
SOFTWARE REQUIREMENTS SPECIFICATION

For

Airline Reservation System

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1. Introduction

1.1 Purpose

The main objective of this document is to illustrate the requirements of the project Airline Reservation System. The document gives the detailed description of the both functional and non-functional requirements proposed by the client. The purpose of this project is to create a superb application which the user need not to waste his valuable time in booking the ticket by visiting the airport. The main purpose of this project is to maintain easy circulation system using computers and to provide different reports. This project describes the hardware and software interface requirements using ER diagrams and UML diagrams.

1.2 Document Conventions

- Entire document should be justified.
- Convention for Main title
 - Font face: Time New Roman
 - Font style: Bold
 - Font Size: 12
- Convention for Sub title
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- Convention for body
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1.3 Scope of Development Project

Airline reservation systems (ARS) are web-based systems that help airlines sell their inventory. The Airline Reservation System is mainly used by the people who are unable to visit nearby airport for tickets reserving. This enables people to suggest the type of seat they required. This is used by passengers and airplane staffs to create, modify and cancel the seats. This system reduces the time taken for booking.

We can add new features like providing offers, cancelling money reduction so on. The language used for developing the project is Java as it is quite advantageous than other languages in terms of performance, tools available, cross platform compatibility, libraries, cost (freely available), and development process. Apart from the flight details, it also displays information that how many passengers are going to board a particular flight. The users follow the same steps no matter what is their mode of system access is, namely, phone, internet or the information desk at any part of the world, keeping consistency in the system.

1.4 Definitions, Acronyms and Abbreviations

- JAVA -> platform independence
- SQL-> Structured query Language
- ER-> Entity Relationship
- UML -> Unified Modeling Language
- IDE-> Integrated Development Environment
- SRS-> Software Requirement Specification

1.5References

➤ Books

- Software Architecture for Airline Reservation Systems: Structure-Behavior Coalescence Method for Model Singularity Kindle Edition by William S. Chao (Author)
- Airline Reservation System Documentation by Sanjana Agarwal.
- Airline Reservation System- By Sonu Kumar.

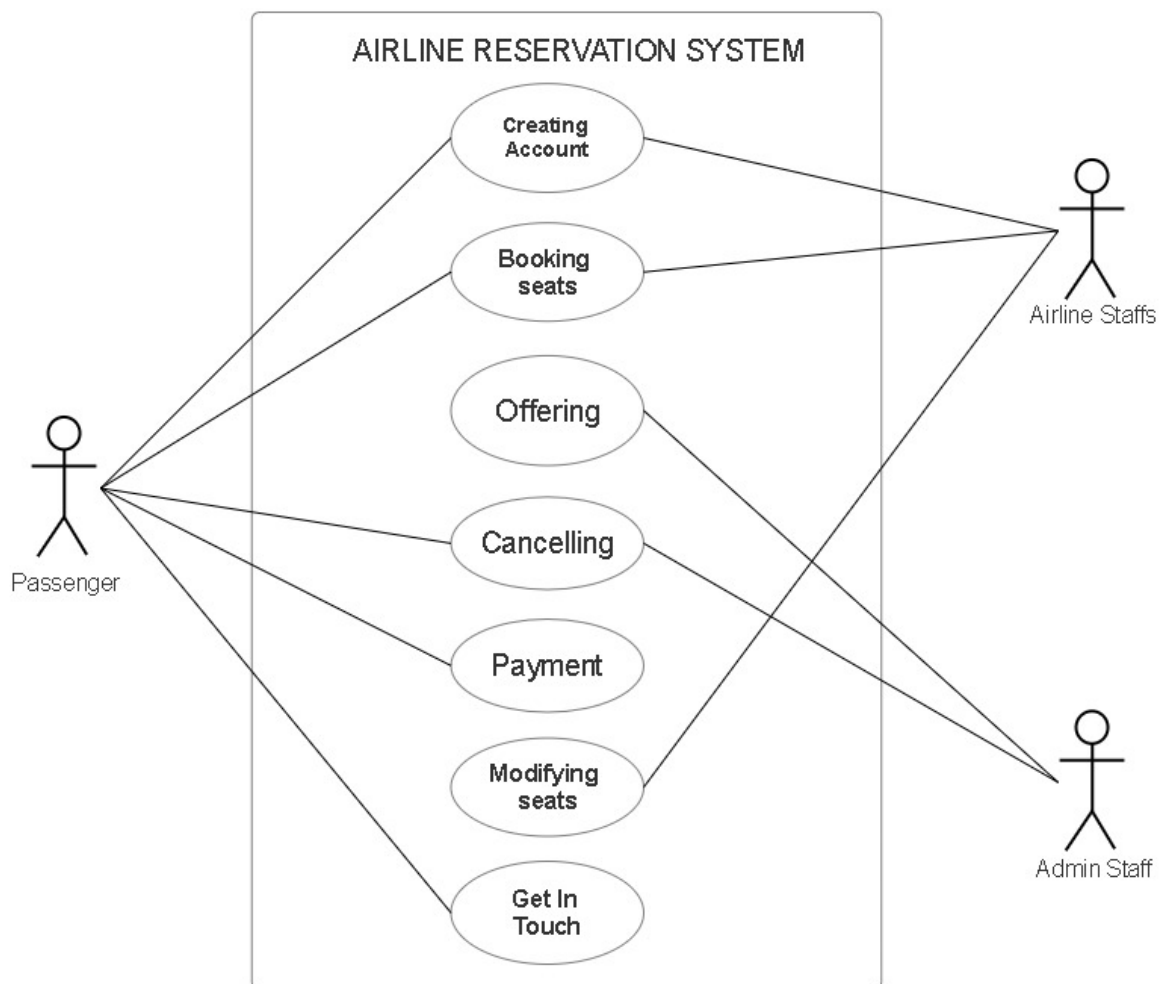
➤ Websites

1. <https://projectworlds.in/java-projects-with-source-code/airline-reservation-system-java->
2. <https://www.altexsoft.com/blog/flight-booking-process-structure-steps-and-key-systems/>

2.Overall Descriptions

2.1: Product Perspective

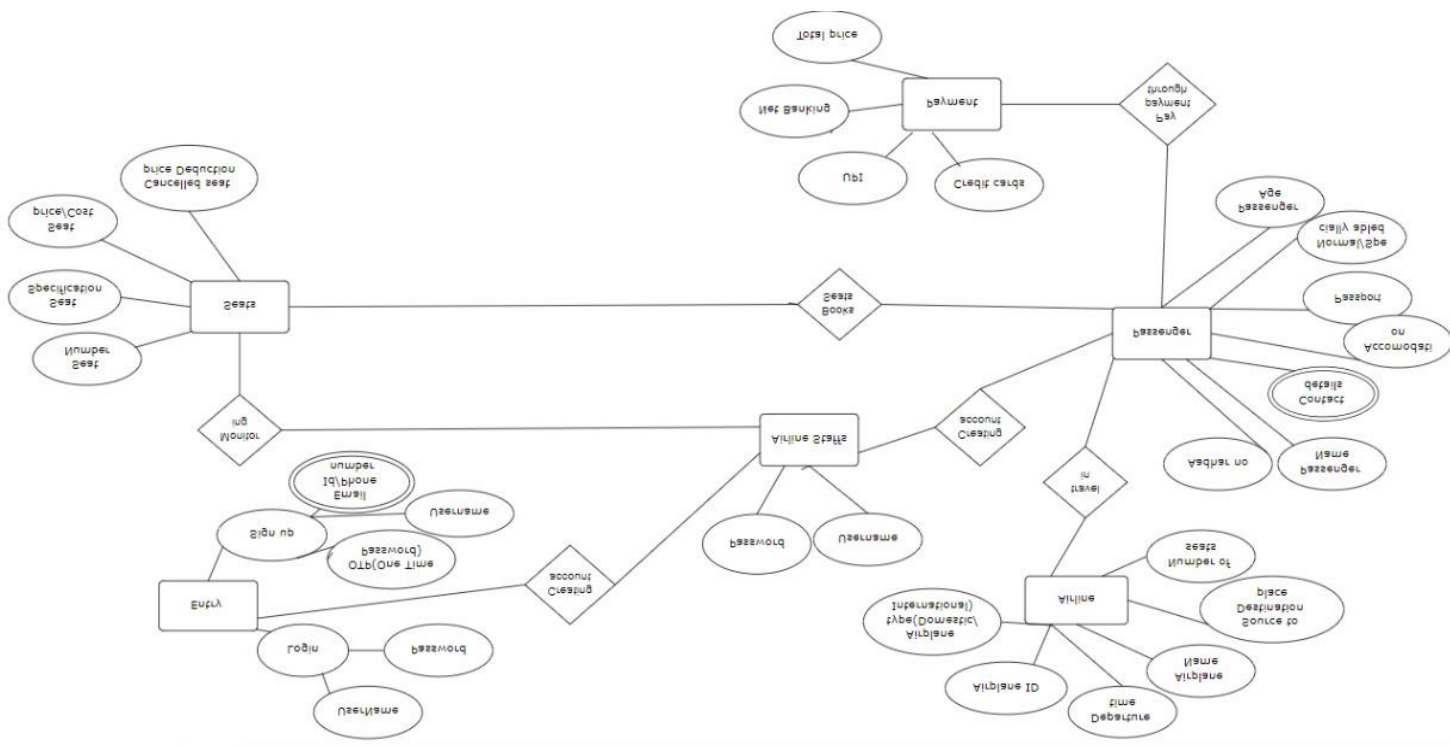
Use Case Diagram of Airline Reservation System



This is a broad level diagram of the project showing a basic overview. The users can be either Airline Staff or Passenger. This System will provide a search functionality to facilitate the search of Seats. This search will be based on various categories Seat availability or the cancellation. Further the Airline staff personnel can add/update the Seat availability and the resource users from the system. The users of the system can request book/cancel the seats for which they would have to follow certain criteria.

2.2 Product Function

Entity Relationship Diagram of Airline Reservation System



The Airline Reservation System provides online real time information about the seats available in the Airlines and the user information. The main purpose of this project is to reduce the manual work. This software is capable of managing seats booking, cancelling, managing offers based on the passenger requirement. The Airplane staffs will act as the administrator to control members and manage seat booking. The member's status of seat booking/cancelling is maintained in the airline database. The member's details can be fetched by the Airplane staff from the database as and when required. The valid members are also allowed to view their account information.

2.3: User Classes and Characteristics

The system provides different types of services based on the type of users [Member/Airline Staffs]. The Airline Staffs will be acting as the controller and he will have all the privileges of an administrator. The member can be either a Passenger or Airline staff who will be accessing the Seat booking online.

The features that are available to the Librarian are: -

- A Staffs can issue a Seats to the member.
- Can view the different categories of Seats available in the Airline
- Can take the seats canceled from passengers
- Add User and their information to the database
- Edit the information of existing Seats
- Can access all the accounts of the Passengers

The features that are available to the Passengers are: -

- Can view the different categories of books available in the library
- Can view the List of Seats available in each category
- Can own an account in the Airline.
- Can view the Seats issued to him
- Can view the history of seats issued to him previously.

2.4 Operating Environment

The product will be operating in windows environment. The Airline Reservation System is a website and shall operate in all famous browsers, for a model we are taking Microsoft Internet Explorer, Google Chrome, and Mozilla Firefox. Also, it will be compatible with the IE 6.0. Most of the features will be compatible with the Mozilla Firefox & Opera 7.0 or higher version. The only requirement to use this online product would be the internet connection.

The hardware configuration includes Hard Disk: 40 GB, Monitor: 15” Color monitor, Keyboard: 122 keys. The basic input devices required are keyboard, mouse and output devices are monitor, printer etc.

2.5 Assumptions and Dependencies

The assumptions are: -

- The coding should be error free
- The system should be user-friendly so that it is easy to access
- The information of all Passengers, Airplanes, Seats and Staffs must be stored in a database that is accessible by the website.
- The system should have more storage capacity and provide fast access to the database
- The system should provide search facility and support quick transactions
- The Airline Reservation System is running 24 hours a day
- Users may access this application from any computer that has Internet browsing capabilities and an Internet connection.
- Users must have their correct usernames and passwords to enter into their online accounts and do actions or for creating a new account, they should provide basic information of username, password and mobile number and to enter the OTP (One Time Password).

The dependencies are: -

- The specific hardware and software due to which the product will be run quickly
- On the basis of listing requirements and specification the project will be developed and run
- The end users (admin) should have proper understanding of the product
- The system should have the general report stored
- The information of all the users must be stored in a database that is accessible by the Airline staffs.
- Any update regarding the seats in the airplane is to be recorded to the database and the data entered should be correct

2.6 Requirement

Software Configuration: -

This software package is developed using java as front end which is supported by sun micro system. MY SQL Server as the back end to store the database.

Operating System: Windows, OS, Linux.

Language: Java Runtime Environment, Eclipse.

Database: MY SQL Server (back end)

Hardware Configuration: -

Processor: Intel i5 2.8 GHZ

Hard Disk: 20 GB

RAM: 1GB or more

2.7 Data Requirement

The inputs consist of the query to the database and the output consists of the solutions for the query. The output also includes the user receiving the details of their accounts. In this project the inputs will be the queries as fired by the users like create an account, selecting seats and putting into account. Now the output will be visible when the user requests the server to get details of their account in the form of time, date and which seats are currently they booked.

3.External Interface Requirement

3.1 GUI

The software provides good graphical interface for the user and the administrator can operate on the system, performing the required task such as create, update, viewing the details of the seats specification, cost and availability of the airplane.

- It allows user to view quick reports like seat availability in a particular time.
- It enables the passenger to verify the seat specification and the offers available.
- It also shows passengers to cancel their tickets.
- The user interface must be customizable by the administrator
- It provides cost details based on the various requirements (seat specification/offers).
- All the modules provided with the software must fit into this graphical user interface and accomplish to the standard defined
- The design should be simple and all the different interfaces should follow a standard

template

- The user interface should be able to interact with the user management module and a part of the interface must be dedicated to the login/logout module

Login Interface: -

In case the user is not yet registered, he can enter the details and register to create his account. Once his account is created, he can 'Login' which asks the user to type his username and password. If the user entered either his username or password incorrectly then an error message appears.

Search: -

User properties like name, address, age associated with flight miles accumulated and credit card information. Flight properties like departing/arriving city, departure/arrival dates and times, miles and an identify flight number. Flight seat properties of identifying seat number, reserved and flight associated to flight-by-flight number.

Categories View: -

The passengers can book their seats of business class or economic class, they can suggest their requirements of place of seating like window side, they can specify the personal requirements of food and seats as they can be a especially abled people.

Airline Staff's Control Panel: -

Airline staffs can able to create seats of requirement. They can modify the seats and confirm the tickets who are in the waiting list when any of the passenger cancelled their tickets. They have an ability to cancel the tickets whose tickets booking are not completed.

4.System Features

The users of the system should be provided the surety that their account is secure. This is possible by providing:-

- User authentication and validation of members using their unique member ID
- Proper monitoring by the administrator which includes updating seat status, showing a popup if the seats are exceeding the limit or the specified seat is not available.
- Proper accountability which includes not allowing a member to see other member's account. Only administrator will see and manage all member accounts

5.Other Non-functional Requirements

5.1Performance Requirement

The proposed system that we are going to develop will be used as the Chief performance system within the different airlines which interacts with the airline staffs and passenger. Therefore, it is expected that the database would perform functionally all the requirements that are specified by the airline.

- The performance of the system should be fast and accurate
- Airline Reservation System shall handle expected and non-expected errors in ways that prevent loss in information and long downtime period. Thus it should have inbuilt error testing to identify invalid username/password
- Fast data updates and retrieval from the database will enable effective administration of flight schedules, seat availability, customer information, and transactional data.
- The system should be able to handle large amount of data. Thus it should accommodate high number of data and users without any fault

5.2 Safety Requirement

The database may get crashed at any certain time due to virus or operating system failure. Therefore, it is required to take the database backup so that the database is not lost. Proper UPS/inverter facility should be there in case of power supply failure.

5.3 Security Requirement

- System will use secured database
- Normal users can just read information but they cannot edit or modify anything except their personal and some other information.
- System will have different types of users and every user has access constraints
- Proper user authentication should be provided
- No one should be able to hack users' password
- There should be separate accounts for admin and members such that no member can access the database and only admin has the rights to update the database.

5.4 Requirement attributes

- Access to all areas of the system is protected by the sign in code of the user.
- Passwords can be enabled in all areas of the system.
- Sessions time out within 20 minutes of inactivity
- Based on the security level of the user, areas are protected by higher levels of security.
- All transactions are logged providing a full audit trail.
- 24 x 7 Monitored Support - All systems are monitored 24 hours a day 7 days a week to ensure that any faults are rectified immediately.
- Connections - To ensure that all TCP/IP connections are maintained, Videocam provide High Speed Duplex land lines for access to systems.
- 24 x 7 Uninterrupted Power Supply - In the case of external power failures the hosting site is equipped with standalone uninterrupted power supplies.
- Dedicated Airline Systems - Each system provided is dedicated to a specific airline to ensure all data is segregated.
- Multiple Firewall Protection - The hosting center is protected by multiple firewalls.
- Offsite Data Storage - As well as daily backup of the systems, data is also stored off site to ensure any failures are fully recoverable.

5.5 Business Rules

A business rule is anything that captures and implements business policies and practices. A rule can enforce business policy, make a decision, or infer new data from existing data. This includes the rules and regulations that the System users should abide by. This includes the cost of the project and the discount offers provided. The users should avoid illegal rules and protocols. Neither admin nor member should cross the rules and regulations.

5.6 User Requirement

The users of the system are Passengers and Airline staffs who act as administrator to maintain the system. The administrators of the system should have more knowledge of the internals of the system and is able to rectify the small problems that may arise due to disk crashes, power failures

and other catastrophes to maintain the system. The proper user interface, user manual, online help and the guide to install and maintain the system must be sufficient to educate the users on how to use the system without any problems.

The admin provides certain facilities to the users in the form of: -

- Backup and Recovery
- Forgot Password
- Data migration i.e., whenever user registers for the first time then the data is stored in the server.
- Data replication i.e., if the data is lost in one branch, it is still stored with the server
- Auto Recovery i.e., frequently auto saving the information
- Maintaining Transaction.
- The server must be maintained regularly and it has to be updated from time to time

6. Other Requirements

6.1 Data and Category Requirement

There are different categories of users namely Airline staffs, Passengers, Admins. Depending upon the category of user the access rights are decided. It means if the user is an administrator, then he can be able to modify the seats, cancel, append etc. All other users except the Airline staffs only have the rights to retrieve the information about database. Similarly, there will be different categories of seats available. According to the categories of Seats their relevant data should be displayed. The categories and the data related to each category should be coded in the particular format.

6.2 Appendix

A: Admin, Abbreviation, Acronym, Assumptions, Airline Staffs; B: Business rules; C: Class, Client, Conventions; D: Data requirement, Dependencies; G: GUI; K: Key; M: Member; N: Non-functional Requirement; O: Operating environment; P: Performance, Perspective, Purpose; R: Requirement, Requirement attributes; S: Safety, Scope, Security, System features; U: User, User class and characteristics, User requirement

6.3 Glossary

The following are the list of conventions and acronyms used in this document and the project as well:

- Administrator: A login id representing a user with user administration privileges to the software
- User: A general login id assigned to most users
- Client: Intended users for the software
- SQL: Structured Query Language; used to retrieve information from a database
- SQL Server: A server used to store data in an organized format
- Layer: Represents a section of the project
- User Interface Layer: The section of the assignment referring to what the user interacts with directly
- Application Logic Layer: The section of the assignment referring to the Web Server. This is where all computations are completed
- Data Storage Layer: The section of the assignment referring to where all data is recorded
- Use Case: A broad level diagram of the project showing a basic overview
- Class diagram: It is a type of static structure diagram that describes the structure of a

system by showing the system's cases, their attributes, and the relationships between the classes

- Interface: Something used to communicate across different mediums
- Unique Key: Used to differentiate entries in a database

5.4: Class Diagram

A class is an abstract, user-defined description of a type of data. It identifies the attributes of the data and the operations that can be performed on instances (i.e., objects) of the data. A class of data has a name, a set of attributes that describes its characteristics, and a set of operations that can be performed on the objects of that class. The classes' structure and their relationships to other frozen in time represent the static model. In this project there are certain main classes which are related to other classes required for their working. There are different kinds of relationships between the classes as shown in the diagram like normal association, aggregation, and generalization. The relationships are depicted using a role name and multiplicities. Here 'Airline Staffs', 'Passengers' and 'Seats' are the most important classes which are related to other classes.

