

FlyWay
'An Airline Reservation System'



PROJECT ITERATION 3

SUBMITTED BY

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1. INTRODUCTION

1.1 VISION

To create an application – FlyWay, a one stop system that allows customers/users to book tickets for ‘FlyWay’ scheduled flight in the most simple, efficient and timely manner.

1.2 OVERVIEW

The following functionalities are included in this system.

- Provides a platform to list scheduled trips of an airlines company
- Allows users to browse through list of trips based on travel commitments
- Provides registration for general customers to become members
- Provides login to registered customers to manage booking
- Allows registered customers to reserve tickets for trips based on seat availability
- Allows airline operator/admin to manage planes(add or update)
- Allows airline operator/admin to manage trips(add or update)
- Eliminates any inappropriate content present

2. PROJECT SCOPE FOR ITERATION 3

The following core functionalities will be addressed in this iteration.

- Manage Booking(cancel,view) by registered customers
- Manage planes(add,update,view) by admin
- View list of registered customers by admin
- Manage Trips(add,update,view) by admin
- Browse through scheduled trips on homepage of system by any user
- Book ticket(s) for trip(s) by registered customers

3. DOMAIN MODEL

See figure

4. DESIGN SPECIFICATIONS

4.1 FUNCTIONAL REQUIREMENTS

- Customers(including both registered and general) should be able to search and browse the trip information

- Registered customers have access to booking tickets, managing booked tickets(includes checking the ticket status and cancellation) but general customers shouldn't be allowed doing so
- When registered customers' operation on booked tickets is successful, there will be a message
- Administrator has permission to manage plane and trip information(includes add/update data).

4.2 NON-FUNCTIONAL REQUIREMENTS

- Application should be easy and intuitive to use
- Application should be as secure as necessary
- Information(including that of customers, planes and trips) should update in a timely fashion, and updates should be reflected within an acceptable time range in the portal

4.3 CONSTRAINTS AND LIMITATIONS

4.3.1 CONSTRAINTS

- Time is a key constraint. Team members involved with implementing the application have busy schedules which must be factored into any plan
- Effectively dividing and assigning work to team members will be a challenge

4.3.2 LIMITATIONS

- The application will most likely not support a large number of concurrent customers

5. USE CASE DIAGRAM

See figure

6. USE CASE TEXT

ACTORS: Admin, General and Registered customers

SYSTEM: FlyWay System

6.1 USE CASE UC1: MANAGE PLANES

Scope: Flyway application

Level: User goals

Primary Actor: Admin

Stakeholders and Interests: Admin can add, update and view planes.

Preconditions: Admin has entered valid username and password and has clicked on Manage Planes tab on his account homepage.

Main Success Scenario (Basic Flow):

1. Admin inputs new plane information and clicks on Add button.
2. System adds new plane information and displays success message.
3. Admin inputs planeNo and clicks on Retrieve button.
4. System retrieves the specific plane status.
5. Admin edits status of the specific plane and clicks on Update button.
6. System updates the information and displays success message.
7. Use case ends successfully.

Extensions (or Alternative Flows):

- 2a. System does not add new plane information and displays an error message that the entered plane already exists in the system and hence cannot duplicate.
- 4a. System displays an error message that entered plane does not exist.
- 7a. Use case ends unsuccessfully.

Postconditions:

1. Admin can view the newly added plane by clicking on Display button.
2. Admin can view the updated plane information by clicking on Display button.

6.2 USE CASE UC2: MANAGE TRIPS

Scope: Flyway application

Level: User goals

Primary Actor: Admin

Stakeholders and Interests: Admin can add new trips, update information of existing trips and view trips.

Pre-conditions: Admin has entered valid username and password and has clicked on Manage Planes tab on his account homepage.

Main Success Scenario (Basic Flow):

1. Admin inputs information of a new trip and clicks Add button.
2. System adds new trip information and admin is displayed success message.
3. Admin inputs tripId and clicks on Retrieve button.
4. System shows the specific trip information.
5. Admin updates information of the specific trip and clicks on Update button.
6. System updates the information and admin is displayed success message.
7. Use case ends successfully.

Extensions (or Alternative Flows):

2a. System does not add new trip information and displays an error message that the entered trip already exists in the system and hence cannot duplicate.

4a. Admin is displayed an error message that entered tripId does not exist.

7a. Use case ends unsuccessfully.

Post-conditions:

1. Admin can view the newly added trip by clicking on Display button.
2. Admin can view the updated trip information by clicking on Display button.

6.3 USE CASE UC3: BROWSE TRIPS

Scope: Flyway application

Level: User goals

Primary Actor: User (admin, general customer, registered customer)

Stakeholders and Interests: Any customer could browse through list of trips available according to the date-time, airport details and choose the number of tickets and class of seats.

Preconditions: Users have access to FlyWay application, may/may not be registered and is viewing the application's homepage.

Main Success Scenario (Basic Flow):

1. Customer enters travel preferences like depart airport, arrive airport, depart time and number of tickets, selects the seat type as economy or business and clicks on 'Browse' button.
2. System displays a list of trips matching search criteria.
3. The use case ends successfully.

Extensions (or Alternative Flows):

- 2a. System displays a message that details entered do not match any trips available.
- 3a. The use case ends unsuccessfully.

Post conditions:

1. **Successful Completion:**The user will be able to view the list of available trips.
2. **Unsuccessful Completion:**The user will not be able to view the list of available trips.

6.4 USE CASE UC4: USER SIGN-UP

Scope: Flyway application

Level: User goals

Primary Actor: General Customer

Stakeholders and Interests: General customer registers into system.

Preconditions: Customer has clicked Sign-Up button on homepage of system.

Main Success Scenario (Basic Flow):

1. Customer enters details like last name, first name, date of birth, phone, email id, password and passport number and clicks on 'Submit' button.
2. System displays a success pop-up message that the customer is now registered.
3. The use case ends successfully.

Extensions (or Alternate Flow):

2a1. System displays a failure message that user could not be registered due to identifying two registrations for same email id and hence suggests that customer may attempt again with valid inputs.

2a2. If done successfully, go to step 1.

3a. The use case ends unsuccessfully.

Postconditions:

1. **Successful Completion:** The customer would be provided a unique customer id and will be able to access his/her FlyWay account and perform functionalities provided.
2. **Failure Condition:** The customer would be kept out of the system.

6.5 USE CASE UC5: USER AUTHENTICATION (LOGIN)

Scope: Flyway application

Level: Subfunction

Primary Actor: Registered Customer

Stakeholders and Interests: Registered customers accesses his/her account in system.

Preconditions: Customer has already been registered on the system and is now accessing the homepage.

Main Success Scenario (Basic Flow):

1. Customer enters details like email and password and clicks on 'Login' button.
2. System directs the customer to his/her account by authenticating the information provided.
3. The use case ends successfully.

Extensions (or Alternate Flow):

- 2a1. System displays a message that he/she could not be authenticated due to providing incorrect email id or password and hence suggests customer to attempt again with valid inputs.
- 2a2. If done successfully, go to step 1.
- 3a. The use case ends unsuccessfully.

Postconditions:

1. **Successful Completion:** The customer would be able to access his/her FlyWay account and perform functionalities provided.
2. **Failure Condition:** The customer would be kept out of the system.

Special Requirements:

In the failure condition, the system should not indicate if the email already exists or not. The purpose is to increase security of system.

6.6 USE CASE UC6: BOOK TRIP(S)

Scope: Flyway application

Level: User goals

Primary Actor: Registered Customer

Stakeholders and Interests: Registered customers books his/her tickets for trip(s).

Preconditions: The registered customer should perform use case 3 i.e, browse trips and selects the trip from a set of trips displayed by the system and clicks on 'make reservation' button.

Main Success Scenario (Basic Flow):

1. The customer adds details of all passengers for the trip and clicks on checkout button
2. System navigates to payment page
3. The customer enters the payment details and clicks on pay button
4. System displays success message.
5. The use case ends successfully.

Extensions (or Alternate Flow):

- 3a. The customer enters the payment details and clicks on cancel button
- 4a. System navigates to search trips page
- 5a. The use case ends unsuccessfully.

Post conditions:

Successful Completion: The customer will be able to see the currently booked trip/tickets in Manage Booking page.

Failure Condition: The user will be navigated to home page

6.7 USE CASE UC7: MANAGE BOOKING

Scope: Flyway application

Level: User goals

Primary Actor: Registered Customer

Stakeholders and Interests: Registered Customer should be able to manage his/her booking(view list of reservations and be able to cancel a reservation).

Preconditions: Customer is logged onto the system and has clicked 'Manage Booking' tab on his/her account homepage.

Main Success Scenario (Basic Flow):

1. Customer clicks on Display button.
2. System displays the list of his/her reservation(s).
3. Customer could select a particular reservation and then click on 'Cancel' button.
4. System displays a success message that the reservation is cancelled.
5. The use case ends successfully.

Extensions (or Alternate Flow): None

Postconditions:

1. **Successful Completion:** The customer would be provided a list of booking information and could cancel a reservation.

6.8 USE CASE UC8: VIEW REGISTERED CUSTOMERS

Scope: Flyway application

Level: User goals

Primary Actor: Admin

Stakeholders and Interests: Admin should be able to view the list of registered customers.

Preconditions: Admin is logged onto the system and has clicked 'Show Users' tab on his homepage of system.

Main Success Scenario (Basic Flow):

1. The Admin clicks on Display button.
2. System displays the list of registered customers.
3. The use case ends successfully.

Extensions (or Alternate Flow):

- 2a1. The admin is displayed a message that there are no registered users on the system.
- 2a2. If done successfully, go to step 1.
- 3a. The use case ends unsuccessfully.

Postconditions:

1. **Successful Completion:** The admin would be provided a list of registered customers.
2. **Failure Condition:** The admin would be prompted a failure message.

7. SYSTEM SEQUENCE DIAGRAM

See System Sequence Diagram doc

8. DESIGN SEQUENCE DIAGRAM

See Design Sequence Diagram doc

9. CLASS DIAGRAM

See Class Diagram

10. SUPPLEMENTARY SPECIFICATION

- This program must run on all the platforms
- Registrations should update in a timely fashion
- Developer will give a manual that explains how to use this application

11. TESTING

Testing is done on the software to check if the quality is maintained and implementation is according to requirements stated earlier.

- Meets the requirements which guided design and development
- Works for correct inputs and handles incorrect inputs
- Get system response within time frame
- Achieves the Stakeholder goal

11.1 TEST PLANS

The following activities and test cases are used to check the quality of code and to map the implementation with the requirements of the system.

11.2 UNIT TESTING

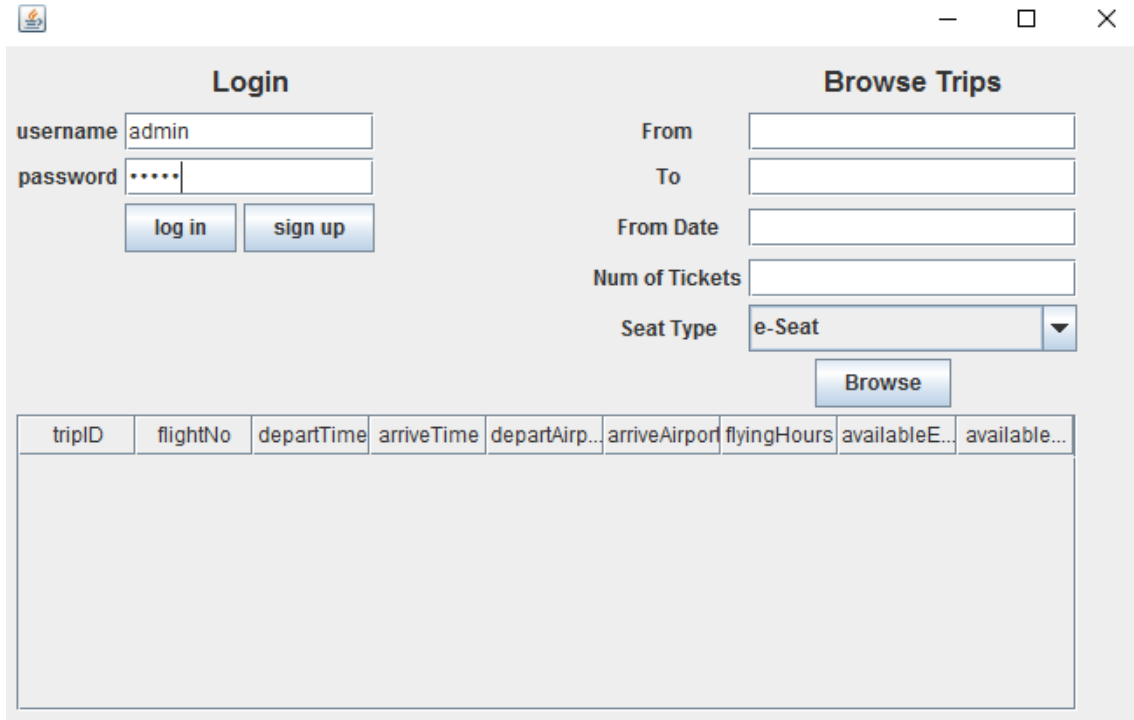
- Unit testing is done for each use cases
- On this iteration testing is done by giving basic inputs

S.No	Test Case	Test Case Description	Expected Output	Observed Output
1	User Authentication	User provides login details and clicks login.	The user should be able to login.	The user is able to log into his account successfully.
2	User sign up	1.User clicks sign-up. 2.Registration page is opened. 3.User provides sign up details and clicks submit.	The user should be able to sign up.	The user is able to sign up with a success message.
3	Manage Planes	1.The admin logs into the system and manages planes. 2.If to 'add plane', admin enters information and clicks on add button. 3.If to 'update plane', admin enters planeNo and clicks retrieve to get the existing status and edits the status and clicks on update button. 4.If to 'display planes', admin clicks on display button.	The admin should be able to manage planes.	The admin is able to manage planes successfully.
4	Manage Trips	1.The admin logs into the system and manages trips. 2.If to 'add trip', admin enters information and clicks on add button. 3.If to 'update trip', admin enters a particular tripId and clicks retrieve to get the existing trip details and edits the information and clicks on update button. 4. If to 'display trips', admin clicks on display button.	The admin should be able to manage trips.	The admin is able to manage trips successfully.
5	Browse Trips	1.User may enter preferences like number of tickets, class of travel,etc and click on Browse button. 2.The user is displayed filtered results according to requirements.	The user should be able to view list of trips.	The user is able to view list of trips successfully.

6	Book Trip(s)	<p>1.Registered customer may select the trip from the list of trips and click on make reservations to navigate to make reservations page.</p> <p>2. The customer is displayed trip details.</p> <p>3. The customer may click on add passengers and the customer is to enter the details of all the passengers travelling the trip.</p> <p>4. The customer may click on checkout to navigate to payment page.</p> <p>5. The customer may enter the payment details and click on pay to confirm the trip booking.</p>	The registered customer should be able to book trips successfully.	The registered customer is able to book trips successfully.
7	Manage Booking	The registered customer views the list of booking details and be able to cancel a reservation.	The registered customer should be able to view list of booking details and cancel a reservation.	The registered customer is able to view list of booking details and also cancel a reservation successfully.
8	View Registered Customers	The admin views the list of registered customers on the system.	The admin should be able to view list of registered customers on the system.	The admin is able to view list of registered customers on the system successfully.

12. SCREENSHOTS

Admin:



The screenshot shows a web application window with a title bar containing a small icon and standard window controls (minimize, maximize, close). The main content area is divided into two sections: "Login" and "Browse Trips".

Login Section:

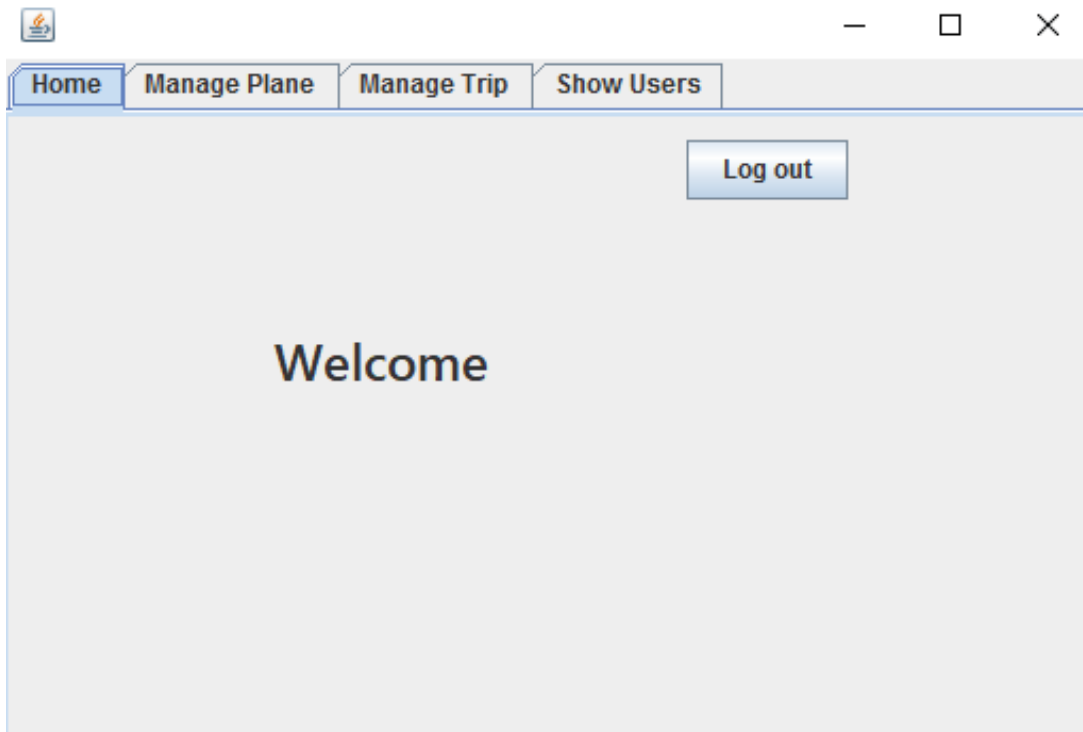
- username:
- password:
- Buttons: and

Browse Trips Section:

- From:
- To:
- From Date:
- Num of Tickets:
- Seat Type: (dropdown menu)
- Button:

Below the forms is a table with the following headers:


tripID	flightNo	departTime	arriveTime	departAirp...	arriveAirpor	flyingHours	availableE...	available...



The screenshot shows a web application window with a title bar containing a small icon and standard window controls (minimize, maximize, close). The main content area has a navigation bar with four tabs: "Home", "Manage Plane", "Manage Trip", and "Show Users". The "Home" tab is selected.

Below the navigation bar, there is a "Log out" button.

The main content area displays the word "Welcome" in a large, bold font.


— □ ×

Home Manage Plane Manage Trip Show Users

Add Plane

Plane_NO
eSeats
bSeats
Status

Add

Update Plane

Plane_NO
Status


Retrieve

Update

View Plane Info

Display

flightNo	eSeats	bSeats	status
A-11	100	20	1
A99	100	10	0
B-11	200	10	1
C-97	150	20	0
C123	100	23	1
E-90	120	10	0
S-12	100	10	0
z11	100	20	0


— □ ×

Home Manage Plane Manage Trip Show Users

Add Trip

trip id
departTime
ArriveTime
departAirport
arriveAirport

flyingHours
Status
available eSeats
available bSeats
planeID

Add

Update Trip

trip id
departTime
Arrive Time
departAirport
arriveAirport

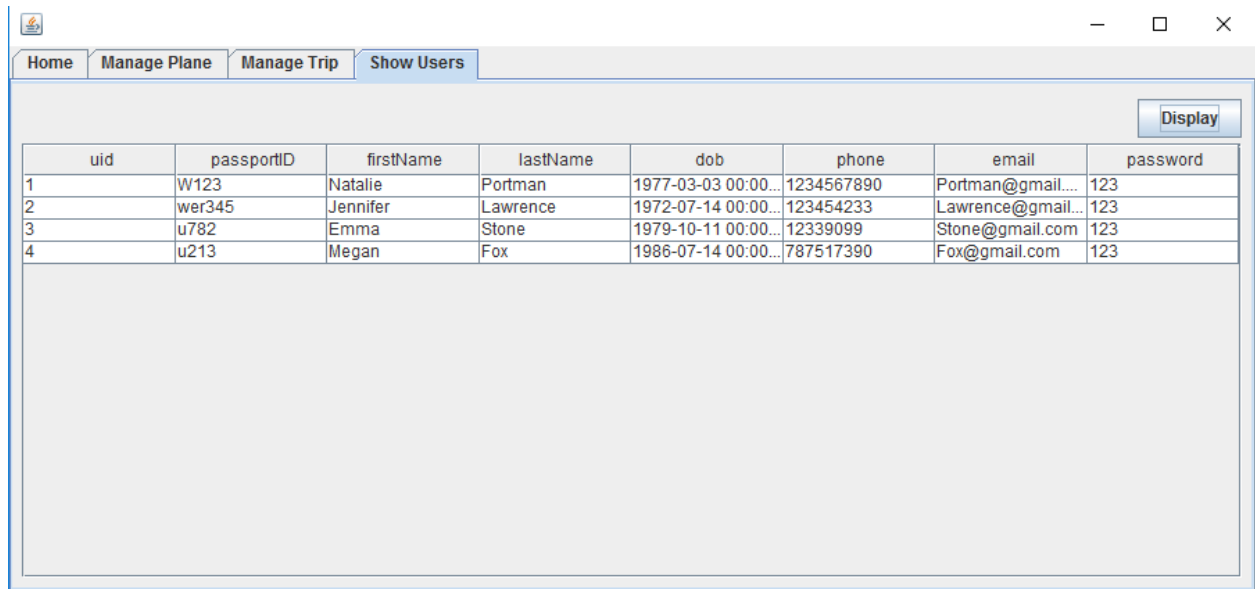
flyingHours
Status
availabe eSeats
available bSeats
planeID

Retrieve

Update

View Trips

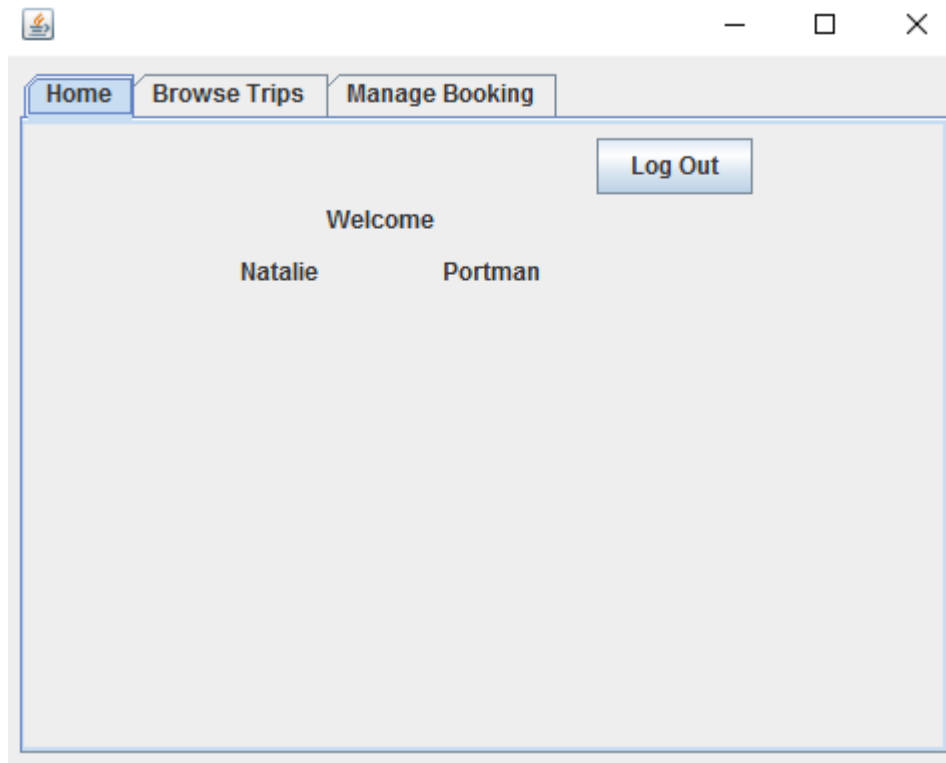
Display



The screenshot shows a web application window with a title bar containing a small icon and standard window controls (minimize, maximize, close). The application has a navigation bar with four tabs: 'Home', 'Manage Plane', 'Manage Trip', and 'Show Users'. The 'Show Users' tab is active. Below the navigation bar is a 'Display' button. The main content area contains a table with the following data:

uid	passportID	firstName	lastName	dob	phone	email	password
1	W123	Natalie	Portman	1977-03-03 00:00...	1234567890	Portman@gmail....	123
2	wer345	Jennifer	Lawrence	1972-07-14 00:00...	123454233	Lawrence@gmail...	123
3	u782	Emma	Stone	1979-10-11 00:00...	12339099	Stone@gmail.com	123
4	u213	Megan	Fox	1986-07-14 00:00...	787517390	Fox@gmail.com	123

Registered Customer:



Home

Browse Trips

Manage Booking

Depart Airport

Arrive Airport

Depart Time

NO of tickets

Seat Typee-Seat

Browse

show available trips

Make a Reservation

Home

Browse Trips

Manage Booking

Current Booking Records

Display

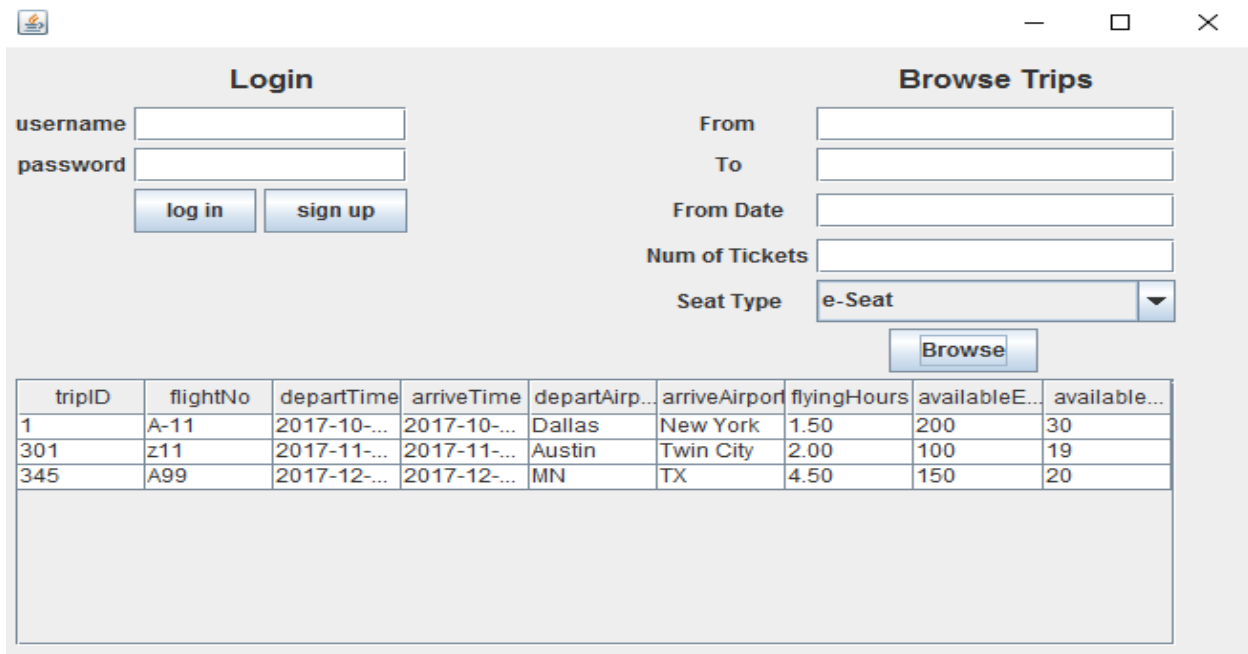
Booking History

Display

bookingRefID	firstName	lastName	departTime	seatType
18	k1	k2	2017-10-20 ...	b-Seat
19	aa2	aa1	2017-10-20 ...	e-Seat
23	a1	a2	2017-10-20 ...	e-Seat
24	b1	b2	2017-10-20 ...	e-Seat
25	c1	c2	2017-10-20 ...	e-Seat
26	d1	d2	2017-10-20 ...	e-Seat
27	e1	e2	2017-10-20 ...	e-Seat
28	k1	k2	2017-10-20 ...	b-Seat
29	j1	j2	2017-10-20 ...	b-Seat

Cancel Reservation

General Customer:



tripID	flightNo	departTime	arriveTime	departAirp...	arriveAirpor	flyingHours	availableE...	available...
1	A-11	2017-10-...	2017-10-...	Dallas	New York	1.50	200	30
301	z11	2017-11-...	2017-11-...	Austin	Twin City	2.00	100	19
345	A99	2017-12-...	2017-12-...	MN	TX	4.50	150	20

13. PLAN FOR DEMO

- Refine the system
- Documentation and Report
- Backlogs from iteration 3

14. GLOSSARY

Revision History			
Version	Date	Description	Author
Iteration 1 Document	9/24/2017	First draft to be refined in later iterations	Group 1
Iteration 2 Document	10/22/2017	Second draft to be refined by last iteration	Group 1
Iteration 3 Document	11/26/2017	Final Documentation	Group 1
Definitions			
Terms	Definitions and Information		
Admin	Admin is responsible for the credibility of the flights being published on the system.		
Registered customer	Registered user is the user who has signed up on the system. These users have the privilege to book tickets for flights and manage their booking after successful reservation. They could also avail any offers provided whenever applicable. They also could provide their feedback.		
General Customer	General customers are the other users who use the system to browse through the scheduled flights based on different dates and airports but they will not be able to reserve tickets unless they sign up.		