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| **Airline Management System**  -Blue Sky-  Prepared by:  Hala Shehada  Marah Dmaide  Thara Shehadeh  Misk Sawallha  Roaa Sawalmeh  Raghad Marie    *5.Nov.2021* |

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*1.Preface*

This software is aiming 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 such that , they can utilize this software to make reservations , modify reservation or cancel a particular reservation .

*2. Introduction*

*2.1 Purpose*

Airline Reservation System aims to automate the flight operations and ticketing / seat booking and confirmation system of an Airline company. The software is providing options for viewing different flights available within a different timings for a specific day. That provide customers within facility to able to book ticket smoothly. The customers can modify and able to cancel the ticket for any reason. That prepare within a role and policies. The software should provide option for checking availability of the tickets. That is important for the customers to get message if the ticket unavailable. That will be displayed into customers. The customers should be noted when the change has been made or any further changes.

*2.2 Scope*

The airline booking website is an application stored in the user server. The purpose of the website is

to resolve the client to allow website users to perform tasks related to booking an airline flight. The

system enables to perform the following functions:

• Automation of flight operations

• Automation of ticketing / seat booking

• Confirmation system

• Cancellation

• Improved and optimized service

* Non member users only allowed to search for available flights.
* Non member users are required to create an account in-order to reserve a seat or to book a flight .
* Member users have the right to search for available flights, to reserve a seat, to book a flight ,cancel a flight and to edit their member information
* Member users are required to login into their account prior to flight booking.

*2.3 Overview*

The remaining section of this document provide a general description including characteristic

of the users of this product, the product’s hardware, and functional and non-functional

requirements of the product.

*3. Overall Description*

Developing an AIRLINE RESERVATION SYSTEM- ARS for an air line company that want to automate its flight operations and ticketing / seat booking and confirmation system . The cause of making this online website is due to suffering from traditional booking ,existing system is highly manual and involves a lot of paper work and calculation and there for may be erroneous, this lead to inconsistency and inaccuracy. So that ,the data may be lost, stolen or destroyed because it is stored on paper. Also, the existing system consumes a lot of time causing inconveniencing to customers and the staff. Even ,Its difficult to update, delete, or view the data due its manual nature and the increasing number of passengers leads to difficulty in maintaining and retrieving details.

As a result for these problems ,the ARS is proposed with the following:

• The computerization of the reservation system will reduce a lot of paperwork and hence load on

the hence the load on airline admin and staff.

• The machine will perform all calculations. Hence chances of error are nearer to zero.

• The passenger, reservation, cancellation list can be easily retrieved and any required addition,

deletion, updation can be performed easily and fast.

* Proper way of confirmation of bookings etc.

So, this project represents the initial version of the Airline Booking system. All requirements listed here in describe a self-contained system. At a high level, this project will allow a user to book flights, check flights, do account maintenance, and query flight information. The goal is to allow customers greater and easier access to the airline’s booking system, twenty-four hours a day.

*3.1 Constraint*

* Constraints System constraints The system is a web base, so it will run on a web browser i.e IE, Chrome, Firefox etc.
* The system will run under any OS with internet functionality .

*4.System Features*

*4.1.1 Login*

*Description:*

This function allows a registered user to login his account using his frequent flyer number with the airline and password. If a user is not registered, the website shall allow the user to enroll first. The system will check both the frequent flight number and password, when a user attempts to login.

*Rationale:* This provides security to the system by authenticating each member and provides confidence to the consumer that his/her personal information is secure.

*4.1.2 Registration*

*Description:*

This function allows unregistered user to enroll and to create a new account with the website. In order to create a new account, the user has to provide required information such as first name, last name ,email address and password. Other optional information, such as phone number, credit card information and mailing address, can be provided during the registration process .The system checks if all required data are provided and then will prompt the user to enter additional information, if required. After all required information is provided, the system auto-generates a unique frequent flyer number that the user must use as username for future authentications. The system shall auto-generate this number in less than five seconds.

*Rationale:* A user who wishes to purchase flights and use advanced features ,must be logged in. However, without enrolment , a user can never be a member. This section offers all users a chance to become a member.

*4.1.3 Book Flights*

*Description*:

The user can use the Book Flights function to purchase seats for an airplane flight. The system shall present the user with information on all current flights. The user may then select a pair (departure and return) of flights on which to purchase seats. The user can indicate the number of seats and placement of such. Finally, the system shall guide the user completely through the checkout process.

*Rationale:* The heart of the business is selling seats on flights. This section provides the primary source of system transactions.

*4.1.4 Reserve Seats*

*Description:*

The user can use the Reserve Seat function to reserve seats for an airplane flight. The seats to be reserved are initially found through the user’s previous bookings. These bookings were previously completed through the Book Flight function (SEE 3.3).The system shall display available seats for the departing and returning flights booked by the user. The user selects seats from each flight, where the number of selected seats from each flight is the number that the user booked on that particular flight. Once the flight seats are selected, the user confirms the seat selection.

*Rationale:* Customers prefer to know where their seats are located. Further, they prefer to pick out particular seats – closer to the front, window seat ,aisle seat, etc. From that point, the seats are removed from available/un reserved seats and the user’s booking is linked to those particular seats. If the user fails to reserve a seat prior to flight takeoff, the user is randomly assigned a seat from available seats a 30 minutes prior to initial take-off time. This function is offered immediately after booking the user can wait and use the function to book seats anytime after up until 30minutes prior their flight.

*4.1.5 Flight Status*

*Description:*

This section shall allow the user – whether enrolled or not – to view flight information that matches input criteria. The user will provide:

1.A flight number and Date.

2.Departing/Arriving Cities and Date .The system will display matching flight information including the following fields:

•Flight Number

•Departure City

•Arrival City

• Status (one of the following)

* In Flight
* At the Gate
* Delayed
* On Time

*Rationale:*

Users will want to query the system to find flight information, even if they’re not at an airport (e.g., on their mobile phone). By making this information available through the web site, we can provide an extra service to the customer and increase our company’s value.

*4.1.6 Flight Schedules*

*Description:*

This section of the system shall allow a user to query flight schedules based upon simple input criteria. The user will provide departure and arrival cities, and a departure/return date. If any flights match the criteria, the system will display the following information:

•Flight Number

•Departing City & Date/Time

•Arriving City & Date/Time

•Number of Available Seats.

The system shall define a “matching” flight as one that uses the departure/arrival cities at a flight time greater or equal to the time provided by the user. Otherwise, the system shall alert the user that no matching flights can be found.

*Rationale:* A customer will want to book flights based on his/her travel plans .This section provides the user a choice of available flights from which to pick.

*4.1.7 My Account*

*Description:*

This section gives the user the power to view, save, edit or delete the information stored in his/her account. The user can check his/her accumulated points, look at the status of a flight that was booked ,cancel a flight that was already booked (optional) and change his/her address, phone number, email or password. This feature is not available for non-registered user*.*

*Rationale:* A customer’s information changes from time to time. Giving the users a way to modify their account information allows the business to have current & updated information.

*4.1.8 Logout*

*Description:*

The Logout section provides a way for the user to securely log out of the system. This process will save all user operations when he/she exits the system. If a user wishes to continue accessing the website ,he/she must log-in again to access user features.

*Rationale:* Customers often use shared computers. Providing a way to clear state and log-out gives our customers confidence that nobody else will use their flight-booking session.

*4.1.9 Search:*

*Description:*

This function allows the booking agent to search for airplane’s and ticket’s availability between two cities, i.e departure city and arrival city, the date of departure, preferred time and number of passengers.

*Rationale:* This function make the website more user friendly *.*

*4.1.10 Payment:*

*Description:*

It asks the agent to enter the various credit card details of the person making reservation i.e. Credit card type, credit card number ,expiration date of the card ,The name on card etc.

*Rationale:* This function provides the ways to make the customer pay for the ticket *.*

*4.1.11 Offers*

*Description:*

Allows the owner to add offers and discounts such as cars, flights and hotels.

*Rationale:* Attract customers .

*4.1.12 Feedback*

*Description:*

This function allows the booking agent to give feedback about his/her experience with this website.

*Rationale:* making other users benefit from the experience of others, and make the website more credibility .

*4.2 Functional Requirements*

*4.2.1 Performance requirements*

* User Satisfaction: The system is such that it stands up to the user expectations.
* Response Time: The response of all operations is good.
* Error Handling: Response to user errors and undesired situation has been taken careof to ensure that the system operates without halting.
* Safety and Robustness: The system is able to avoid or tackle disastrous action. In other words it should be foul proof.
* Portable: The software should not be architecture specific. It should be easily transferable to other platforms if needed.
* User Friendliness: The system is easy to learn and understand. A native user can also use the system effectively, without any difficulties.

*4.2.2 Design constrain*

There are a number of factors in the client’s environment that may restrict the choices of a designer. Such factors include standards that must be followed, resource limits, operating environment, reliability and security requirements and policies that may have an impact on the design of the system.

* Standard Compliances This specifies the requirement for standards the system must follow. The standards may include the report format and accounting properties.
* Hardware Limitations Hardware limitations can include the types of machine to be used, operating system available on the system, languages support and limits on primary and secondary storage.
* Reliability and Fault Tolerance Fault tolerance requirement can be place a constraint on how the system is to be designed. Recovery requirements are often on integral part here, detailing what the system should do if some failure occurs to ensure certain properties. Reliability requirements are very important for critical application.
* Security requirements are particularly significant in defines system and database system. They place restrictions on the use of certain commands, control access to data, provide different kinds of access requirements for different people, require the use of passwords and cryptography techniques and maintain a log of activities in the system.

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3.1.3 Hardware Requirements

For the hardware requirements like memory restrictions, cache size, the processor, RAM size

etc... those are required for the software to run.

MINIMUM Hardware Requirements

Processor Pentium IV

Hard Disk Dirve 100 GB

RAM 1 Gb

PREFERED HARDWARE REQUIREMENTS

Processor Core i3

Hard Disk Drive 500 GB

RAM 4 GB

3.1.4 Software Requirements

Any window based operating system with DOS support are primary requirements for software

development. Windows 7 and up are required. The system must be connected vie LAN and

connection to internet is mandatory

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*5. Non-Functional Requirements*

The reliability of the overall project depends on the reliability of the separate components.

The main pillar of reliability of the system is the backup of the database which is

continuesly maintained and updated to reflect the most recent changes. Also the system

will be functional under a container. Thus the overall stability of the system depends on the

stability of the container and its underlying OS.

*5.1 Security*

The system is must automatically log out all customers after a period of inactivity. The system should not leave any cookies on the customer’s computer containing the user’s password. The system’s back-end servers shall only be accessible to authenticated management .

*5.2 Reliability*

The reliability of the overall project depends on the reliability of the separate components. The main pillar of reliability of the system is the backup of the database which is continuously maintained and updated to reflect the most recent changes. Also the system will be functional under a container. Thus the overall stability of the system depends on the stability of the container and its underlying OS.

*5.3 Availability*

The system should be available at all the times, meaning the user can access it using a web browser, only restricted by the down time of the server on which system runs. A customer friendly system which is in access of people around the worlds should work 24 hours. In case of a hardware failure or database corruption, a replacement page will be shown. Also in case of hardware failure or database corruption backups of the database should be retrieved from the server and saved by the Organizer. Then the service will be restarted. It means 24x7 availability.

*5.4 Maintainability*

In case of a failure, a re-initialization of the system will be done. Also the software design is being done with modularity in mind so that maintainability can be done efficiently.

*5.5 Supportability*

The code and supporting modules of the system will be well documented and easy to understand. Online user documentation and Help system requirements will be provided.

*6.Other Requirements*

* Security :

1. Passwords must be a minimum of eight characters and must contain one to seven digits.
2. Email addresses should be verified before the system grants user access. This verification shall be exercised by sending the prospective user a confirmation email after enrolment .This email must contain information specific to completing the enrolment process.
3. All exchanges from client to server involving private data shall occur using the highest available level of secure connection .

* Performance:

1. The Airline Website shall have capabilities to accept 500 connections. For each session ,system shall guarantee the connection time 5 minutes from last input, after which the connection will be deemed expired. A close operation will be performed when expired. This design is to satisfy each user’s usability and connection quality.
2. The system shall send out verification request immediately (within 100ms) after the it receives a user submitted form.
3. The system shall update all flight status information every 5 minutes.

* Software Quality Attributes :

1. Usability: The airline website design shall allow deployment on both Windows and UNIX(Linux) servers.
2. Robustness: The system design shall include recovery scenarios allowing the ability to restore a state no older than one business day old.

* Correctness
* Portability
* Efficiency
* Flexibility
* Testability
* Reusability

*7.Appendix*

* Authentication: The process of identifying an individual, usually based on username and password
* Cached : A form of storing information/data, usually this data is repeatedly accessed.
* CSS : Cascading Style Sheets is a feature to give users and developers more control on how web site pages are displayed.
* Database: Is a structured collection of records or data that is stored in a computer system. In our system, this may pertain to flightrecords or user information.
* Dynamic Links: A pointer to a particular scope called during runtime.
* Encryption Algorithm: A mathematical procedure for performing encryption on data, which is translating data into secret code.
* HTTP: Hyper Text Transfer Protocol is the underlying protocol used by the World Wide Web. It defines how messages are formatted and transmitted and what actions should be taken in response to various commands.
* Hyper Links : Also called link, is a directly follow able reference within a hypertext document.
* Input Criteria : A defined particular group of criteria, which defines inputs.
* Query or Queries : A form of questioning. In this document, query pertains to a search entered by a user into a search engine to return results

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