ITIS 4166/5166-091, Fall 2013
Network Based Application Development

Assignment 3

Udaykumar Bhupendrakumar
Jui Bhagat

Table of Contents

Important /Must Read notes:

File Location:

The files are located at the following location:

C:\NBAD32bitWinPackage\eclipse\workspace\Assignment-3

Folders/Files/Functions:

Folder: Java Resources/src/udayjui.javaclasses/ :

User.java-

This class is used to manage the users account.

There are three methods:

1) userExist_login(String user, String passp): returns a Boolean stating that the user exists
2) userExist_reg(String user, String passp): returns a Boolean stating that user is registered
3) addUser(String usr, String password): adds a new user to the user.properties file

DBClass.java-

This class is used to manage the database.

There are five methods:

1) connectMeIn() : sets the connection to the Oracle database
2) execute(String SQL): returns a ResultSeat after executing the SQL query
3) insert(String SQL): inserts into the database
4) update(String SQL): updates the database
5) closeConnection(): closes the connection to the database

Accounts.java-

This class is used to manage the users account balance.

There are five important methods:

1) Accounts(): this is a constructor to the class that calls to open a database connection

2) Accounts(int accountId, String holderName, int routingNo) : this is the second constructor that calls to open a connection and sets the values of accountId, holderName and routingNo and retives the balance by calling the retriveBalance() method
3) retrieveBalance(): gets the current balance from the database
4) updateBalance((int ano, String name, int rno, int bal): updates the balance, after deducting the total cost of the tickets booked , in the database.
5) closeConnection(): closes the connection to the database.

Bookings.java-

This class is used to manage the Booking details.

There are six important methods:

1) Bookings() : this is a constructor to the class that calls to open a database connection
2) Bookings (String username, String flightid, String dot, int seats,int accountid, int totalcost): this is the second constructor that calls to open a connection and sets the values of the variables.
3) insert(): inserts values in the BOOKINGS table
4) int bookid(String username, String flightid, String dot, int seats, int accountid, int totalcost): returns the bookid of a user
5) selectBookings(String uname):returns ArrayList of objects of the class Bookings.
6) closeConnection(): closes the connection to the database.

Flights.java-

This class is used to manage the Flight details.

There are six important methods:

1) Flights():: this is a constructor to the class that calls to open a database connection
2) selectAllFlights(String leaving, String going,String date): returns an ArrayList of flights with all their values
3) selectFlight(String operator, String number):returns all the flights with the same operator and number
4) getAvailableSeats(String flightnumber, String operator): returns the flight details along with the number of seats available ,which matches the user given flight name.
5) updateSeats(String flightnumber, String operator, int seats): updates the number of seats in the database
6) closeConnection(): closes the connection to the database.

Cart.java-

This class is used to manage the Cart details.

There are getters and setters for the variables seats,total_amt,bookid and flights.

Folder: Java Resources/src/udayjui.servlets/ :

Login.java-

This servlet class is used to perform the following tasks:

The set of user names and passwords are saved in a Java Properties file user.properties managed by the User.java class. The servlet validates the user login and password through the User.java class. With a valid user login/password the servlet redirects the user to the flightsearch.jsp page. With an invalid user login/password, the servlet redirects the user to the registration.jsp page. A new session is created for each user. Cookies are used to remember the username when “Remember Me” check box is selected by the user.

Registration.java-

This servlet class is used to perform the following tasks:

Each registered user’s login/password info will be kept in the Java Properties file user.properties used by the Login.java servlet. The servlet saves the users’ records through the User.java class. After inserting the record, the servlet redirects the user to the login.jsp page.

FlightSearch.java-

This servlet class is used to perform the following tasks:

Receives the search parameters passed by flightsearch.jsp page.Retrieves all matching flights from the Flights Model and redirects the user to the flightsearch.jsp page with the search results.

SearchResults.java-

This servlet class is used to perform the following tasks:

Receives the flight parameters passed flightsearch.jsp page .All the flight details are displayed on the searchresult.jsp page from the Flights Model and the user is redirected to the viewandbook.jsp with the flight details.

ViewandBook.java-

This servlet class is used to perform the following tasks:

Receives the flight parameters passed by viewandbook.jsp page.Verifies the availability of the requested number of seats.Calculate the cost and then redirects the user to the transaction jsp page with the flight details, number of seats and total cost.

AddCart.java-

This servlet class is used to perform the following tasks:

This is an additional servlet that maintains the number of flights that are added by the user in the cart before confirming the transaction. After the user selects “Add to cart” button on the viewandbook.jsp the flight is added to the ArrayList of objects of the class Cart and the user is directed to the flightsearch.jsp page to select more flights.

Bank.java-

This servlet class is used to perform the following tasks:

This servlet receives bank details from the transaction.jsp page (using AJAX). Uses Bank Model to check bank account standing. Redirects user to the transaction.jsp page with flight details and transaction status (Success/Failure).

BookingHistory.java-

This servlet class is used to perform the following tasks:

This servlet uses session information (username) to find all previous bookings for that user.
It fetches these values from the bookings model and redirects the user to the bookinghistory jsp page with the results.

UpdateHistory.java-

This servlet class is used to perform the following tasks:

This servlet adds the booking details to booking history via the bookings model.

Folder: WebContent

login.jsp-

This Jsp page performs the following tasks:

- Clicking the submit button on the form calls the Login.java servlet. Clicking the New User? link should lead to the registration.jsp page.
- If it is an existing user the page should get directed to the flightsearch.jsp page.
- If the user selects the checkbox for **“Remember me” the username is saved as a Cookie**.
- The username is **not case-sensitive and special characters are not allowed.**

Input: 1) If existing user: Username and Password

2) If new user: NewUser?

Output: 1) If existing user:

- If the Username or Password field is left blank and the Submit button is clicked an alert box displays on the screen requesting the user to fill in the respective fields.
- If the Username or Password field are correct the page is directed to the flightsearch.jsp page
- If the “Remember me!!!” check box is selected by the user the username appears in the Username textbox everytime the user visits the login.jsp page.

2) If new user:

- The page is directed to the registration.jsp page

registration.jsp-

This Jsp page performs the following tasks:

- Clicking the submit button on the form calls the Registration.java servlet.
- The page checks if the password and confirmation password match.

Input: Username, Password, Confirm Password, First Name, Last Name, Address Line 1, Address Line 1, City, State, Country, Contact Email.

Output:

1) If the Username is left blank and the Submit button is clicked an alert box displays on the screen requesting the user to fill the fields.
2) If the Password and Confirm Password fields do not match an alert box is displayed on the screen requesting the user to fill the fields.
3) If all the fields are correct the page is directed to the login.jsp page.

flightsearch.jsp-

This Jsp page performs the following tasks:

- This is a Flight search page. It has a Search button which when clicked leads to the searchresult.jsp page.
- It has a Booking History button that leads to the bookinghistory.jsp page.
- **The username is displayed along with a Logout link. The Logout link will end the user's session and will direct the user to the login.jsp page.**
- The page also displays the **number of visits by the user**.
- The Source and Destination fields are **not case-sensitive**.
- **A Date picker is used to select the date.**

Input: Source, Destination, Date of Travel, Adult, Child, Class

Output:

1) Clicking the Search button directs the page to the searchresult.jsp page.
2) Clicking the Booking History button directs the page to the bookinghistory.jsp page.
3) Clicking the Logout link will end the users session and will direct the user to the login.jsp page

searchresult.jsp-

This Jsp page performs the following tasks:

- Displays the data from FlightSearch.java servlet in a tabular format to the user with the following columns: Flight Number, Date, Source , Destination, Departure Time, Arrival Time, Number of Stops, Cost and a"View and Book" button to view more details and reserve that flight.
- After selecting a flight and clicking the "View and Book" button the page leads to the viewandbook.jsp page and calls SearchResults.java servlet passing flight number.
- It has a Booking History button that leads to the bookinghistory.jsp page.
- **The username is displayed along with a Logout link. The Logout link will end the user's session and will direct the user to the login.jsp page.**
- The page also displays the **number of visits by the user**.

Input: Select an option button, Booking History button

Output:

1) If no option button is selected an alert message is displayed on the screen requesting the user to select a flight
2) Clicking the View and Book button after selecting the flight will direct the page to viewandbook.jsp page
3) Clicking the Booking History button directs the page to the bookinghistory.jsp page.

viewandbook.jsp-

This Jsp page performs the following tasks:

- The flight number is received from the SearchResult.java servlet .The page has the option to select number of seats for a particular flight.
- **The number of seats is restricted to be selected upto 6 seats at one time.**
- Clicking the "Select" button calls the ViewAndBook.java servlet passing flight number and number of seats.
- Clicking on “Add to Cart” button should take user back to the flightsearch.jsp page where more flights can be added to the shopping cart.
- It has a Booking History button that leads to the bookinghistory.jsp page.
- **The username is displayed along with a Logout link. The Logout link will end the users session and will direct the user to the login.jsp page.**
- The page also displays the **number of visits by the user**.

Input: Select button, Back button, Home button, Confirm Transaction button
Output:

1) Clicking the Select button directs the page to the transaction.jsp page.
2) Clicking the Back button directs the page back to the searchresult.jsp page
3) Clicking the Home button directs the page back to the flightsearch.jsp page.
4) Clicking the Confirm Transaction button directs the page back to the transaction.jsp page
5) Clicking the Booking History button directs the page to the bookinghistory.jsp page.

transaction.jsp-

This Jsp page performs the following tasks:

Javascript functions:

- **confirm_function**:
  - Initiates AJAX call to the bank servlet with the required data.
  - Populates the result elements with the response received from the bank servlet.
  - On Success shows Success/Failure message and a form for the user to enter passenger details (Name, Age, Sex, etc...), Print Ticket button. Also calls update_history_function.
  - On Failure: The page displays a message: “Transaction was not successful”

- **update_history_function:**
  - Initiates AJAX call to the update booking history servlet with the booking details.

Other elements (To display result):
The HTML element div is used for displaying the response of the bank servlet.
This will initially contain all flight information passed by the ViewandBook servlet. This also contains the div to show the response that is returned by the Bank servlet.

- Displays the flight information values passed by the servlet.
- Clicking the "Confirm" calls the Bank.java servlet with total cost and bank details.
- **If user provides incorrect account details error meesage is displayed on the screen.**
- It has a Booking History button that leads to the bookinghistory.jsp page.
- **The username is displayed along with a Logout link. The Logout link will end the user's session and will direct the user to the login.jsp page.**
- The page also displays the **number of visits by the user**.
- On Success:
- The page displays all information passed by the Bank.java servlet and displays a success message" Your purchase has been successfully submitted" on the page.
- It displays a form for the user to enter passenger details (Name, Age, Sex, etc...).
- The page has a Print button that allows the user to print the ticket showing all the flight and passenger information entered.
- On Failure:
- Displays an error message " Account Details are Incorrect !" on the page if the user provides incorrect account details
- Displays an error message " Balance Insufficient!" on the page if the user's bank balance is less than the total cost of the purchase.
- Back button directs the user to the previous page.

Input: Name of Account Holder, Account Number, Routing Number, Confirm button,Cancel button
Output:

- Clicking the Confirm button loads the page with flight confirmation details and asks the user to fill in the details such as (Name, Age, Sex, etc...). The Print button that allows the user to print the ticket showing all the flight and passenger information entered.
  1) Clicking the Cancel button directs the page to the flightsearch.jsp page.

confirmtransaction.jsp-

This Jsp page performs the following tasks:

- This jsp page is called when transaction is successful from the transaction,jsp page. The div displays the flight confirmation details along with a form for the user to enter passenger details (Name, Age, Sex, etc...).

bookinghistory.jsp-

This Jsp page performs the following tasks:

- The page displays the user's booking history which included the Booking Number, Flight Number, Date and Cost
- It has a Booking History button that leads to the bookinghistory.jsp page.

- **The username is displayed along with a Logout link. The Logout link will end the user’s session and will direct the user to the login.jsp page.**
- The page also displays the **number of visits by the user**.

Input: Home button

Output:

1) Clicking the Home button directs the page to the flightsearch.jsp page.

Models used:

- Users
  - Reads user details from the database
  - Check if user exists and password validation
  - Add new user details to database
- Flights
  - Reads flight details from the database
  - Fetches all flights with given parameters
  - Fetches details of individual flights
- Transactions
  - Validate bank account details
  - Get balance
  - Set new balance (Update balance)
- Bookings
  - Reads booking history from the database
  - Adds new bookings to the database
- Bank
  - Check the given account if its balance is greater than the booking amount. Return transaction success / failure status accordingly. If successful, deduct the amount

Team work:

We divided the assignment into four parts:

1) Servlet coding
2) JSP pages designing
3) Linking of pages
4) Documentation

As a team we worked together on every aspect of the project. The division of work was fairly equal. The table below shows the contribution of each team member for this assignment:

Servlet Coding	Udaykumar	Jui
JSP page designing	Udaykumar	Jui
Linking of pages	Udaykumar	Jui
Documentation	Udaykumar	Jui

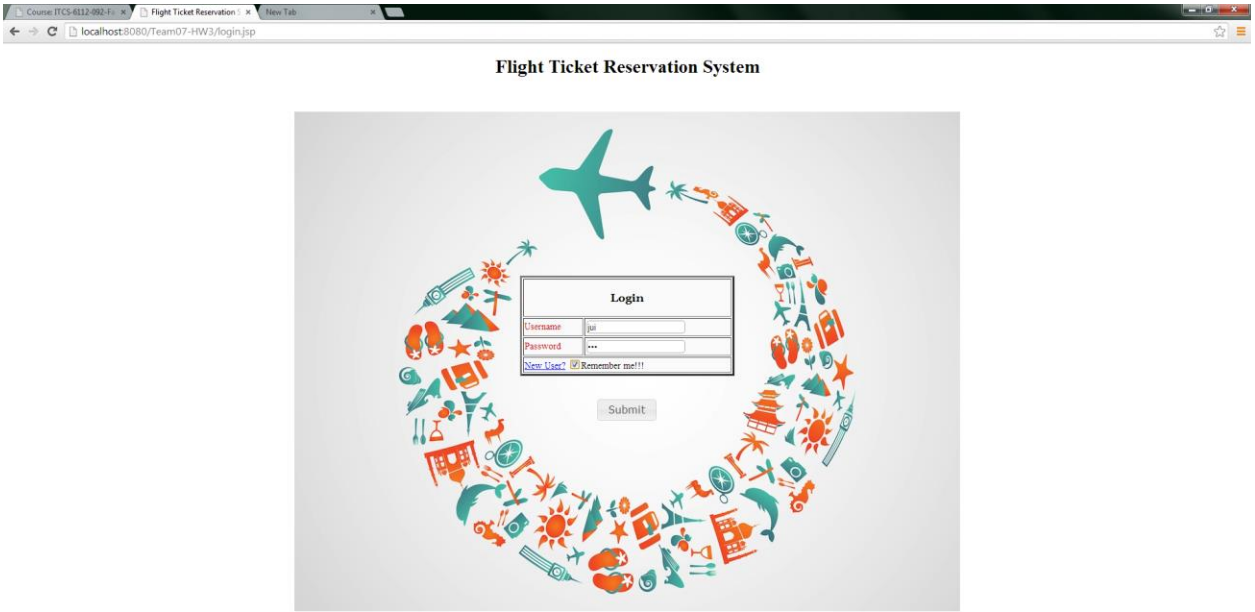
Challenges:

- The main challenge was hiding and showing the div in the transaction.jsp page.
- We also faced a problem for the email notification as the div which contained the function for email notification was loaded when transaction.jsp page was called even though it was hidden. To solve this problem we created another jsp page called confirmtransaction.jsp which is called only after the flight booking is confirmed.

Additional Features:

- We have used **javascript frameworks** like **jQuery.**
- **Application Security Functionality**: We have included application security functionality while checking the username and the transaction details.

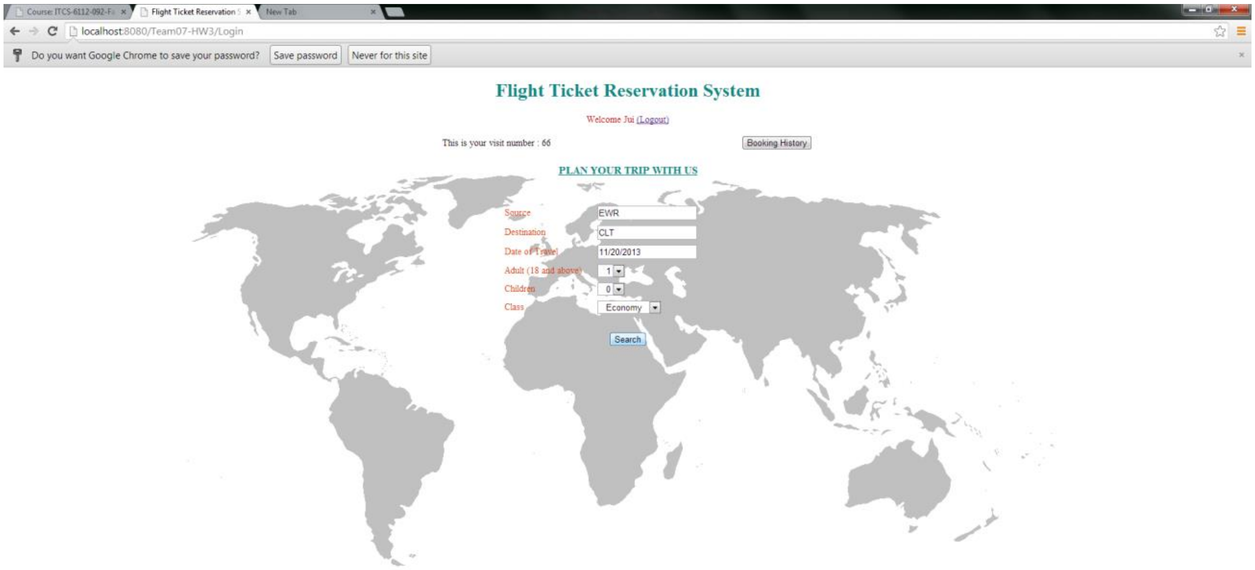
Screen Shots:


Course: ITCS-6112-092-Fa
Flight Ticket Reservation S
New Tab
localhost:8080/Team07-HW3/login.jsp
Submit

Flight Ticket Reservation System

Login

Username	jui
Password	•••
New User? ☑ Remember me!!!	



Do you want Google Chrome to save your password?

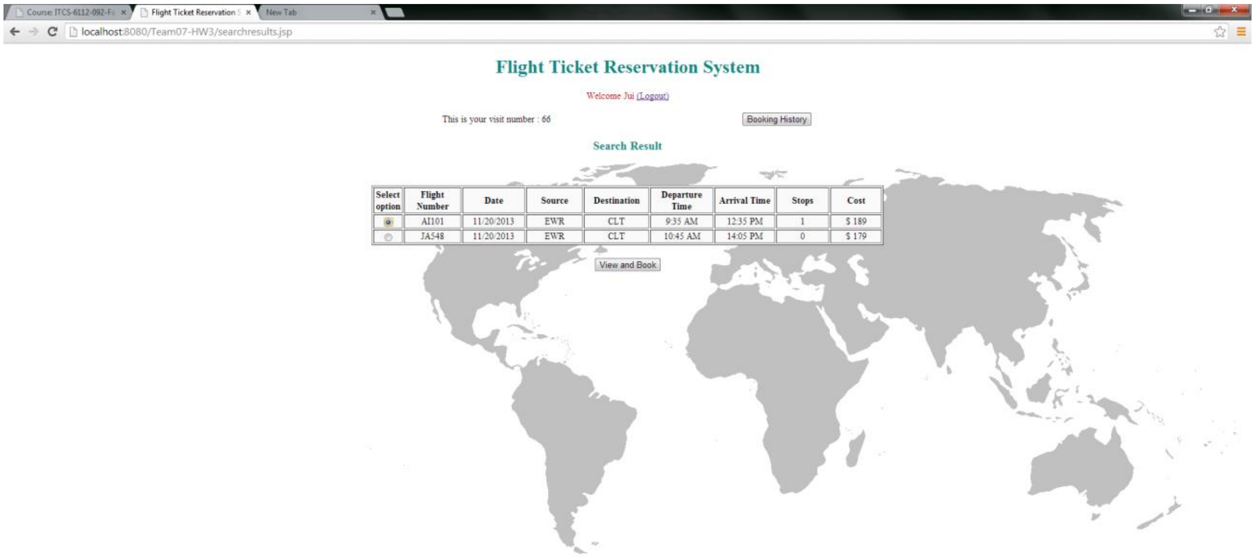
Flight Ticket Reservation System

Welcome Jui (Logout)

This is your visit number : 66

PLAN YOUR TRIP WITH US

Source	EWR
Destination	CLT
Date of Travel	11/20/2013
Adult (18 and above)	1
Children	0
Class	Economy


Course: ITCS-6112-092-F
Flight Ticket Reservation
New Tab
localhost:8080/Team07-HW3/searchresults.jsp

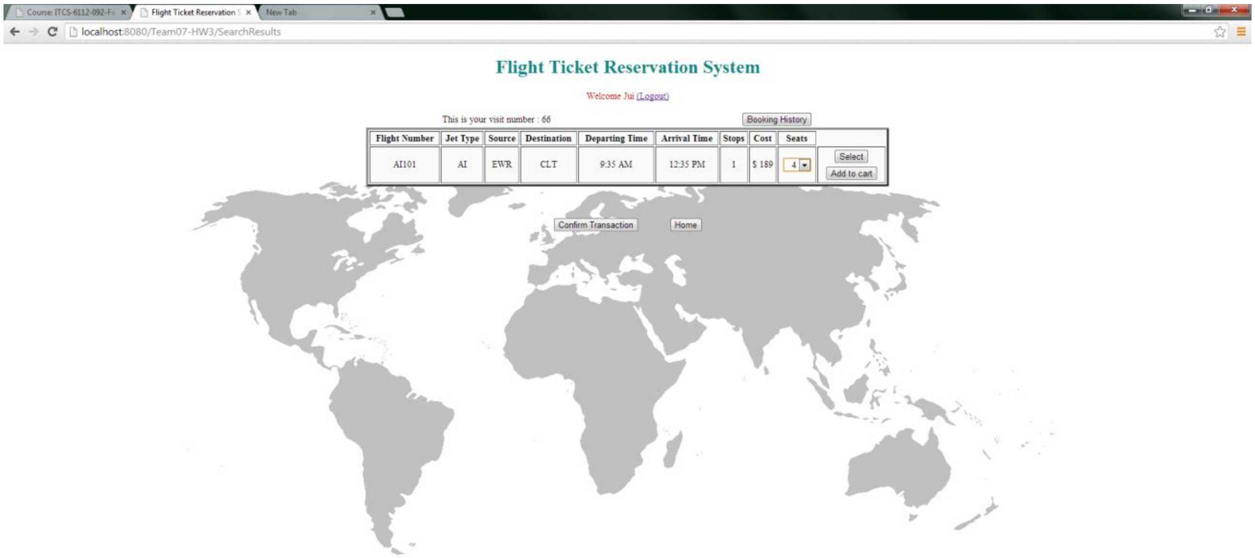
Flight Ticket Reservation System

Welcome Jui (Logout)

This is your visit number : 66

Search Result

Select option	Flight Number	Date	Source	Destination	Departure Time	Arrival Time	Stops	Cost
●	AI101	11/20/2013	EWR	CLT	9:35 AM	12:35 PM	1	$ 189
○	JA548	11/20/2013	EWR	CLT	10:45 AM	14:05 PM	0	$ 179

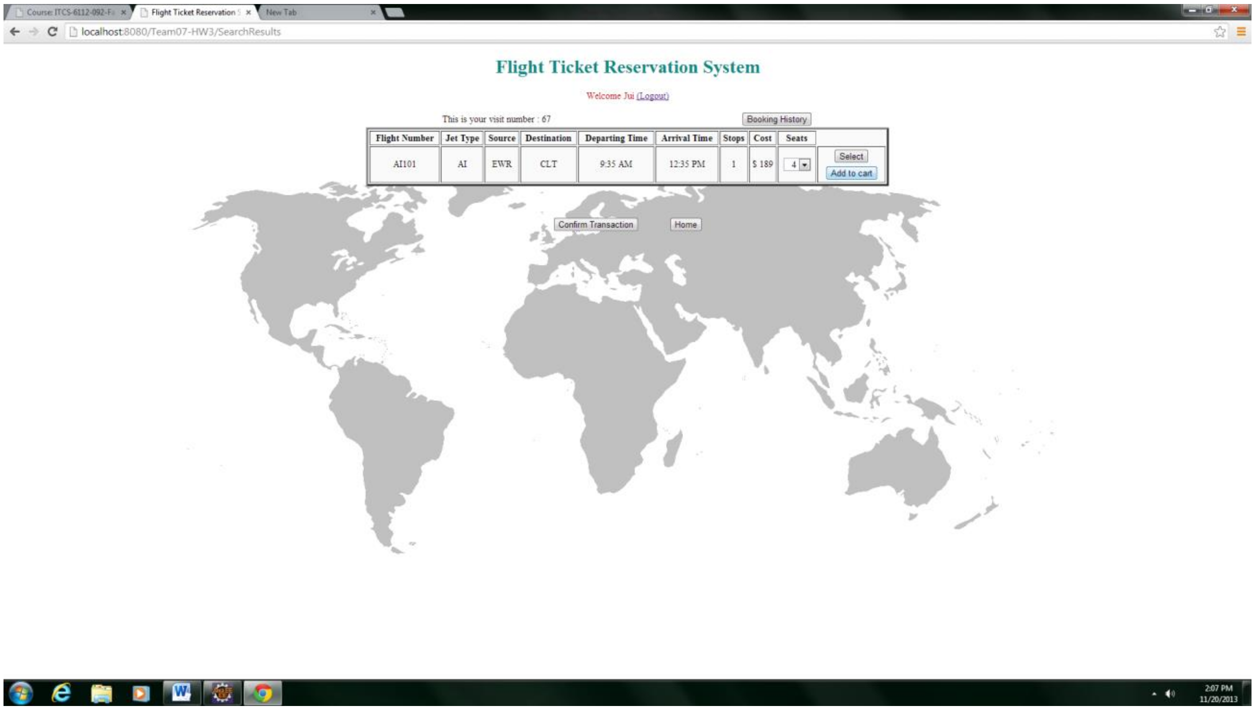

Course: ITCS-6112-092-F
Flight Ticket Reservation
New Tab
localhost:8080/Team07-HW3/SearchResults

Flight Ticket Reservation System

Welcome Jui (Logout)

This is your visit number : 66

Flight Number	Jet Type	Source	Destination	Departing Time	Arrival Time	Stops	Cost	Seats	
AI101	AI	EWR	CLT	9:35 AM	12:35 PM	1	$ 189	4	Select Add to cart

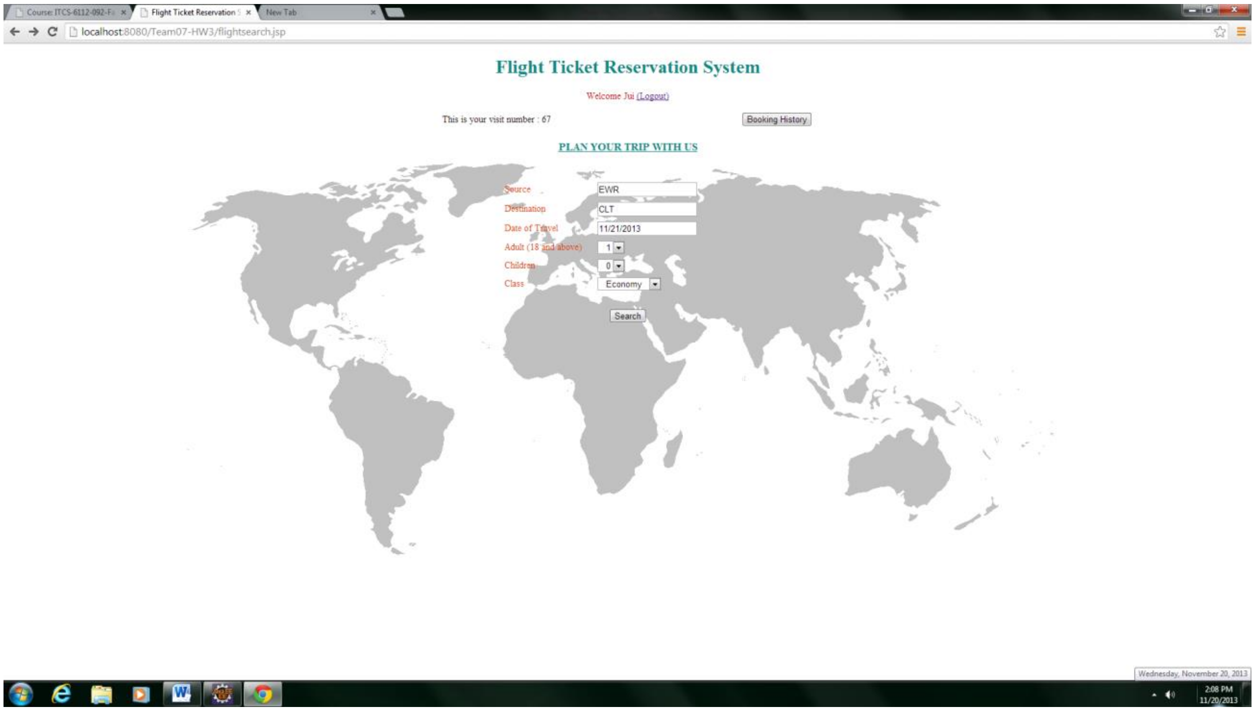


Flight Ticket Reservation System

Welcome Jui (Logout)

This is your visit number : 67

Flight Number	Jet Type	Source	Destination	Departing Time	Arrival Time	Stops	Cost	Seats	
AI101	AI	EWR	CLT	9:35 AM	12:35 PM	1	$ 189	4	Select Add to cart



Course: ITCS-6112-092-F
Flight Ticket Reservation S
New Tab
localhost:8080/Team07-HW3/flightsearch.jsp
Booking History
Search
Wednesday, November 20, 2013
2:08 PM
11/20/2013

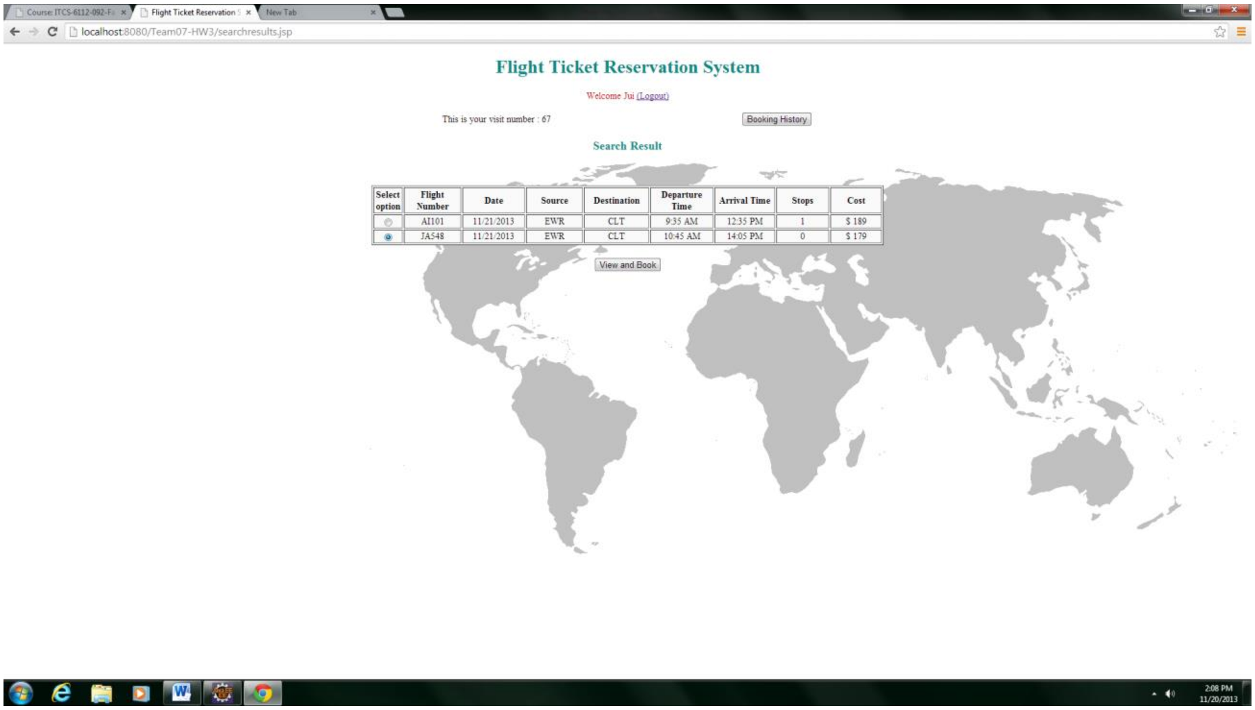
Flight Ticket Reservation System

Welcome Jui (Logout)

This is your visit number : 67

PLAN YOUR TRIP WITH US

Source	EWR
Destination	CLT
Date of Travel	11/21/2013
Adult (18 and above)	1
Children	0
Class	Economy



localhost:8080/Team07-HW3/searchresults.jsp

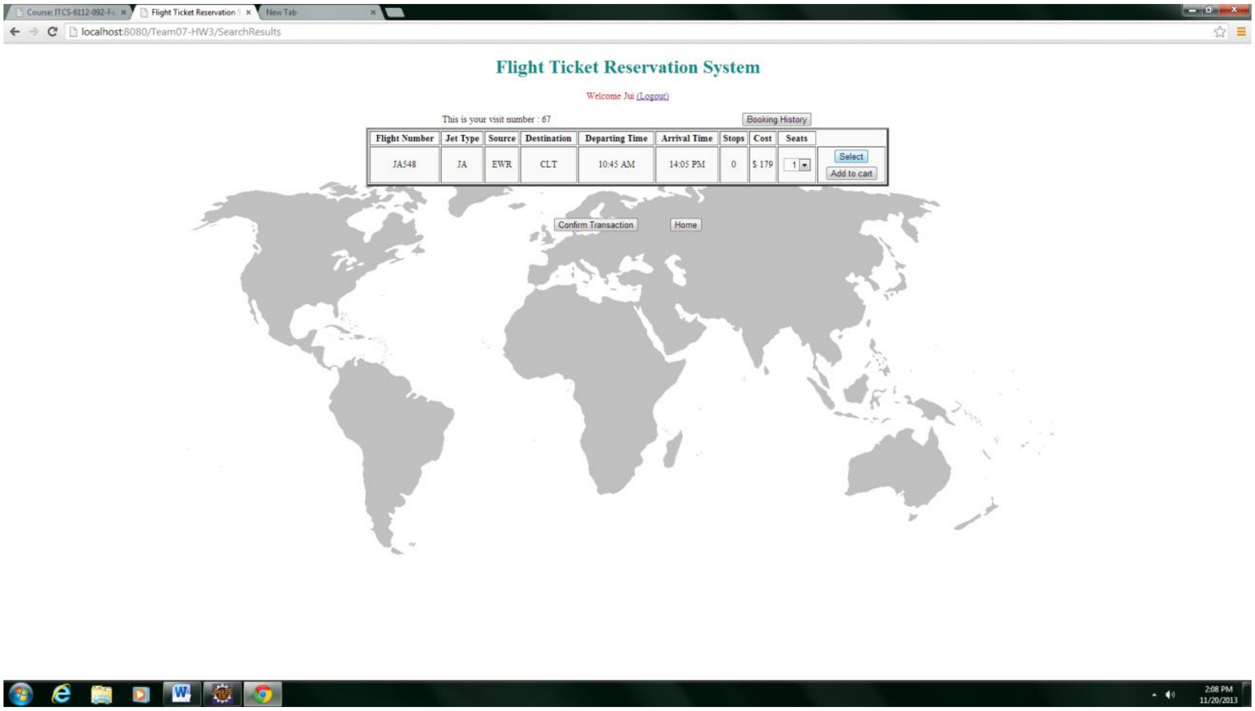
Flight Ticket Reservation System

Welcome Jui (Logout)

This is your visit number : 67

Search Result

Select option	Flight Number	Date	Source	Destination	Departure Time	Arrival Time	Stops	Cost
○	AI101	11/21/2013	EWR	CLT	9:35 AM	12:35 PM	1	$ 189
●	JA548	11/21/2013	EWR	CLT	10:45 AM	14:05 PM	0	$ 179



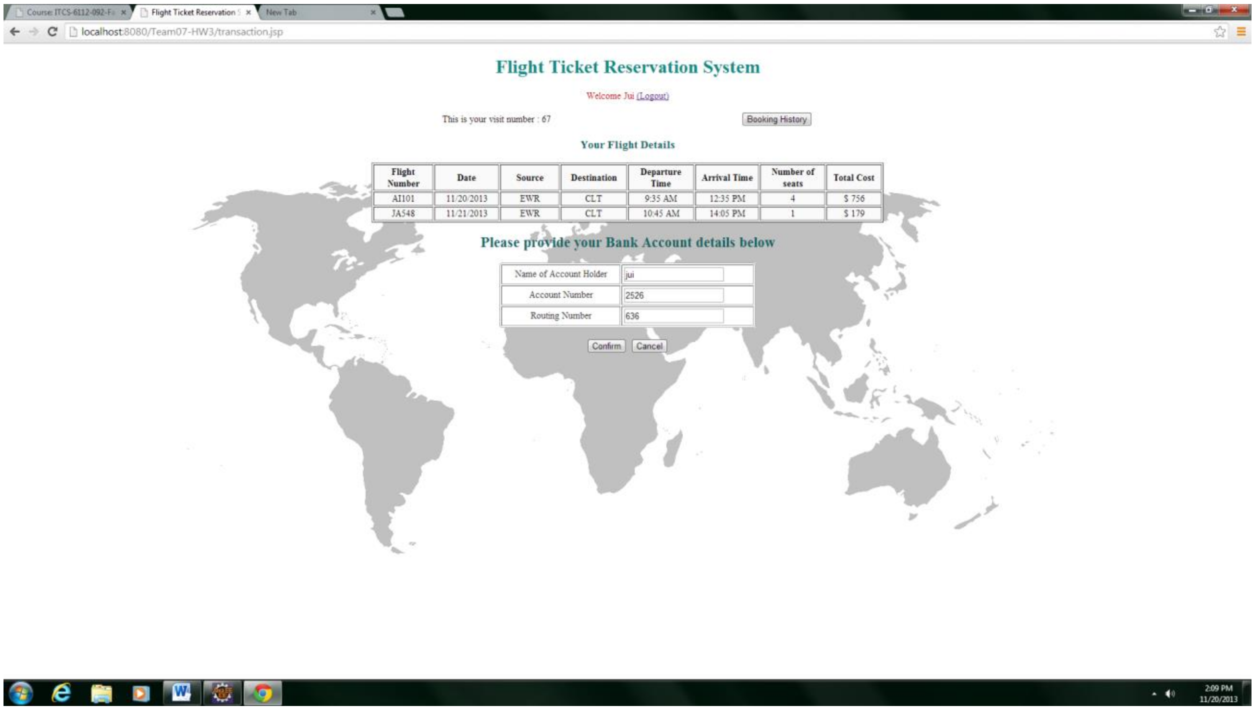
localhost:8080/Team07-HW3/SearchResults

Flight Ticket Reservation System

Welcome Jui (Logout)

This is your visit number : 67

Flight Number	Jet Type	Source	Destination	Departing Time	Arrival Time	Stops	Cost	Seats	
JA548	JA	EWR	CLT	10:45 AM	14:05 PM	0	$ 179	1	Select Add to cart


Course: ITCS-6112-092-F
Flight Ticket Reservation
New Tab
localhost:8080/Team07-HW3/transaction.jsp
2:09 PM
11/20/2013

Flight Ticket Reservation System

Welcome Jui (Logout)

This is your visit number : 67

Booking History

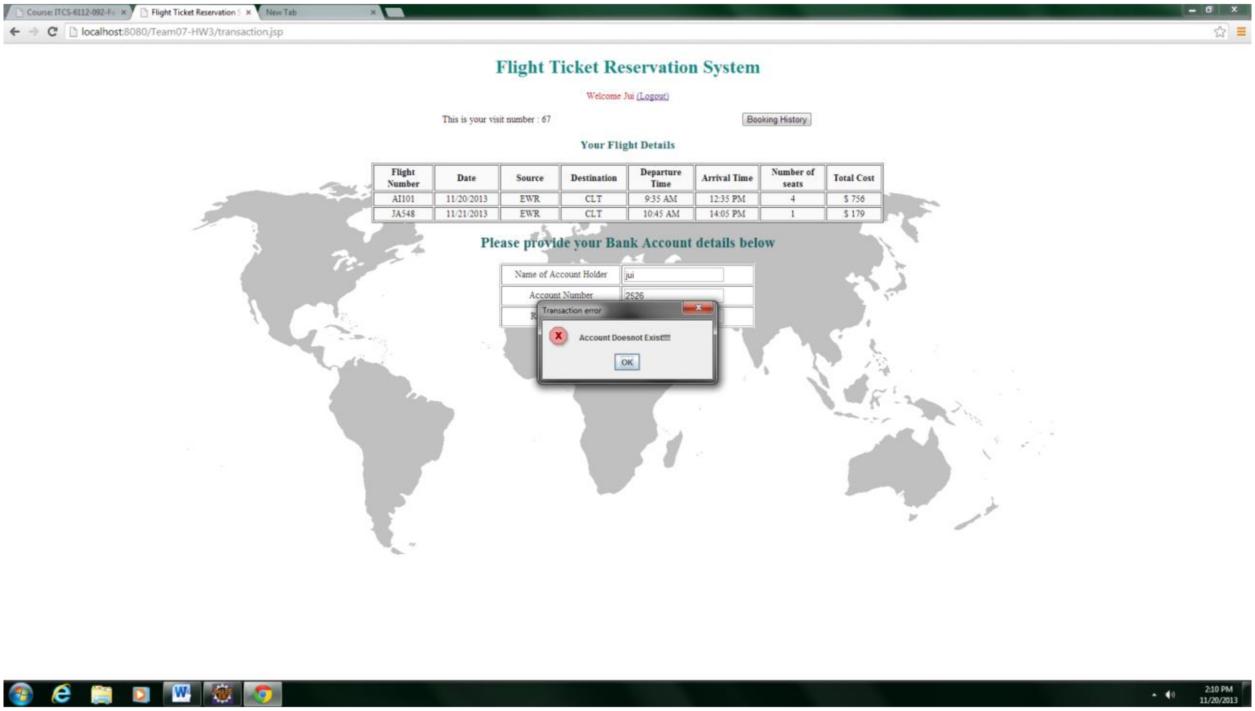
Your Flight Details

Flight Number	Date	Source	Destination	Departure Time	Arrival Time	Number of seats	Total Cost
AI101	11/20/2013	EWR	CLT	9:35 AM	12:35 PM	4	$ 756
JA548	11/21/2013	EWR	CLT	10:45 AM	14:05 PM	1	$ 179

Please provide your Bank Account details below

Name of Account Holder	jui
Account Number	2526
Routing Number	636

Confirm Cancel


Course: ITCS-6112-092-F
Flight Ticket Reservation
New Tab
localhost:8080/Team07-HW3/transaction.jsp
2:10 PM
11/20/2013

Flight Ticket Reservation System

Welcome Jui (Logout)

This is your visit number : 67

Booking History

Your Flight Details

Flight Number	Date	Source	Destination	Departure Time	Arrival Time	Number of seats	Total Cost
AI101	11/20/2013	EWR	CLT	9:35 AM	12:35 PM	4	$ 756
JA548	11/21/2013	EWR	CLT	10:45 AM	14:05 PM	1	$ 179

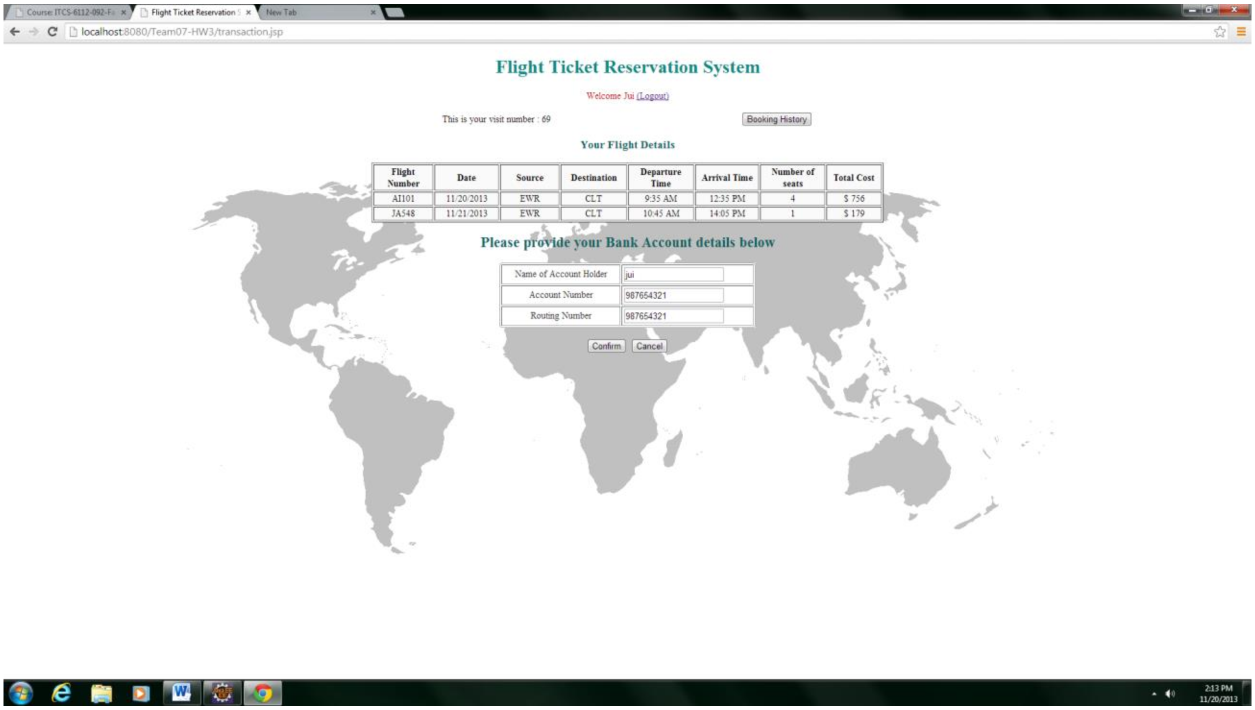
Please provide your Bank Account details below

Name of Account Holder	jui
Account Number	2526
R	

Transaction error

Account Doesnot Exist!!!!

OK


Course: ITCS-6112-092-Fa
Flight Ticket Reservation S
New Tab
localhost:8080/Team07-HW3/transaction.jsp
2:13 PM
11/20/2013

Flight Ticket Reservation System

Welcome Jui (Logout)

This is your visit number : 69

Booking History

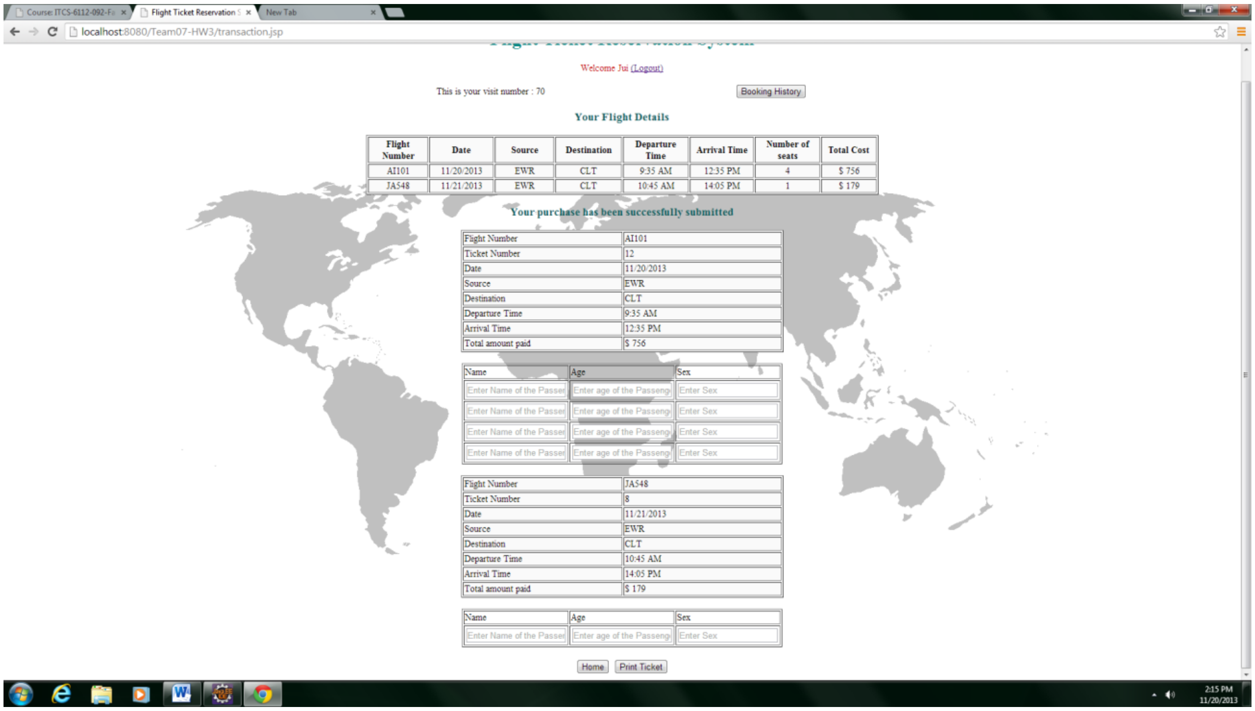
Your Flight Details

Flight Number	Date	Source	Destination	Departure Time	Arrival Time	Number of seats	Total Cost
AI101	11/20/2013	EWR	CLT	9:35 AM	12:35 PM	4	$ 756
JA548	11/21/2013	EWR	CLT	10:45 AM	14:05 PM	1	$ 179

Please provide your Bank Account details below

Name of Account Holder	jui
Account Number	987654321
Routing Number	987654321

Confirm Cancel


Course: ITCS-6112-092-Fa
Flight Ticket Reservation S
New Tab
localhost:8080/Team07-HW3/transaction.jsp
2:15 PM
11/20/2013

Welcome Jui (Logout)

This is your visit number : 70

Booking History

Your Flight Details

Flight Number	Date	Source	Destination	Departure Time	Arrival Time	Number of seats	Total Cost
AI101	11/20/2013	EWR	CLT	9:35 AM	12:35 PM	4	$ 756
JA548	11/21/2013	EWR	CLT	10:45 AM	14:05 PM	1	$ 179

Your purchase has been successfully submitted

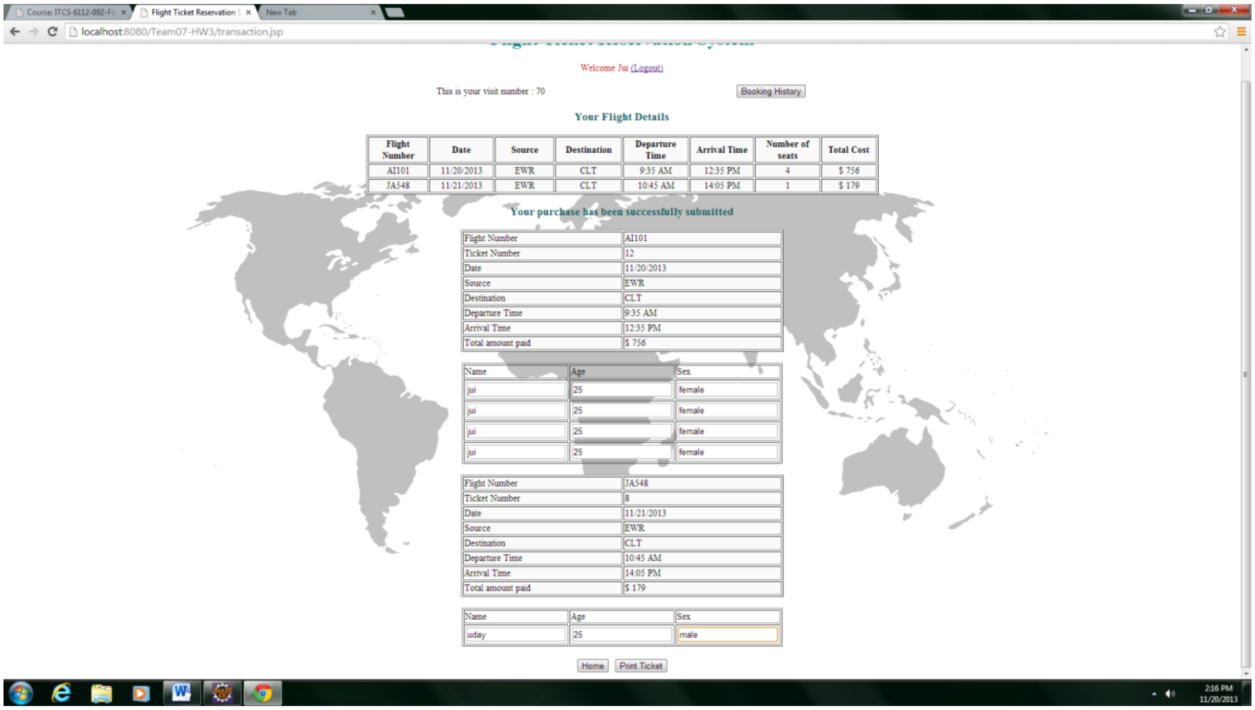
Flight Number	AI101
Ticket Number	12
Date	11/20/2013
Source	EWR
Destination	CLT
Departure Time	9:35 AM
Arrival Time	12:35 PM
Total amount paid	$ 756

Name	Age	Sex
Enter Name of the Passer	Enter age of the Passeng	Enter Sex
Enter Name of the Passer	Enter age of the Passeng	Enter Sex
Enter Name of the Passer	Enter age of the Passeng	Enter Sex
Enter Name of the Passer	Enter age of the Passeng	Enter Sex

Flight Number	JA548
Ticket Number	8
Date	11/21/2013
Source	EWR
Destination	CLT
Departure Time	10:45 AM
Arrival Time	14:05 PM
Total amount paid	$ 179

Name	Age	Sex
Enter Name of the Passer	Enter age of the Passeng	Enter Sex

Home Print Ticket


Course: ITCS-6112-092-Fa
Flight Ticket Reservation S
New Tab
localhost:8080/Team07-HW3/transaction.jsp
2:16 PM
11/20/2013

Welcome Jui (Logout)

This is your visit number : 70

Booking History

Your Flight Details

Flight Number	Date	Source	Destination	Departure Time	Arrival Time	Number of seats	Total Cost
AI101	11/20/2013	EWR	CLT	9:35 AM	12:35 PM	4	$ 756
JA548	11/21/2013	EWR	CLT	10:45 AM	14:05 PM	1	$ 179

Your purchase has been successfully submitted

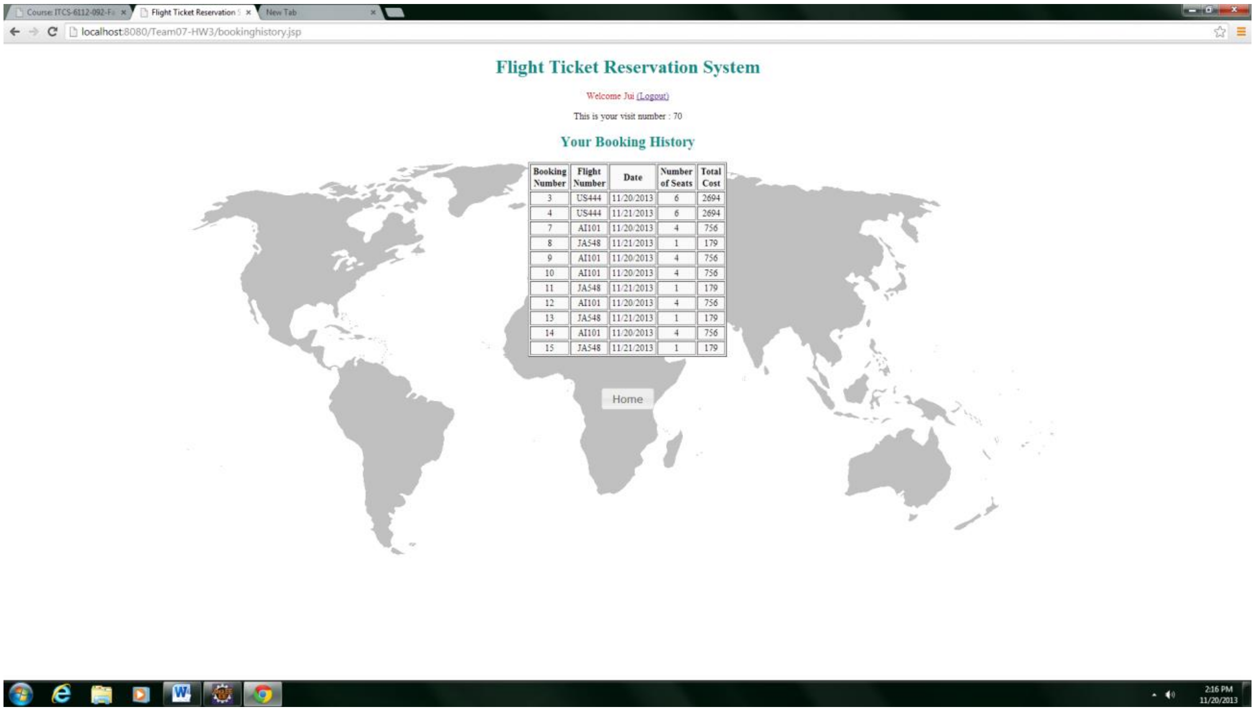
Flight Number	AI101
Ticket Number	12
Date	11/20/2013
Source	EWR
Destination	CLT
Departure Time	9:35 AM
Arrival Time	12:35 PM
Total amount paid	$ 756

Name	Age	Sex
jui	25	female
jui	25	female
jui	25	female
jui	25	female

Flight Number	JA548
Ticket Number	8
Date	11/21/2013
Source	EWR
Destination	CLT
Departure Time	10:45 AM
Arrival Time	14:05 PM
Total amount paid	$ 179

Name	Age	Sex
uday	25	male

Home Print Ticket


Course: ITCS-6112-092-Fa
Flight Ticket Reservation S
New Tab
localhost:8080/Team07-HW3/bookinghistory.jsp
2:16 PM
11/20/2013

Flight Ticket Reservation System

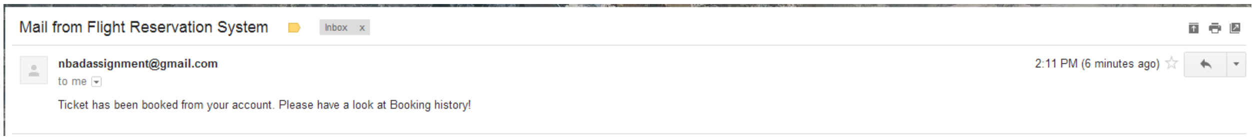
Welcome Jui (Logout)

This is your visit number : 70

Your Booking History

Booking Number	Flight Number	Date	Number of Seats	Total Cost
3	US444	11/20/2013	6	2694
4	US444	11/21/2013	6	2694
7	AI101	11/20/2013	4	756
8	JA548	11/21/2013	1	179
9	AI101	11/20/2013	4	756
10	AI101	11/20/2013	4	756
11	JA548	11/21/2013	1	179
12	AI101	11/20/2013	4	756
13	JA548	11/21/2013	1	179
14	AI101	11/20/2013	4	756
15	JA548	11/21/2013	1	179

Home



Mail from Flight Reservation System

nbadassignment@gmail.com

to me

2:11 PM (6 minutes ago)

Ticket has been booked from your account. Please have a look at Booking history!