

AIRLINE MANAGEMENT SOFTWARE

TEST PLAN

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Group No. 49

INTRODUCTION

Objectives:

This software test plan is aimed at verifying the functionality and correct working of every aspect and part of the software. This testing is done to ensure that on completion , the software is foolproof and does not have errors .

Testing Strategy:

Testing is the process of analyzing a software item to detect the differences between existing and required conditions and to evaluate the features of the software item.

Test plan components include:

- Purpose for the test
- Pass / Fail criteria,
- Hardware / software requirements

Scope:

Testing is a continuous process which happens at many stages during a software creation process .

Hence testing is very important and should **not be ignored** .

TESTS

Unit Testing:

Each unit is tested thoroughly and independently to make sure it has no error . These tests have been performed and the screenshots are shown below.

Integration Testing

All of the above units has been integrated together and tested for consistency. The data flow from one unit to another has been verified.

Interface Testing:

The software has been tested on machines with different configurations(for example computers with different operating systems like Windows or Linux) and the functionality of the interface has been verified.

Security Testing:

The software should be secure . The password encryption and the way the data is stored and backed up should be consistently checked .

Recovery Testing:

If the software crashes , data should be recovered . This should be tested by ensuring that the backup data is safe and secure .

Use Case Testing:

This is the testing for bad inputs .

- if during login or signup details were left blank or wrongly entered , then appropriate error message is shown .
- if details entered were wrong or in the wrong format , error message is shown.

Alpha Testing:

The software was tested by 2 students other than the creators to ensure it was working correctly .

Stress Testing:

The software was subjected to simultaneous logins from different machines and the functionality of the software was tested in this situation. The response times were observed and was ensured that they were not very much.

PASS / FAIL CRITERIA

Failing Criteria:

The test is considered failed if any of the following is encountered:-

- The software crashes
- It results in wrong output

Passing Criteria

The test is considered passed if any of the following is encountered:-

- The correct results are obtained

ENVIRONMENTAL REQUIREMENTS

Hardware:

Working internet connection

Software:

The requirements for a client are:

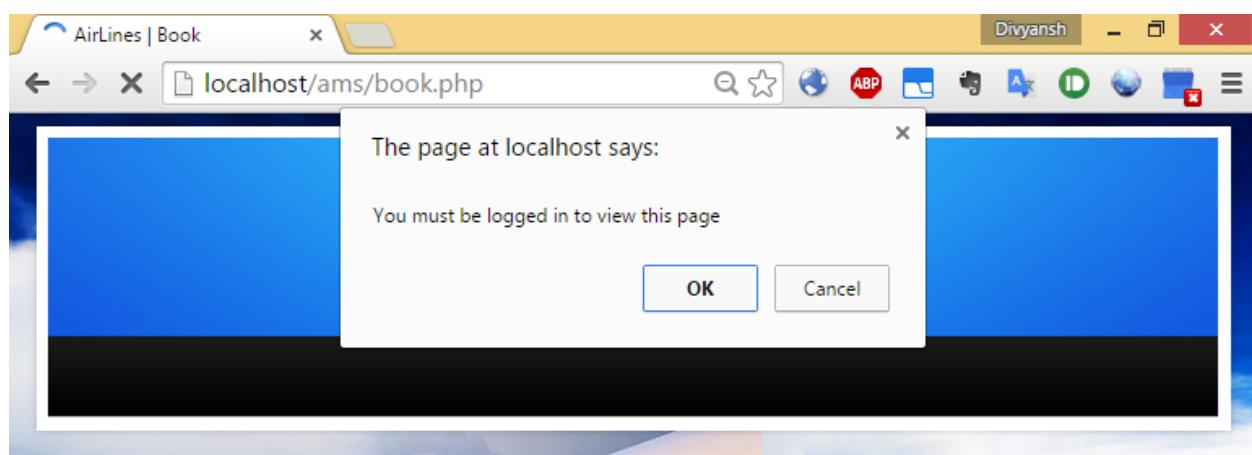
- Operating System:- Windows/ Linux
- Html/CSS/Javascript

The server should have:

- Apache
- PHP
- Mysql

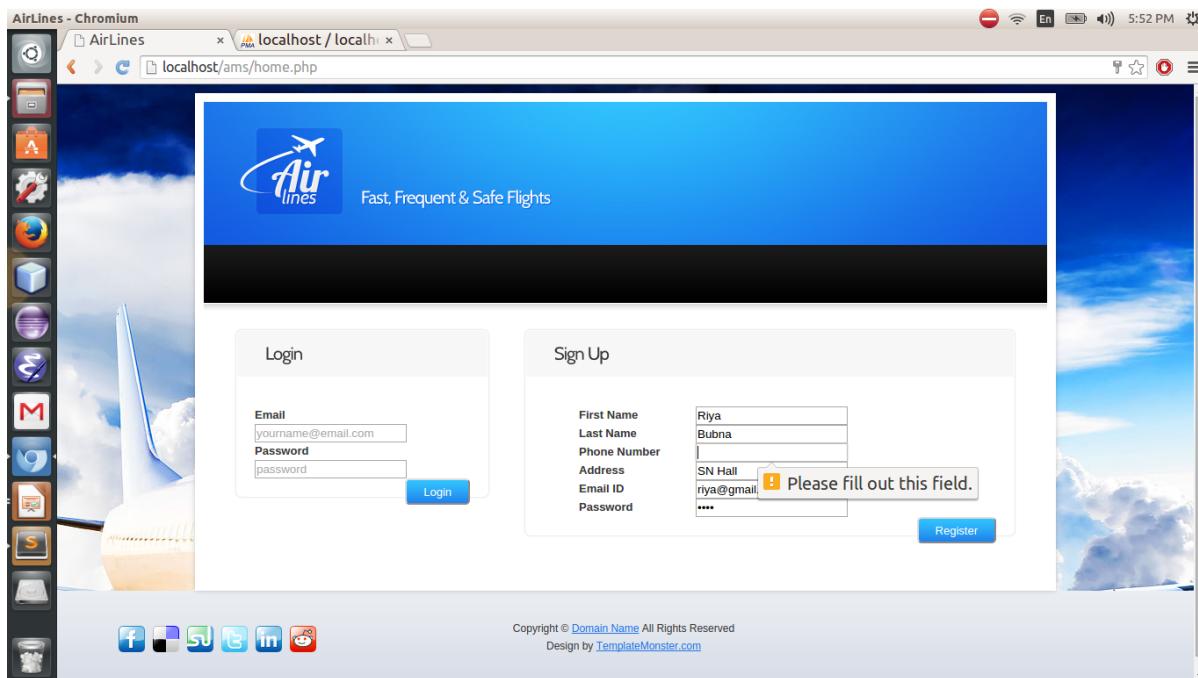
HOMEPAGE :

A user must be logged in to have access to the website. Trying to go to any page using the url directly prompts the user to login in/sign up and directs the user to the homepage.



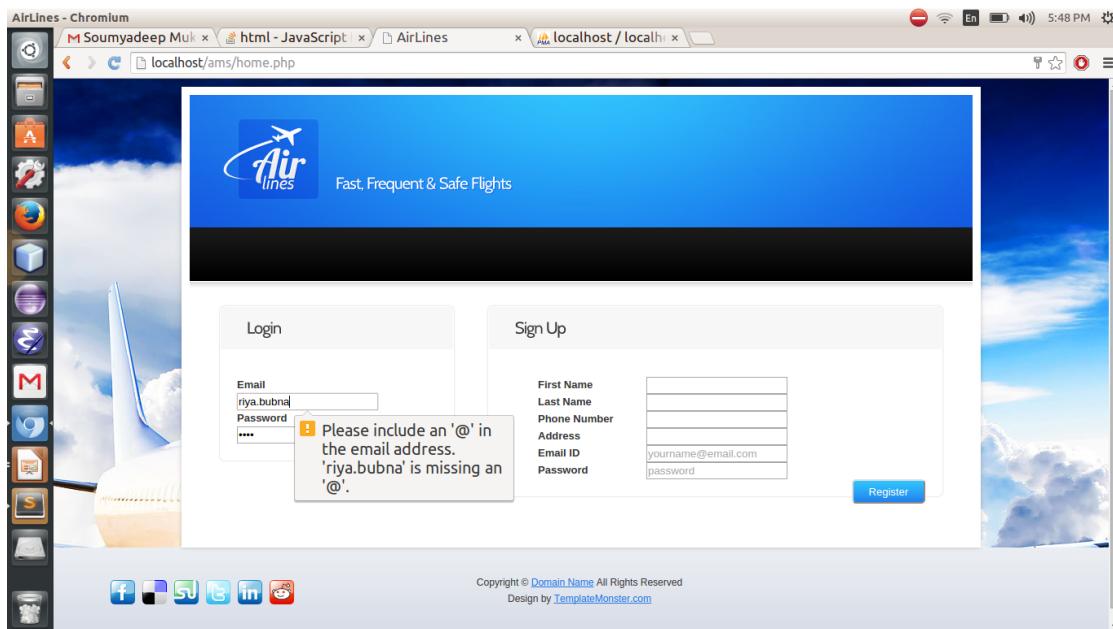
SIGN UP:

All fields need to be filled up while creating an account, else the user is prompted to enter a value in that field.



LOGIN:

In the input box to enter the email-id of the user, a proper email-id is necessary, else the user is prompted to re-check the value entered and correct it.



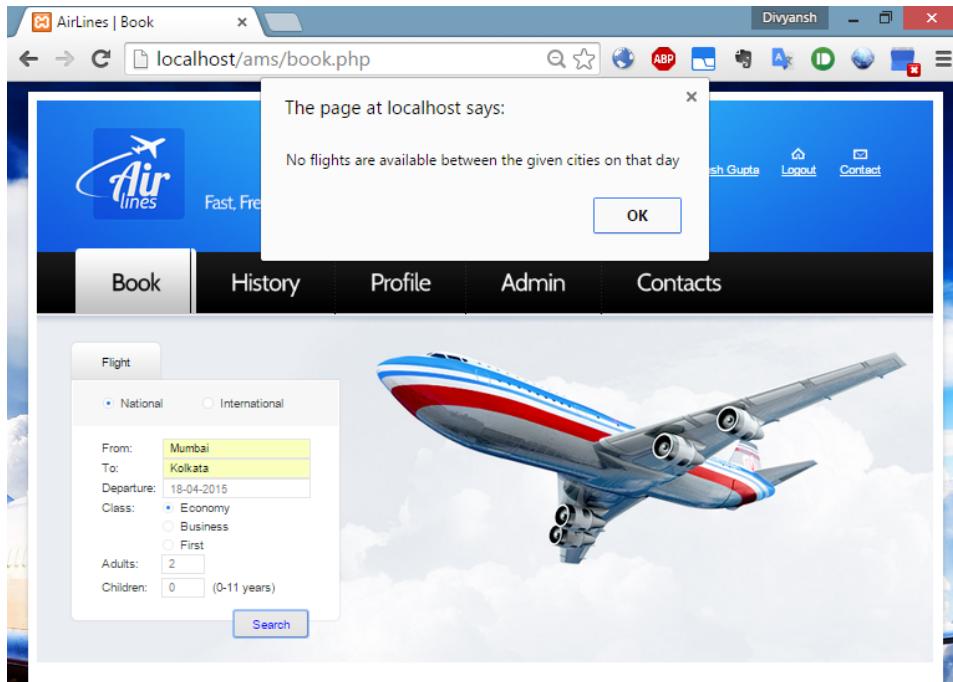
PRIMARY USER:

Search For Flights:

After logging in, the user can fill a form to search for flights.

The screenshot shows a web browser window titled "Airlines | Book" with the URL "localhost/ams/book.php". The page is titled "Fast, Frequent & Safe Flights" and features a logo with a stylized airplane and the word "Airlines". At the top right, it says "Logged in as Divyansh Gupta" with links for "Logout" and "Contact". A navigation bar at the top includes "Book", "History", "Profile", "Admin", and "Contacts", with "Book" being the active tab. The main content area has a large image of a Boeing 747 aircraft in flight. On the left, there's a "Flight" search form with fields for "From" (Mumbai), "To" (Kolkata), "Departure" (16-04-2015), and a date picker showing April 2015. The date 15 is selected. There are also fields for "Class", "Adults", and "Children". Below the form is a "Hot Offers" section.

If the primary user tries to search for flights which aren't scheduled , then the user is prompted that such a flight isn't available. The user is directed back to the booking page to search for other flights.



Booking A Flight:

When a flight exists for a flight searched by the user, all the existing flights which satisfy his requirements are displayed with the option of booking the flight of his choice. The sql query used to display the flights on being searched is shown below:

```
mysql -u sqldadmin -p
mysql> SELECT starttime, endtime, firstavl, bizavl, econavl FROM flights WHERE startcity = 'Mumbai' AND endcity = 'Kolkata' AND starttime LIKE '2015-04-16%' ORDER BY starttime ASC;
+-----+-----+-----+-----+
| starttime | endtime | firstavl | bizavl | econavl |
+-----+-----+-----+-----+
| 2015-04-16 11:58:00 | 2015-04-16 14:00:00 | 5 | 10 | 15 |
| 2015-04-16 15:01:00 | 2015-04-16 18:00:00 | 5 | 10 | 15 |
+-----+-----+-----+-----+
2 rows in set (0.00 sec)

mysql>
```

The seat numbers available are also displayed. If the user chooses seats of his choice, the user is prompted that some X amount will be deducted from his account. Otherwise, random seat numbers(the first seat numbers which haven't been booked yet) are allotted to the user.

A screenshot of a web browser window titled "AirLines | Services". The URL in the address bar is "localhost/ams/search.php". The page header includes the "AirLines" logo, a tagline "Fast, Frequent & Safe Flights", and a user session message "Logged in as Divyansh Gupta" with links for "Logout" and "Contact". Below the header is a navigation menu with tabs: Book, History, Profile, Admin, and Contacts. The "Book" tab is currently selected.

Hot Offers of the Week

- Kharagpur
 - [Midnapore](#) from INR 4000
 - [Mumbai](#) from INR 10000
 - [Singapore](#) from INR 20000
 - [Hyderabad](#) from INR 6000
 - [Stuttgart](#) from INR 42848
 - [Mumbai](#) from INR 10000
- Mumbai
 - [Kolkata](#) from INR 5000
 - [Kolkata](#) from INR 12000

Search Query

Flight details:
Start: Mumbai
Destination: Kolkata
Departure: 2015-04-16
Class: economy
Adults: 2
Children: 0

Search Results

Flight 1 (Departure: 11:58:00, Arrival: 14:00:00)
Timing Class Availability Seats Fare
11:58:00 Economy 15 18 ▾ 18 ▾ 12000
11:58:00 Business 10 6 ▾ 6 ▾ 25000
11:58:00 First 5 1 ▾ 1 ▾ 30000

Book

Flight 2 (Departure: 15:01:00, Arrival: 18:00:00)
Timing Class Availability Seats Fare
15:01:00 Economy 15 18 ▾ 18 ▾ 5000
15:01:00 Business 10 6 ▾ 6 ▾ 10000
15:01:00 First 5 1 ▾ 1 ▾ 20000

Book

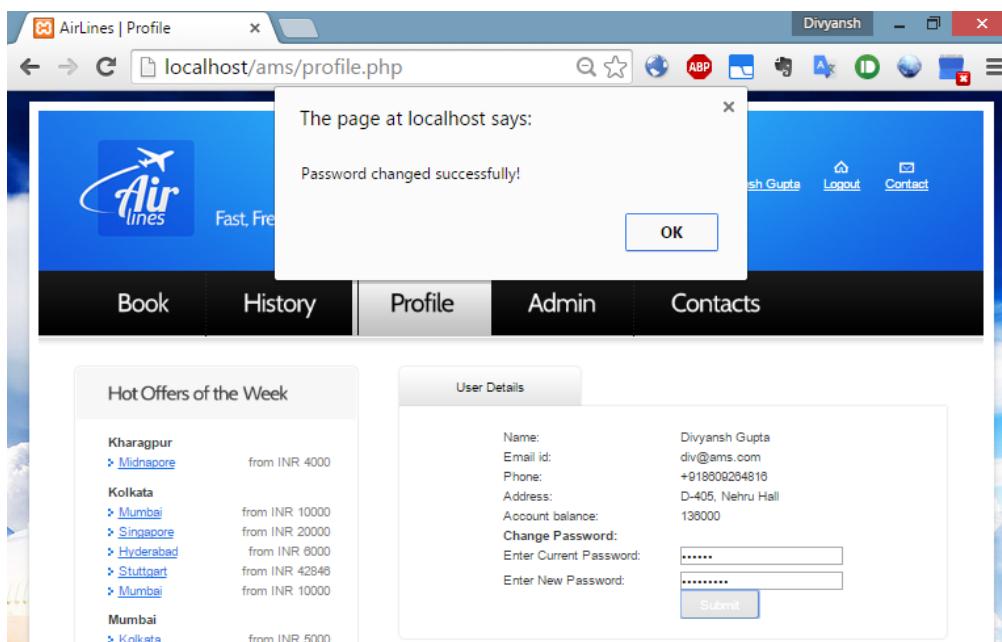
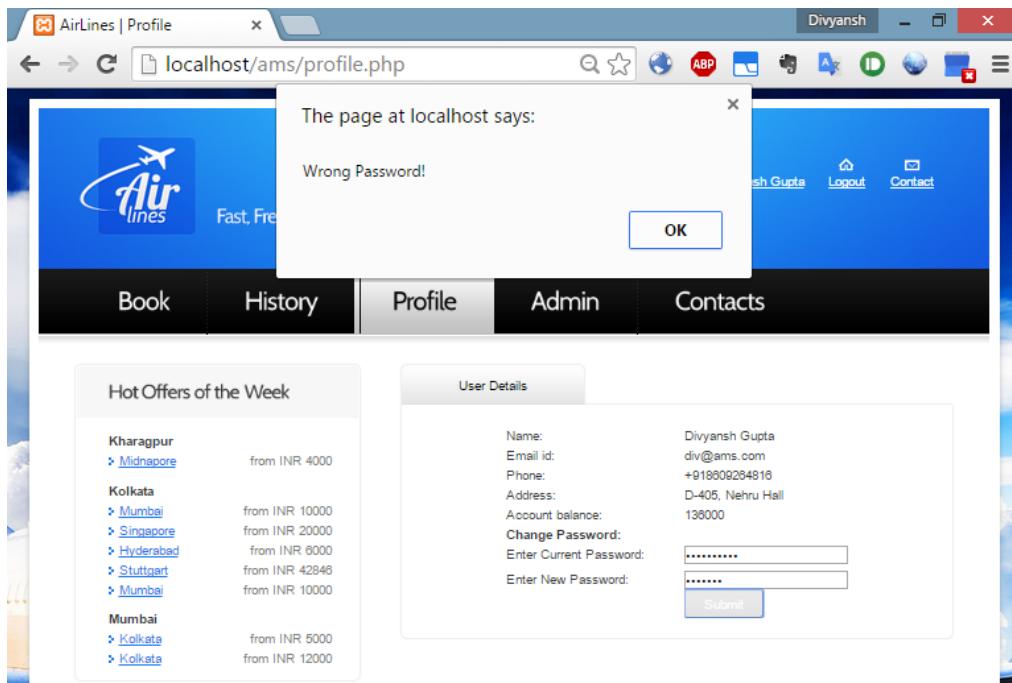
Footer

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Design by Riya Bubna

Social media icons: Facebook, Twitter, LinkedIn, YouTube, etc.

Change Password:

The user can change his password in the profile tab by entering the current password and the new password. If the current password is incorrect, an alert is shown. If it is correct, the password is changed.



Booking History:

Once the booking has been made, all the flights that have been booked by the user are visible in the history tab. The user here can modify or cancel his booking. The sql query used is also shown.

The screenshot shows a web browser window for 'AirLines | History' at 'localhost/ams/history.php'. The page features a blue header with the 'air lines' logo and the tagline 'Fast, Frequent & Safe Flights'. It includes navigation links for Book, History, Profile, Admin, and Contacts. A sidebar on the left lists 'Hot Offers of the Week' for Kharagpur, Kolkata, and Mumbai. The main content area displays a table titled 'Booked History' with the following data:

| From | Destination | Departure | Seats | Class | Amount |
|--------|-------------|------------------------|-------|---------|--------|
| Mumbai | Kolkata | 2015-04-16 15:01:00 | 2 | economy | 10000 |

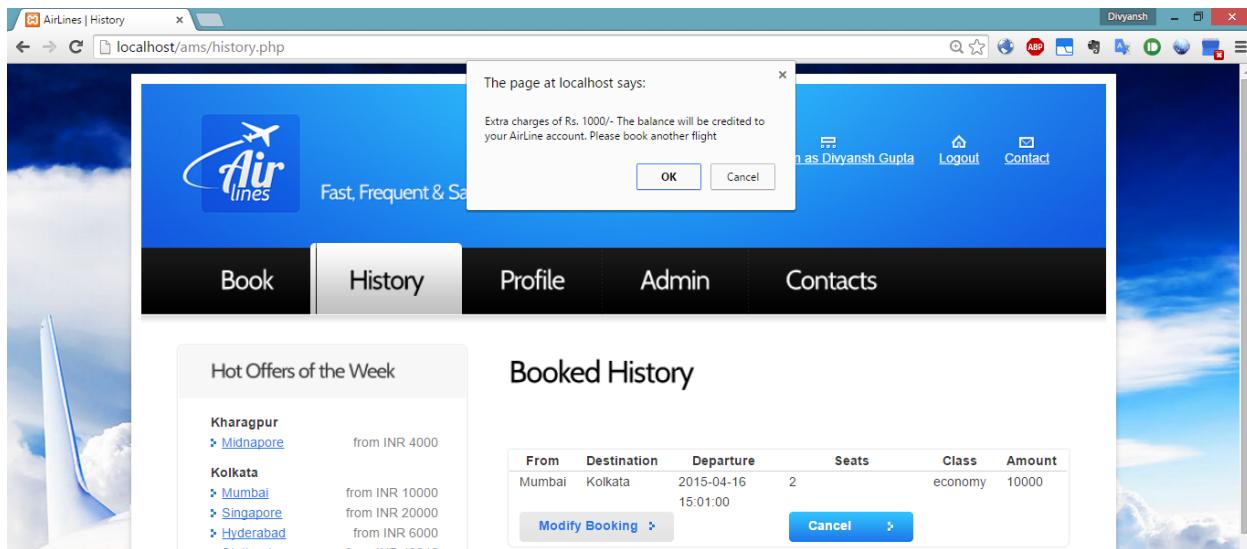
Buttons for 'Modify Booking' and 'Cancel' are located below the table. The footer contains social media icons and copyright information: 'Copyright © AirLines All Rights Reserved' and 'Design by Riya Bubna'.

```
mysql -u sqldadmin -p
mysql> SELECT flights.startcity AS startcity, flights.endcity AS endcity, flight
sstarttime AS starttime, bookings.quantity AS quantity, bookings.class AS class
, bookings.amount AS amount, bookings.id AS id FROM flights INNER JOIN bookings
ON bookings.flightid = flights.id WHERE bookings.userid = 4;
+-----+-----+-----+-----+-----+-----+
| startcity | endcity | starttime | quantity | class | amount | id |
+-----+-----+-----+-----+-----+-----+
| Mumbai | Kolkata | 2015-04-16 11:58:00 | 2 | economy | 24000 | 33 |
+-----+-----+-----+-----+-----+-----+
1 row in set (0.00 sec)

mysql>
```

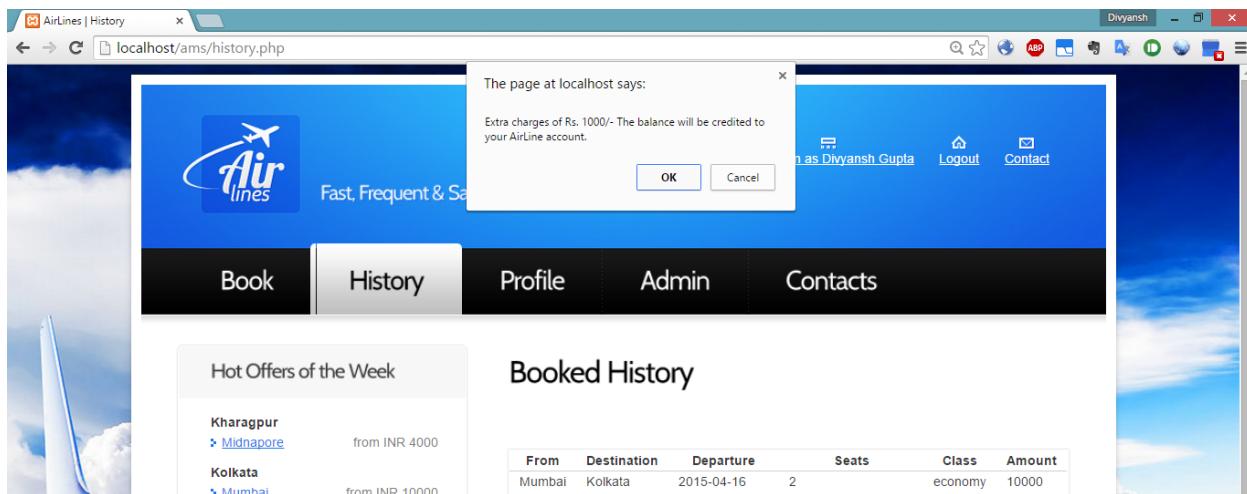
Modify Booking:

If a user wants to modify a booking, the booking of the flight to be modified is canceled, X amount is deducted from his account as Modifying Charges and rest of the balance is refunded. The user is directed to the booking page to book a new flight.



Cancel Booking:

If a user wants to cancel a booking, the booking of that flight is canceled, X amount is deducted from his account as Cancellation Charges and rest of the balance is refunded.



Offers:

On book, history and profile pages, the users are shown economy rates of flights that are yet to take off.

Hot Offers of the Week

Kharagpur
» [Midnapore](#) from INR 4000

Kolkata
» [Mumbai](#) from INR 10000
» [Singapore](#) from INR 20000
» [Hyderabad](#) from INR 6000
» [Stuttgart](#) from INR 42846
» [Mumbai](#) from INR 10000

Mumbai
» [Kolkata](#) from INR 5000
» [Kolkata](#) from INR 12000

The sql queries for this, are:

```
mysql -u sqladmin -p
+-----+-----+-----+-----+-----+
| startcity | starttime |
+-----+-----+
| Kharagpur | 2015-04-16 17:01:00 |
| Kolkata   | 2015-04-16 20:00:00 |
| Mumbai    | 2015-04-16 15:01:00 |
+-----+-----+
3 rows in set (0.01 sec)

mysql>
```

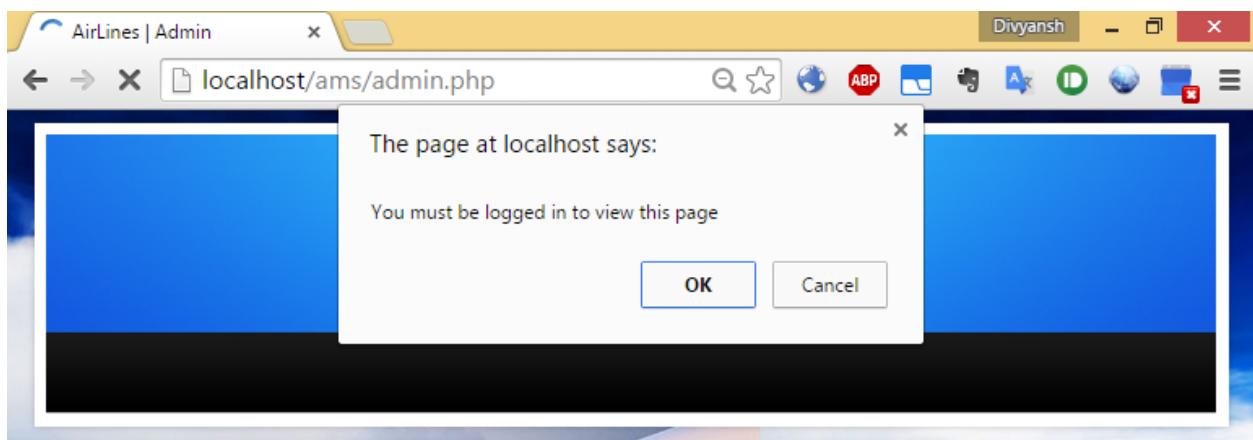
```
mysql -u sqladmin -p

mysql> SELECT endcity, econfare, starttime FROM flights WHERE startcity = 'Khara
gpur' HAVING DATE<starttime> > NOW();
+-----+-----+-----+
| endcity | econfare | starttime |
+-----+-----+-----+
| Midnapore | 4000 | 2015-04-16 17:01:00 |
+-----+-----+-----+
1 row in set (0.00 sec)

mysql>
```

SECONDARY USER:

The admin tab is visible only to a secondary user. If a primary user tries to access the admin page directly through the url, the user is prompted that to access the page, he needs to be an admin.



The admin panel gives the secondary user options to add flights, aircrafts, aircraft types, cancel flights, remove aircrafts, view occupancy rates or view profits.

The admin panel, as visible to a secondary user is shown below:

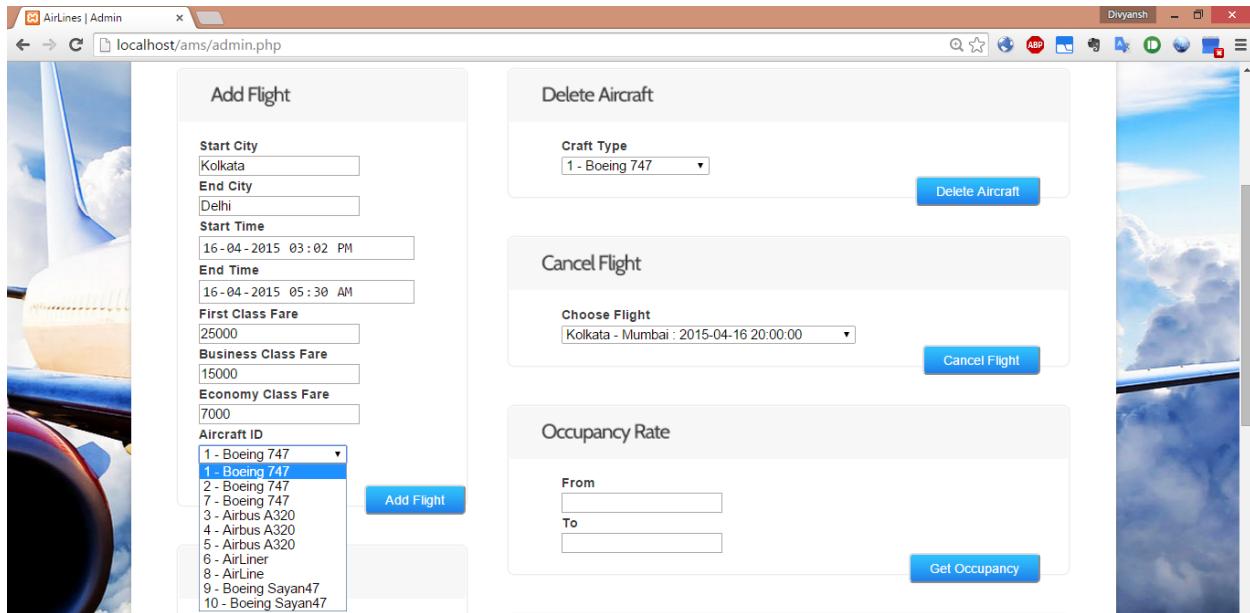
The screenshot shows the AirLines Admin panel interface. At the top, there is a header bar with the title "AirLines | Admin" and a user status message "Logged in as Divyansh Gupta". Below the header, there is a navigation menu with links for Book, History, Profile, Admin, and Contacts. The main content area contains several administrative modules:

- Add Flight:** Form fields for Start City, End City, Start Time (dd-mm-yyyy), End Time (dd-mm-yyyy), First Class Fare, Business Class Fare, Economy Class Fare, Aircraft ID (1 - Boeing 747), and a "Add Flight" button.
- Delete Aircraft:** Form field for Craft Type (1 - Boeing 747) and a "Delete Aircraft" button.
- Cancel Flight:** Form field for Choose Flight (Kolkata - Mumbai : 2015-04-16 20:00:00) and a "Cancel Flight" button.
- Occupancy Rate:** Form fields for From and To, and a "Get Occupancy" button.
- Profit:** Form fields for Start Time (dd-mm-yyyy) and End Time (dd-mm-yyyy), and a "Get Profit" button.
- Add Aircraft:** Form field for Craft Type (Boeing 747) and a "Add Aircraft" button.
- Add Aircraft Type:** Form fields for Name, First Class Capacity, Business Class Capacity, Economy Class Capacity, Cost Per KM, and Fixed Cost, and an "Add Type" button.

At the bottom of the page, there is a footer section with social media icons (Facebook, Twitter, LinkedIn, YouTube, etc.) and copyright information: "Copyright © AirLines All Rights Reserved" and "Design by Riya Bubna".

Add Flights:

In the form to add a new flight, a drop down menu is used which shows all the aircrafts of different possible types which exist. The admin chooses one of them and hence, adds a flight i.e. a trip of that particular aircraft between the given cities.



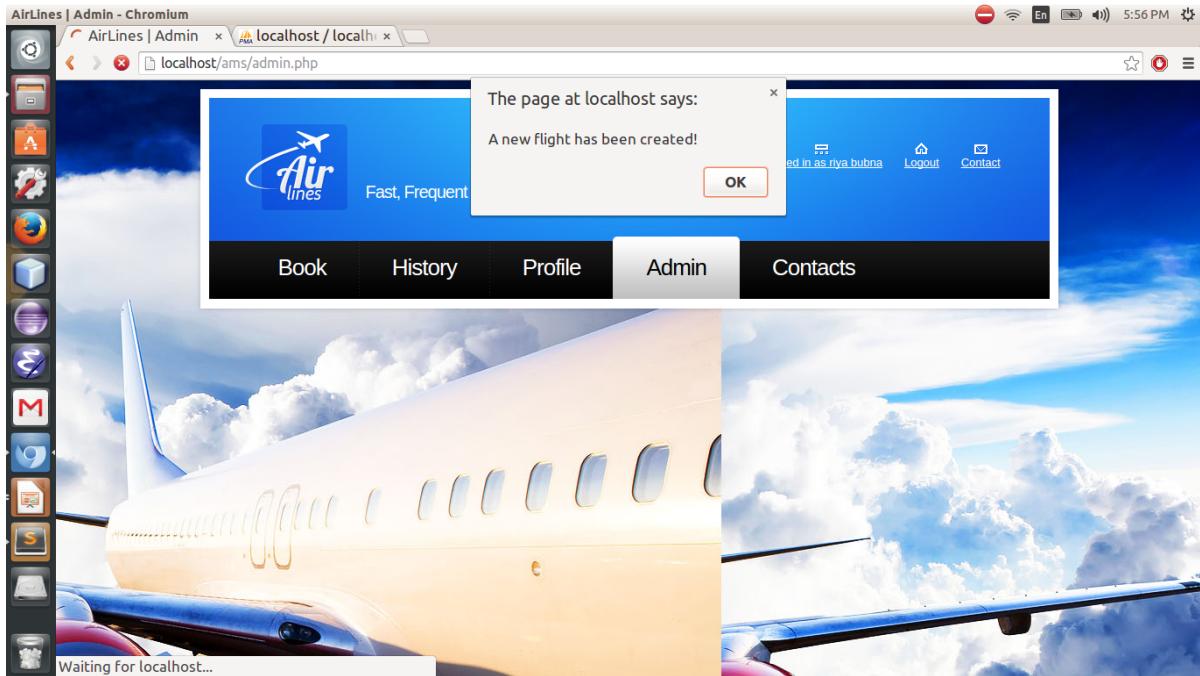
The sql query used for the drop down menu is shown below:

```
mysql -u sqldadmin -p
mysql> SELECT aircrafts.id AS aircraftid, types.name AS typename FROM aircrafts
INNER JOIN types ON aircrafts.typeid = types.id;
+-----+-----+
| aircraftid | typename |
+-----+-----+
| 1 | Boeing 747 |
| 2 | Boeing 747 |
| 7 | Boeing 747 |
| 3 | Airbus A320 |
| 4 | Airbus A320 |
| 5 | Airbus A320 |
| 6 | AirLiner |
| 8 | AirLine |
| 9 | Boeing Sayan47 |
| 10 | Boeing Sayan47 |
+-----+-----+
10 rows in set (0.00 sec)

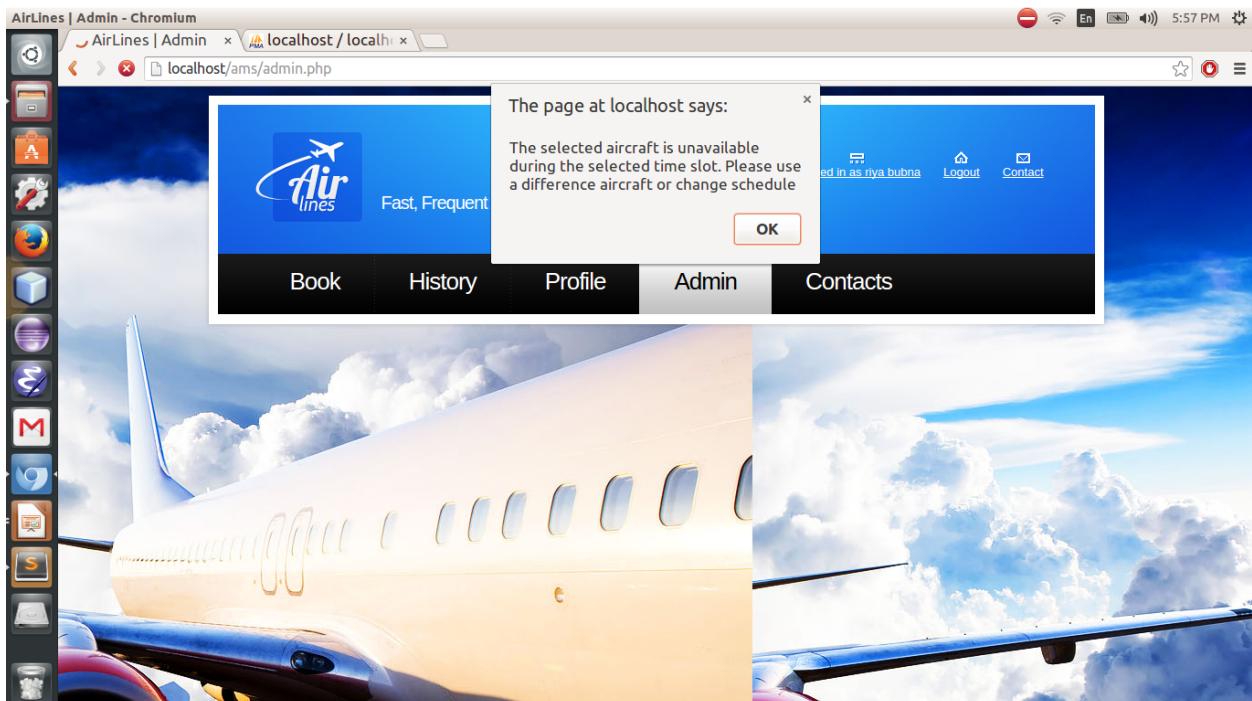
mysql>
```

When the admin fills all the details for the addition of a flight (if any field is left vacant, the admin is prompted to fill that field too, as in the login section) and submits the form, two possibilities exist.

- The selected aircraft may be available at that time. Hence, a new flight is created.

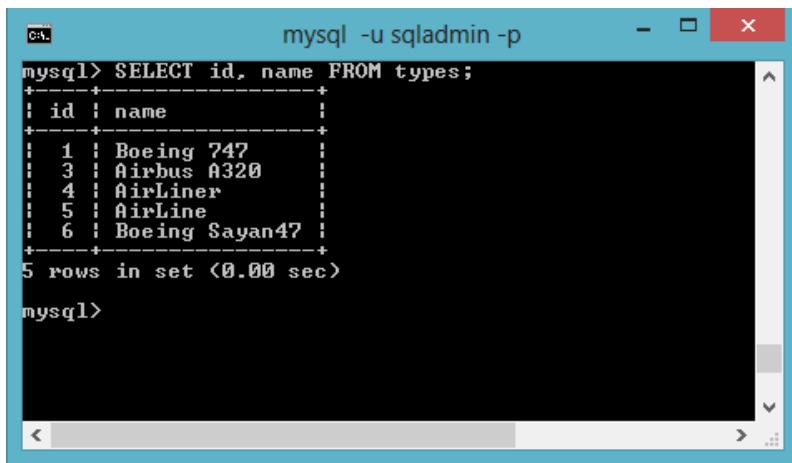


- The selected aircraft might have some other flight which intersects with the duration of the flight to be created i.e. the aircraft is unavailable. Hence, the flight cannot be created and a message is prompted to convey this to the secondary user.



Add Aircraft:

To add an aircraft, the secondary user needs to select a type of aircraft which he wants to add. The available types of aircrafts are shown to him in a drop down menu. The sql query for the menu is shown below:



```
mysql -u sqladmin -p
mysql> SELECT id, name FROM types;
+----+-----+
| id | name |
+----+-----+
| 1  | Boeing 747 |
| 3  | Airbus A320 |
| 4  | AirLiner |
| 5  | AirLine |
| 6  | Boeing Sayan47 |
+----+-----+
5 rows in set (0.00 sec)

mysql>
```

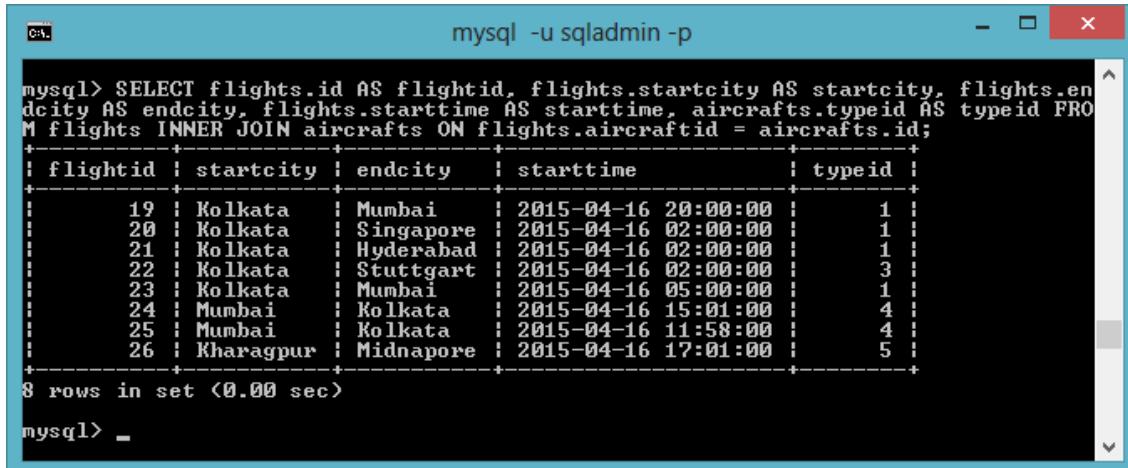
Add Aircraft Type:

A user can add a new type of aircraft. He can fix the rates of all the three classes, the cost per km and the fixed cost according to his choice.

No field must be left vacant, else an appropriate message is generated and the user is prompted to fill that field (as shown in the login section).

Delete Flight:

To delete a flight, the user needs to select the flight he wants to delete from the drop down menu. All bookings of that flight are cancelled and the amount is refunded to the accounts of the users' who had a booking in that flight. An sql query for the dropdown is:

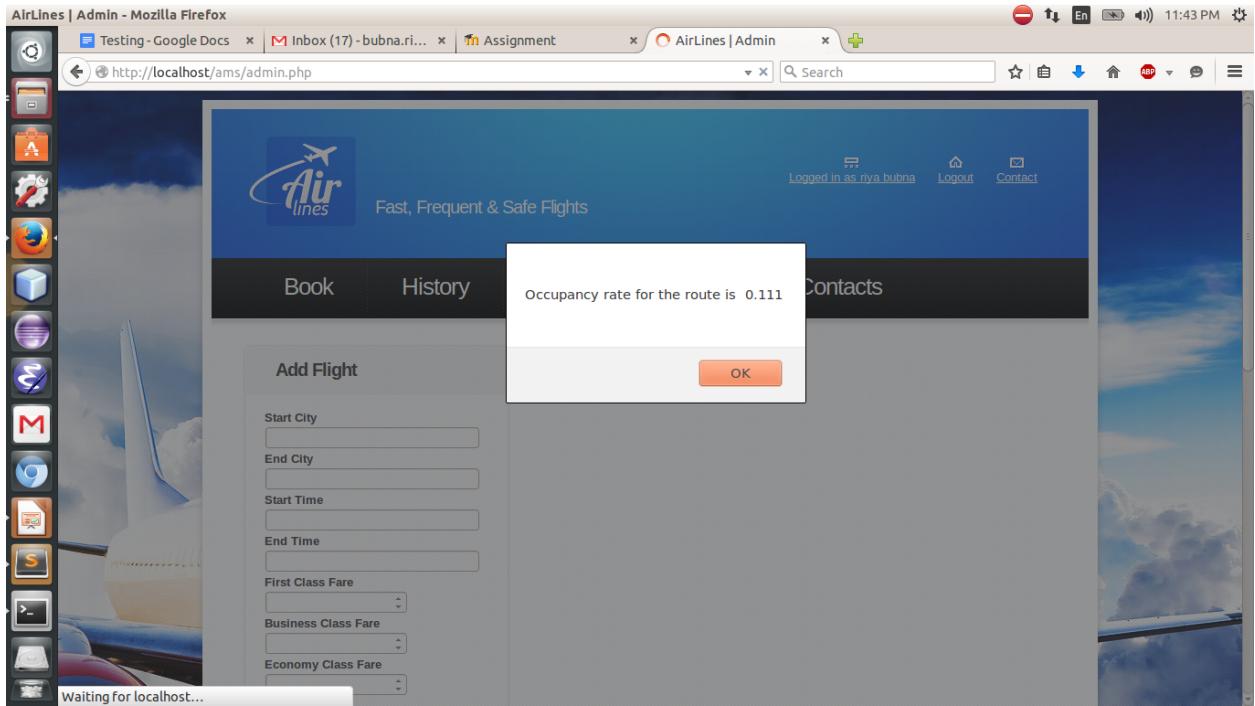


```
mysql -u sqladmin -p
mysql> SELECT flights.id AS flightid, flights.startcity AS startcity, flights.endcity AS endcity, flights starttime AS starttime, aircrafts.typeid AS typeid FROM flights INNER JOIN aircrafts ON flights.aircraftid = aircrafts.id;
+----+-----+-----+-----+-----+
| flightid | startcity | endcity | starttime | typeid |
+----+-----+-----+-----+-----+
| 19 | Kolkata | Mumbai | 2015-04-16 20:00:00 | 1 |
| 20 | Kolkata | Singapore | 2015-04-16 02:00:00 | 1 |
| 21 | Kolkata | Hyderabad | 2015-04-16 02:00:00 | 1 |
| 22 | Kolkata | Stuttgart | 2015-04-16 02:00:00 | 3 |
| 23 | Kolkata | Mumbai | 2015-04-16 05:00:00 | 1 |
| 24 | Mumbai | Kolkata | 2015-04-16 15:01:00 | 4 |
| 25 | Mumbai | Kolkata | 2015-04-16 11:58:00 | 4 |
| 26 | Kharagpur | Midnapore | 2015-04-16 17:01:00 | 5 |
+----+-----+-----+-----+-----+
8 rows in set (0.00 sec)

mysql>
```

Occupancy Rate:

The user enters the route for which he wants to find the occupancy rate and a popup displays it.



Net Profit:

The user enters the time period for which he wants to calculate the profit, the formula is:

$$(\text{Total amount earned from bookings}) - (\text{Total kms travelled}) * (\text{cost per km}) + (\text{Fixed Cost})$$

A popup displays the profit.