Airline Seat Reservation System

1. Business Scenario

Divyam Airline is a newly opened airline company. It provides [air transport services](http://en.wikipedia.org/wiki/Civil_aviation) for [traveling](http://en.wikipedia.org/wiki/Travel) [passengers](http://en.wikipedia.org/wiki/Passenger) for domestic flights. Currently Divyam Airline is using a manual system for ticket reservation, ticket cancellation, changing the status of the tickets, giving information to the passengers about the tickets. The manual system was working fine when it was dealing less number of passengers.

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But, nowadays numbers of passengers are increasing day by day; also numbers of flights are increasing. So it has become very difficult for staff members to maintain the details about the seats and flights properly. It is facing problems in terms of seat reservation for passengers. The customers or passengers fill forms manually and submit to the person in-charge of the process of assigning seat for passengers. Most times, the officer in –charge find it difficult to assign the appropriate seat to the passengers and sometime assign one particular seat to two passengers thereby causing a big problem and delay in flight. So, now it has become very difficult to manage these details by using manual system. Some of the problems include:

* Inability to accommodate the pressure mounted on the airline by the passengers in getting their seats.
* Delay in processing passenger’s queries.
* Wrong allocation of seat numbers to the passengers.
* Error in allocating a seat to more than one passenger.
* Incorrect information about the seats given to the passengers.
* Difficulty in changing the status of seats of the passengers.

Divyam Airline want to change the manual work done by its employees to a computer based application. It want to collect and store all the information by using a computer based solution so that it can give correct information about the seats to its passengers on time. It want a system that can help to reduce the manual errors involved in the airline reservation process and make it convenient for the customers to book the flights as when they require. The staff members can also utilize this application to add, modify or delete flights information.

**Your team is retained to**

* Design an application to give the solution to the problems faced by the company.
* Design a sample database required by the application.

1. Problem statement:

**2.1 Assumption**

We assume that there is just one branch of the company.

**2.2 Objective of the project**

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The objectives of this project are as follows:

To ensure prompt allocation of airline seat reservation system for passengers.

The Airline Seat Reservation System is to assist the airline with transactions related to making ticket reservations, which includes blocking, reserving, canceling and rescheduling tickets.

Minimize repetitive work done by the system reservation users.

Minimize the number of vacant seats on a flight and maximize flight capacity utilization.

**2.3 Business Process in the application:**

This application will be designed for the users who want to book air tickets. User can get information about any delays, cancellation of the flight or the availability of the tickets for a particular flight. Expected impact of the product is to automate existing manual processes in order to make them more efficient and cost effective.

**Sample Business process for Air Ticket Reservation Case study**

1. Users can search the flights and book the air tickets according to their requirements. User can get the information about the status and price of the tickets.

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1. User can cancel the ticket.
2. A user can reschedule a flight by checking the availability of the flight and tickets for the new flight.
3. The records of the customers will be maintained in the database.
4. User can get any type of information related to availability of the tickets and flights.
5. The management of the company can also use this application to view the status of all the flights and tickets.
6. Staff members can add delete or modify the information of the flights and tickets.
7. Tools to be used for development:

Tools to be used:

* Oracle Database 10g
* JDK 1.7
* Eclipse
* Apache Tomcat
* Angular 4

1. Activities to be done by the students

## 5.1 Java

* Student will make different classes to write the business logic to perform different operations in the application.
* Booking page will accept following information from the customer:
* Customer Name
* Customer phone no.
* Leaving From

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* Going To
* Departure Date
* Departure Time
* Seats to book

Also, a student has to handle concurrency issues if two user or more users are booking same tickets at the same time. A booking id should be generated after booking of the ticket

* For Cancellation of ticket user need to enter
* Booking ID

Confirm cancel ticket page will fetch the data using booking ID and show below details

* Booking ID
* Booking Date
* Journey Date
* From
* To
* No Of seats
* Total Fare
* Cancellation charge
* Refundable amount
* System should display all the necessary fields on the screen.
* Calculate the cancellation charge. If cancellation is done before10 days and above10% will be deducted, before 5 days 20% and before 1 day 50% will be deducted from the total fare.
* Calculate the refundable amount:

**RegundableAmount=TotalFare – CancellationCharge**

* For rescheduling of any flight a user has to cancel previous flight and will search for the availability of the new flight and then the bill will be generated again including rescheduling charges.
* Students will also maintain customer’s information in the database.

## 5.2 Advanced Java

* Students have to create the database for the application.
* To access the application a user has to enter his login information. Students have to maintain login information of all the users of the application in the database.
* When the user logs out, he is logged out of the application and home page of the application should be displayed

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* User interface for the application will be designed by using JSF and JSP wherever required. Validation for the fields can be implemented by using JSF validators.
* Student can also use EJB for business logic wherever required.
* By using web services the company can display the information of the flights on other websites.
* Students will implement security by using JAAS for the application.
* Following reports will be generated for the management.
* Daily Report for list of passengers travelled by a particular flight.
* Total revenue generated from all the flights every day.

Guidelines to the instructors:

**Step 1**

After teaching them the basics of classes and objects, Let them design class diagram for the above problem.

Explain 3 tier architecture & layered architecture. Explain different UML models and their understanding in design & development. Now ask team members to design Business Model for given case study. Validate model once done to be self-explanatory.

**Step 2**

Once the basic design is approved by the facilitator, the team can go ahead and create classes required. Components to be monitored

* Creation of classes
* Various fields required for classes
* Design of tables required to store the data
* Creation of other modules
  + Views
  + Model
  + Controller
  + Services

Review to be done by the facilitator at this stage (it goes in cycle, till it reaches the expected out cum)

**Step 3** – Role Play

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Let the team present their design.

Note Down comments/ideas by other team and facilitator

Keeping these ideas as base, team has to list down the operations that can facilitate.

Write queries to solve all above problems

**Step 4** – Validate

All module developed must be validated with input verification, user authentication and access privileges.

**Step 5** – Continue with Java and Advanced Java Learning Objectives

All learning objectives defined above for the Java SE and Java EE should have been met. If not revisit and ensure the learning objectives are met for the course.

**Step 6 -** Extension of Project work

If student completes the above task well in advance trainer has flexibility to add additional functionalities to the existing components. The students can add the functionality to keep track of all the customers and give discount to the regular customers of the company. **Students can also localize this application into different languages**.