))
 {
 cout << "Flights Found" << endl << endl;
 cout << "Airline:\tDeparture:\tArrival:\tPrice:\t\tCategory:\n";
cout << "\1.Air
India(1)\t08:00\t\t11:05\t\tRs.5000\t\tRefundable\n";
 cout <<
"\2.Spicejet(2)\t14:00\t\t17:05\t\tRs.4500\t\tRefundable\n";
```

```
 cout << "\3.Jet
Airways(3)\t19:00\t\t22:05\t\tRs.6000\t\tRefundable\n";
 }
 else if((src==3 && dest==4) || (src==4 && dest==3))
 {
 cout << "Flights Found" << endl << endl;
 cout << "Airline:\tDeparture:\tArrival:\tPrice:\t\tCategory:\n";
cout << "\1.Air
India(1)\t08:00\t\t11:05\t\tRs.5800\t\tRefundable\n";
 cout <<
"\2.Spicejet(2)\t14:00\t\t17:05\t\tRs.5508\t\tRefundable\n";
cout << "\3.Jet
Airways(3)\t19:00\t\t22:05\t\tRs.6050\t\tRefundable\n";
 }
 else if(src==dest)
 {
 cout << "\nSource and destination can't be same.\nTry
again\n\n\n" << endl;
 return j_detail();
 }
 else
 {
 cout <<"\nWrong input entered\nTry again\n\n\n" << endl;
 return j_detail();
 }
 }
 int select_flight() //function declaration and definition for selecting
flight
 {
 cout << "\nEnter your choice\n>>> " << endl;
 cin >> choice;
 switch(choice)
 {
 case 1:
 cout << "\nFlight  selected:"<<endl;
 cout << "Air India"<<endl;
 strcpy(f_d,"Air India");//copy to string
 cout << "Departure Time : 08:00"<<endl;
 cout<<"Arrival Time: 11:05"<<endl;
 strcpy(tojd,"8:00"); //copy to string
 strcpy(toja,"11:05");// copy to string
 break;
 case 2:
 cout << "\nFlight selected:"<<endl;
 cout << "Spicejet"<<endl;
 strcpy(f_d,"Spicejet");//copy to string
 cout << "Departure Time : 14:00"<<endl;
```

```
 cout<<"Arrival Time: 17:05"<<endl;
 strcpy(tojd,"14:00");//copy to string
 strcpy(toja,"17:05");//copy to string
 break;
 case 3:
 cout << "\nFlight selected:" << endl;
 cout << "Jet Airways" << endl;
 strcpy(f_d,"Jet Airways");//copy to string
 cout << "Departure Time : 19:00" << endl;
 cout << "Arrival Time: 22:05" << endl;
 strcpy(tojd,"19:00");//copy to string
 strcpy(toja,"22:05");//copy to string
 break;
 default:
 cout << "Wrong input entered.\nTry again" << endl;
 return select_flight();
 }
 }
};
//=============================================================================
//=============================================================================
class i_booking
{
protected:
 int pnri;
 char f_i[10],tojai[7],tojdi[7];
 long int doji;
 int srci,desti,choicei;
public:
 void i_pnr()
 {
 global++;
 pnri=global;
 }
 int j_detaili()// function declaration and definition for journey details
 {
 cout << "\n================================================" << endl
;
 cout << "\nEnter Date Of Journey (DDMMYY)\n>>> ";
 cin >> doji;
 cout << "\n========================" << endl ;
 cout << "\1.London(1) \2.Dubai(2) \3.Abu Dhabi(3) \4.Singapore(4)
\5.NewYork(5) " << endl << endl;
 cout << "\tEnter Source\n>>> ";
 cin >> srci;
 cout << "\nEnter destination\n>>> ";
 cin >> desti;
```

```
 cout << "\n=======================" << endl ;
 cout << "Flights Found" << endl << endl;
 if((srci==1 && desti==3) || (srci==3 && desti==1))
 {
 cout << "Airline:\tDeparture:\tArrival:\tPrice:\t\tCategory:\n";
cout <<
"\1.Vistara(1)\t10:00\t\t14:05\t\tRs.25000\tRefundable\n";
 cout << "\2.Fly
Dubai(2)\t14:00\t\t18:05\t\tRs.21500\tRefundable\n";
cout <<
"\3.Emirates(3)\t18:00\t\t22:05\t\tRs.24000\tRefundable\n";
 }
 else if((srci==1 && desti==4) || (srci==4 && desti==1))
 {
 cout << "Airline:\tDeparture:\tArrival:\tPrice:\t\tCategory:\n";
cout <<
"\1.Vistara(1)\t10:00\t\t14:05\t\tRs.25500\tRefundable\n";
 cout << "\2.Fly
Dubai(2)\t14:00\t\t18:05\t\tRs.21300\tRefundable\n";
cout <<
"\3.Emirates(3)\t18:00\t\t22:05\t\tRs.24650\t\tRefundable\n";
 }
 else if((srci==1 && desti==5) || (srci==5 || desti==1))
 {
 cout << "Airline:\tDeparture:\tArrival:\tPrice:\t\tCategory:\n";
cout <<
"\1.Vistara(1)\t10:00\t\t14:05\t\tRs.52500\tRefundable\n";
 cout << "\2.Fly
Dubai(2)\t14:00\t\t18:05\t\tRs.59420\tRefundable\n";
cout <<
"\3.Emirates(3)\t18:00\t\t22:05\t\tRs.64892\tRefundable\n";
 }
 else if((srci==2 && desti==3) || (srci==3 && desti==2))
 {
 cout << "Airline:\tDeparture:\tArrival:\tPrice:\t\tCategory:\n";
cout <<
"\1.Vistara(1)\t10:00\t\t14:05\t\tRs.17800\tRefundable\n";
 cout << "\2.Fly
Dubai(2)\t14:00\t\t18:05\t\tRs.14900\tRefundable\n";
cout <<
"\3.Emirates(3)\t18:00\t\t22:05\t\tRs.18700\tRefundable\n";
 }
 else if((srci==2 && desti==4) || (srci==4 && desti==2))
 {
 cout << "Airline:\tDeparture:\tArrival:\tPrice:\t\tCategory:\n";
cout <<
"\1.Vistara(1)\t10:00\t\t14:05\t\tRs.32000\tRefundable\n";
```

```
 cout << "\2.Fly
Dubai(2)\t14:00\t\t18:05\t\tRs.38500\tRefundable\n";
cout <<
"\3.Emirates(3)\t18:00\t\t22:05\t\tRs41259\tRefundable\n";
 }
 else if(srci==2 && desti==5 || (srci==5 && desti==2))
 {
 cout << "Airline:\tDeparture:\tArrival:\tPrice:\t\tCategory:\n";
cout <<
"\1.Vistara(1)\t10:00\t\t14:05\t\tRs.82500\tRefundable\n";
 cout << "\2.Fly
Dubai(2)\t14:00\t\t18:05\t\tRs.87550\tRefundable\n";
cout <<
"\3.Emirates(3)\t18:00\t\t22:05\t\tRs81478\tRefundable\n";
 }
 else if(srci==desti)
 {
 cout << "wrong input entered.\nTry again\n\n\n"<< endl;
 return j_detaili();
 }
 else
 {
 cout << "Wrong input entered.\nTry again\n\n\n";
 return j_detaili();
 }
 }
 int select_flighti()//function declaration and definition for selecting
flight
 {
 cout << "\nEnter your choice\n>>> " << endl;
 cin >> choicei;
 switch(choicei)//switch case
 {
 case 1:
 cout << "\nFlight selected:" <<endl;
 cout << "Vistara" << endl;
 strcpy(f_i,"Vistara");//copy to string
 cout << "Departure Time: 10:00" << endl;
 cout << "Arrival Time: 14:05" << endl;
 strcpy(tojdi,"10:00");//copy to string
 strcpy(tojai,"14:05");//copy to string
 break;
 case 2:
 cout << "\nFlight selected:" << endl;
 cout << "Fly Dubai" << endl;
 strcpy(f_i,"Fly Dubai");//copy to string
 cout << "Departure Time: 14:00" << endl;
```

```
 cout << "Arrival Time: 18:05" << endl;
 strcpy(tojdi,"14:00");//copy to string
 strcpy(tojai,"18:05");//copy to string
 break;
 case 3:
 cout << "\nFlight selected:" << endl;
 cout << "Emirates" << endl;
 strcpy(f_i,"Emirates");//copy to string
 cout << "Departure Time : 18:00" << endl;
 cout << "Arrival Time: 22:05" << endl;
 strcpy(tojdi,"18:00");//copy to string
 strcpy(tojai,"22:05");//copy to string
 break;
 default:
 cout << "Wrong input entered" << endl;
 return select_flighti();
 }
 }
};
//=============================================================================
//=============================================================================
class passenger: public d_booking,public i_booking//class passenger publicly
inherited from class d_booking and i_booking
{
protected:
 char f_name[20],l_name[20],email[50];
 int age,gender;
 long int c_no;
public:
 void p_detail(int x)
 { if(x==1)
 {
 j_detail();
 select_flight();
 }
 else
 {
 j_detaili();
 select_flighti();
 }
 cout << "\n================================================" << endl
;
 cout << "\n\n\nEnter passenger details\n";
 cout << "\nFirst Name: ";
 cin >> f_name;
 cout << "Last Name: ";
 cin >> l_name;
```

```
}
int gender_check()//to check gender input as valid
{
cout << "\n=======================" << endl ;
cout << "\nGender:\n.Male (1)\n.Female (2)\n>>> ";
cin >> gender;
if(gender>2)
{
cout << "\n\nWrong input entered.\nTry again\n\n" << endl;
return gender_check();
}
}
void more_details()//to take more details of the passenger
{
cout << "\n=======================" << endl ;
cout << "Age: ";
cin >> age;
cout << "Email Id: ";
cin >> email;
cout << "Contact no.: ";
cin >> c_no;
cout << "\n=======================" << endl ;
cout << "\n=======================" << endl ;
cout << "\n\nDetails Entered:\n";
cout << "Name:" << f_name << " " << l_name << endl;
cout << "Gender:" << gender << endl;
cout << "Age:" << age << endl;
cout << "Email id:" << email << endl;
cout << "Contact No.:" << c_no << endl;
cout << "\n=======================" << endl ;
cout << "\n=======================" << endl ;
}
int getpnr()//function to get pnr for domestic booking
{
return pnr;
}
int getpnri()//function to get pnr for international booking
{
return pnri;
}
void disp()//function to display details for domestic booking
{
cout << "\n=======================" << endl ;
cout << "\n=======================" << endl ;
cout<<"PNR:" << pnr << endl;
cout<<"Flight:" << f_d << endl;
cout<<"Name:" << f_name << " " << l_name << endl;
```

```
 cout<<"DOJ:" << doj << endl;
 cout<<"Departure Time:" << tojd << endl;
 cout<<"Arrival Time:" << toja;
 cout << "\n=======================" << endl ;
 cout << "\n=======================" << endl ;
 }
 void dispi()//function to display details for international booking
 {
 cout << "\n=======================" << endl ;
 cout << "\n=======================" << endl ;
 cout<<"PNR:" << pnri << endl;
 cout<<"Flight:" << f_i << endl;
 cout<<"Name:" << f_name << " " << l_name << endl;
 cout<<"DOJ:" << doji << endl;
 cout<<"Departure Time:" << tojdi << endl;
 cout<<"Arrival Time:" << tojai;
 cout << "\n=======================" << endl ;
 cout << "\n=======================" << endl ;
 }
};
//================================================================================
//================================================================================
//================================================================================
//================================================================================
class payment//class for payment
{
protected:
 long
 int choice1,bank,card,date,cvv,user_id;
 char password[10];
public:
 void pay_detail()//function declaration and definition for payment method
 {
 cout << "\n================================================" << endl
;
 cout << "\n\n\nHow would you like to pay?:\n";
 cout << "\n\1.Debit Card(1) \n\2.Credit Card(2) \n\3.Net Banking(3)";
 cout << "\n\nEnter your choice";
 cin >> choice1;
 switch(choice1)
 {
 case 1:
 cout << "\nEnter card no.:";
 cin >> card;
 cout << "\nEnter expiry date:";
 cin >> date;
 cout << "\nEnter CVV no.:";
```

```
 cin >> cvv;
 cout << "\nTransaction Successful\n";
 break;
 case 2:
 cout << "\nEnter card no.:";
 cin >> card;
 cout << "\nEnter expiry date:";
 cin >> date;
 cout << "\nEnter password:";
 cin >> password;
 cout << "\nTransaction Successful\n";
 break;
 case 3:
 cout << "Banks Available: \1.HDFC(1) \2.Axis Bank(2) \3.Standard
Chartered Bank(3) \4.ICICI(4) \5.Others(5)";
 cout << "\nSelect your bank:";
 cin >> bank;
 cout << "\nYou have selected:" << bank;
 cout << "\nEnter user id:";
 cin >> user_id;
 cout << "\nEnter password:";
 cin >> password;
 cout << "\nTransaction Successful\n";
 break;
 default:
 cout << "\nWrong input entered.\nTry again\n\n";
 return pay_detail();
 }
 }
};
void createfile(passenger p)//file creation for domestic booking
{
 ofstream fin("domestic.txt",ios::binary|ios::app);
 fin.write((char*)&p,sizeof(p));
 fin.close();
}
void cancelticket(int x)//function to cancel ticket
{
 passenger p;
 int f=0;
 ifstream fout("domestic.txt",ios::binary|ios::app);
 ofstream fin("domestic1.txt",ios::binary|ios::app);
 fout.read((char *)&p,sizeof(p));
 while(fout)
 {
 if(p.getpnr()!=x)
 fin.write((char *)&p,sizeof(p));
```

```
 else
 {
 p.disp();
 cout<<"\nYour Above ticket is being canceled:\n" << "Amount
refunded: Rs 1000\n";
 f++;//incrementing f if pnr found
 }
 fout.read((char *)&p,sizeof(p));//reading another record from file
 }
 if(f==0)//if f==0,pnr not found
 cout<<"Ticket not found\n";
 fout.close();
 fin.close();
 remove("domestic.txt");
 rename("domestic1.txt","domestic.txt");
}
void checkticket(int x)//function to check pnr or ticket
{
 passenger p;
 int f=0;
 ifstream fout("domestic.txt",ios::binary);
 fout.read((char *)&p,sizeof(p));
 while(fout)
 {
 if(p.getpnr()==x)
 {
 p.disp();
 cout<<"\nYour ticket"<<endl;
 f++;//incrementing f if onr found
 break;
 }
 fout.read((char *)&p,sizeof(p));
 }
 fout.close();
 if(f==0)//if f==0, pnr not found
 cout<<"Ticket not found"<<endl;
}
void createfilei(passenger p)//opening a file for international booking
{
 ofstream fin("international.txt",ios::binary|ios::app);
 fin.write((char*)&p,sizeof(p));
 fin.close();
}
void cancelticketi(int x)//function to cancel ticket
{
 passenger p;
 int f=0;
```

```
 ifstream fout("international.txt",ios::binary|ios::app);
 ofstream fin("international1.txt",ios::binary|ios::app);
 fout.read((char *)&p,sizeof(p));
 while(fout)
 {
 if(p.getpnri()!=x)
 fin.write((char *)&p,sizeof(p));
 else
 {
 p.dispi();
 cout<<"Your Above ticket is being deleted:\n"<<"Amount refunded:
Rs 1000\n";
 f++;//incrementing f if pnr found
 }
 fout.read((char *)&p,sizeof(p));
 }
 if(f==0)//if f==0,pnr not found
 cout<<"\nTicket not found\n";
 fout.close();
 fin.close();
 remove("international.txt");
 rename("international1.txt","international.txt");
}
void checkticketi(int x)//function to check pnr or ticket
{ passenger p;
 int f=0;
 ifstream fout("international.txt",ios::binary);//opening file
 fout.read((char *)&p,sizeof(p));//reading file
 while(fout)
 {
 if(p.getpnri()==x)//checking pnr
 {p.dispi();//display details
 cout<<"\nYour ticket"<<endl;
 f++;//incrementing f if pnr found
 break;
 }
 fout.read((char *)&p,sizeof(p));//reading another record from the file
 }
 fout.close();//closing file
 if(f==0)//if f==0, pnr not found
 cout<<"Ticket not found"<<endl;
}
//=============================================================================
//=============================================================================
//=============================================================================
//=============================================================================
int main()
```

```
{
 class d_booking d1;
 class i_booking i1;
 class passenger p1;
 class payment p2;
 int ch,ch1,n;
 char input;
 do
 {
 //system("CLS");
 cout << "\n\n \t\tWelcome To Airline Reservation System" << endl <<
endl;
 cout <<"\t <><><><><><><><><><><><><><><><><><><><><><><><><>\n";

 cout << "\n\n\t\t\t\1.Book Flight (1) \n\t\t\t\2.Cancel Fight (2)
\n\t\t\t\3.Check Ticket (3) \n\t\t\t\4.Exit (4)" << endl;
 cout << "\n\t\tPlease enter your choice\n\t\t>>> ";
 cin >> ch;
 switch(ch)
 {
 case 1:
 //system("CLS");
 cout << "\n\n\1.Domestic Fights (1) \n\2.International
Flights (2)" << endl;
 cout << "\nPlease enter your option\n>>> ";
 cin >> ch1;
 switch(ch1)
 {
 case 1://for booking domestic ticket
 p1.d_pnr();
 p1.p_detail(1);
 p1.gender_check();
 p1.more_details();
 p2.pay_detail();
 p1.disp();
 createfile(p1);//call to create file
 break;
 case 2: //for booking international ticket
 p1.p_detail(2);
 p1.i_pnr();
 p1.gender_check();
 p1.more_details();
 p2.pay_detail();
 p1.dispi();
 createfilei(p1);//call to create file
 break;
 default://wrong input
```

```
 cout << "Wrong input entered\nTry again\n\n\n" <<
endl;
 return main();
 }
 break;
 case 2:
 //for canceling ticket
 //system("CLS");
 cout << "\1.Domestic Fights(1) \n\2.International Flights(2)"
<< endl;
 cout << "\nPlea
```

Input Output

```
                Welcome To Airline Reservation System

            <><><><><><><><><><><><><><><><><><><><><><><><><><><><>


                        .Book Flight (1)
                        .Cancel Fight (2)
                        .Check Ticket (3)
                        .Exit (4)

                Please enter your choice
                >>> 3
  .Domestic Fights(1)
  .International Flights(2)

  Please enter your option
  1
  Please enter your PNR no.:
  1

  ========================

  ========================
  PNR:1
  Flight:Spicejet
  Name:Johan Joseph
  DOJ:211122
  Departure Time:14:00
  Arrival Time:17:05
  ========================

  ========================

  Your ticket



  Do you wish to continue:(y/Y)
  n
```

Conclusion

The Airline Management system is a c++ project which will reduce the scope of manual error and conveniently maintain any modifications, cancellations in the reservations. In airline reservation system, the streamlining of the process of reservation without human interaction is highly needed so as to perform well in the highly competitive market. It not only provides flight details but also but also creates a platform to book tickets, cancels or modifies ticket timings or dates . The system in this place lacks a login feature. Users may simply check tickets, cancel reservations, and book flights. For the reservations, it has many payment alternatives. The features in this project are fewer, but they are vital. This project does not contain all the features but more features such as connecting flight routes, layover, document checking such as ID proofs can be added. Inform aboutthe number of people on board, availability of tickets can be added to make this more efficient and user friendly.

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