ATMIYA UNIVERSITY

RAJKOT

A

Report On

AIRLINE RESERVATION SYSTEM

Under subject of

MAJOR PROJECT

B. TECH, Semester – VII

(Computer Engineering)

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Academic Year

(2022-23)

CANDIDATE'S DECLARATION

We hereby declare that the work presented in this project entitled "AIRLINE RESERVATION SYSTEM**"** submitted towards completion of Major project in **7th Semester** of B. Tech. (Computer Engineering) is an authentic record of our original work carried out under the guidance of "**Prof. Nirali Borad".**

We have not submitted the matter embodied in this project for the award of any other degree.

Semester: 7th

Place: Rajkot

Signature:

Kashyap Bavaliya (190002007)

Anvit Patel (190002081)

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CERTIFICATE

Date:

This is to certify that the "**AIRLINE RESERVATION SYSTEM**" has been carried out by **Kashyap Bavaliya** under my guidance in fulfillment of the subject Major Project in COMPUTER ENGINEERING (7th Semester) of Atmiya University, Rajkot during the academic year 2022-23.

Prof. Nirali Borad   Prof. Tosal M. Bhalodia

(Project Guide)   **(Head of the Department)**

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CERTIFICATE

Date:

This is to certify that the "**AIRLINE RESERVATION SYSTEM** has been carried out by **Anvit Patel** under my guidance in fulfillment of the subject Major Project in COMPUTER ENGINEERING (7th Semester) of Atmiya University, Rajkot during the academic year 2022-23.

Prof. Nirali Borad   Prof. Tosal M. Bhalodia

(Project Guide)   **(Head of the Department)**

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</div>

ABSTRACT

Airline Reservation System contains the details about flight schedules and its fare tariffs, passenger reservations and ticket records. An airline's inventory contains all flights with them Available seats. The inventory of an airline service is generally divided into two categories of classes (e.g., Business or Economy class) and each category is having seats bookings, along with prices and booking conditions. Inventory data is imported and maintained through a Schedule Distribution System over standardized interfaces. One of the core functions of the inventory management of airline reservations is the inventory control. Inventory control steers how many seats are available for the different booking classes, by opening and closing individual booking classes for sale. In combination with the fares and booking conditions stored in the Fare Quote System the price for each sold seat is determined.

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1. INTRODUCTION

1.1 Purpose

This project is a web-based AIRLINE RESERVATION SYSTEM for an existing air company. The project objective is to deliver the online management application into visual studio platform. This project is an attempt to provide the advantages of online flights to customers of a real platform. It helps anywhere through internet by using an online device.

1.2 Scope

Airline Management System is widely used as compared to other systems. Airline management system can be used in private institutes as well as public institution. As it is user friendly web base application it can be used anywhere and anytime. Every software may have some cases of bugs, errors, security related problems or system faults. There are many problems or system faults for example; computer collapse or crashes due to power supply problem will invalidate efforts of number of patients. There are large numbers of chances in which software may produce wrong results or may display invalid data. These bugs must be identified and solved for improving quality of software. So, in future we can develop more secure software by using advanced technologies.

1.3 Technology and tools

1. HTML:

- Hypertext Markup Language (HTML) is the main markup language for creating
- Web pages and other information that can be displayed in a web browser.HTML is written in the form of HTML elements consisting of tags enclosed in angle brackets (like < html>), within the web page content. HTML tags most commonly come in pairs like< h1> and </h1>, although some tags represent empty elements and so are unpaired, for example <img>.

- The first tag in a pair is the start tag, and the second tag is the end tag (they are also called opening tags and closing tags). In between these tags' web designers can add text, further tags, comments and other types of text-based content.

- The purpose of a web browser is to read HTML documents and compose them into visible or audible web pages. The browser does not display the HTML tags, but uses the tags to interpret the content of the page.

2. CSS:

- Cascading Style Sheets (CSS) is a style sheet language used for describing the presentation semantics (the look and formatting) of a document written in a markup language. Its most common application is to style web pages written in HTML and XHTML, but the language can also be applied to any kind of XML document, including plain XML, SVG and XUL.CSS is designed primarily to enable the separation of document content from document presentation, including elements such as the layout, colors, and fonts.

- This separation can improve content accessibility, provide more flexibility and control in the specification of presentation characteristics, enable multiple pages to share formatting, and reduce complexity and repetition in the structural content (such as by allowing for table less web design).

- CSS specifies a priority scheme to determine which style rules apply if more than one rule matches against a particular element. In this so-called cascade, priorities or weights are calculated and assigned to rules, so that the results are predictable.

- The CSS specifications are maintained by the World Wide Web Consortium (W3C). Internet media type (MIME type) text/CSS is registered for use with CSS by RFC 2318 (March1998), and they also operate a free CSS validation service.

Back End: Back End technologies used in the website are:

1. SQL:

- SQL (Structured Query Language) is a special-purpose programming language designed for managing data held in a relational database management system (RDBMS).

- Originally based upon relational algebra and tuple relational calculus, SQL consists of a data definition language and a data manipulation language. The scope of SQL includes data insert, query, update and delete, schema creation and modification, and data access control. Although SQL is often described as, and to a great extent is, a declarative language (4GL), it also

includes procedural elements. SQL was one of the first commercial languages for EdgarF. Codd's relational model, as described in his influential 1970 paper " A Relational Model of Data for Large Shared Data

Banks ". Despite not entirely adhering to the relational model as described by Codd, it became the most widely used database language.

- SQL became a standard of the American National Standards Institute (ANSI) in 1986, and of the International Organization for Standards (ISO) in 1987. Since then, the standard has been enhanced several times with added features. But code is not **completely** portable among different database systems, which can lead to vendor locking.

2.   PROJECT MANAGEMENT

2.1 Project Planning:

Project Planning is concerned with identifying and measuring the activities, milestones and deliverables produced by the project. Project planning is undertaken and completed sometimes even before any development activity starts. Project planning consists of following essential activities:

•   Scheduling manpower and other resources needed to develop the system.

•   Staff organization and staffing plans.

•   Risk identification, analysis, and accurate planning.

•   Estimating some of the basic attributes of the project like cost, duration and efforts. The effectiveness of the subsequent planning activities is based on the accuracy of these estimations. Miscellaneous plans like quality assurance plan, configuration management plan, etc. Project management involves planning, monitoring and control of the people, process, and the events that occurs as the software evolves from a preliminary concept to an operational implementation. Cost estimation is a relative activity that is concerned with the resources required to accomplish the project plan.

2.2 Project Scheduling:

The scheduling is the peak of a planning activity, a primary component of web project management. When combined with estimation methods and risk analysis, scheduling establishes a roadmap for project management. The characteristics of the project are used to adapt an appropriate task set for doing work.

2.3 Risk Management:

Risk management consists of a series of steps that help a web development team to understood and manage uncertain problems that may arise during the course of web development and can plague a software project.

Risks are the dangerous conditions or potential problems for the system which may damage the system functionalities to very high level which would not be acceptable at any cost. So in order to make our system stable and give its 100% performance we must have identify those risks, analyze their occurrences and effects on our system and must prevent them to occur.

2.3.1 Risk Identification:

Risk identification is a first systematic attempt to specify risks to project plan, Scheduling resources, project development. It may be carried out as a team process using brainstorming approach.

Technology risk:

Technical risks concern implementation, potential design, Interfacing, testing, and maintenance problems

- Database Corruptness
- Garbage Collection

People Risks:

These risks are concerns with the team and its members who are taking part in developing the system.

- Leaking an important data
- Failure of the administration
- Lack of knowledge.
- Lack of clear product vision.
- Technical staff conflict
- Poor communication between people.

Tools Risks:

These are more concerned with tools used to develop the system

- Tools containing virus.

General Risks:

General Risks are the risks, which are concerned with the mentality and resources.

- Lack of resources can cause great harm to efficiency and timely productivity.

- Rapidly changing requirements.

- Changes in requirements can cause a great harm to implementation, designing and schedule of developing the system.

- Insufficient planning and task identification.

2.3.2 Risk Analysis

"Risk analysis = risk assessment + risk management + risk communication."

Risk analysis is employed in its broadest sense to include:

Risk assessment:

Involves identifying sources of potential harm, assessing the likelihood that harm will occur and the consequences if harm does occur.

For this project It might be: -

System Crash.

Risk management

Evaluates which risks identified in the risk assessment process require management and selects and implements the plans or actions that are required to ensure that those risks are controlled.

Precautions taken to make risks minimal are as under: -

Periodical backups are taken to avoid major loss in case of system crash.

Risk communication

Involves an interactive dialogue between stakeholders and risk assessors and riskmanagers which actively informs the other processes.

Steps taken for risk communication is as under: -

- Probability of certain risks is negotiated with client.

- All the possible risks are listed out during communication and project is developed taking care of that risks.

3. SYSTEM REQUIREMENTS STUDY

3.1 Hardware and Software Requirement

This shows minimum requirements to carry on to run this system efficiently.

3.1.1 Hardware Requirements

Server-side Hardware Requirement:

Devices	Description
Processor	Intel Core Duo 2.0 GHz or more
RAM	512 MB or more
Hard Disk	10 GB or more

Table 3.1.1.1 Server-side Hardware Requirement

3.1.2 Software Requirements

For which	Software
Operating System	Windows7/10/11, Linux
Front End	HTML, CSS
Back End	MySQL
Coding Language	php

Table 3.1.2.1 Software Requirements

3.1.3 Client-side Requirements

For which	Requirement
Browser	Any Compatible browser device

Table 3.1.3.1 client-side Requirements

3.2 Constraints

3.2.1 Hardware Limitations

The major hardware limitations faced by the system are as follows If the appropriate hardware is not there like processor, RAM, hard disks

-The problem in processing requests of client

-If appropriate storage is not there our whole database will crash due to less storage because our main requirement is large storage.

3.2.2 Reliability Requirements

Since many users can access the server simultaneously, load on the server becomes very high. Hence, the server should be of enough high configurations. There should be high back up storage and management of huge data for overall ideas, videos, images, multiple countries, multiple user profile.

The Reliability requirements are the validations used to protect the system against one or more incorrect activities. Without proper validation of the system, the failure possibilities of it grow higher so it is must to understand the proper validation of the system and must implement them. All the required validator controls spend very good role to keep the system secure from any unauthorized incorrect information. In all these validation actions if system found one or more entries violating validation rules, then user will be warned by proper error messages and the details or the record is not going to be saved until corrections are made to them.

4. SYSTEM ANALYSIS

4.1 Study Current System

Implementation is the stage where the theoretical design is turned into a working system. The most crucial stage in achieving a new successful system and in giving confidence on the new system for the users that it will work efficiently and effectively.

The system can be implemented only after thorough testing is done and if it is found to work according to the specification.

It involves careful planning, investigation of the current system and its constraints on implementation, design of methods to achieve the changeover and an evaluation of change over methods a part from planning. Two major tasks of preparing the implementation are education and training of the users and testing of the system.

The more complex the system being implemented, the more involved will be the systems analysis and design effort required just for implementation.

The implementation phase comprises of several activities. The required hardware and software acquisition is carried out. The system may require some software to be developed. For this, programs are written and tested. The user then changes over to his new fully tested system and the old system is discontinued.

4.2 Problem and weakness of current system

- Inconsistency in data entry and generate errors
- System is fully dependent on skilled individuals
- Time consuming and costly to produce reports
- Entry of false information
- Lack of security
- Duplication of data entry

4.1 Requirements of New System

4.1.1 User Requirements:

The user requirement for this system is to make the system fast, flexible, less prone to error, reduce expenses and save the time.

4.1.2 System Requirements:

⬜ Functional System Requirement:

This section gives a functional requirement that applicable to the Online shopping system.

There are three sub modules in this phase.

1.   Customer module.
2.   Admin module.
3.   Moderator module.

⬜ The functionality of each module is as follows:

1.   **Customer module**: A user must login with his user name and password to the system after registration. If they are invalid, the user not allowed to enter the system.

Username and password will be provided after user registration is confirmed.

- A new user will have to register in the system by providing essential details in order to view the products in the system.
- The system must encrypt the password of the customer to provide security.
- The user can add the desired product into his cart by clicking add to cart option on the product. He can view his cart by clicking on the cart button.
- User can remove an item from the cart by clicking remove.
- After confirming the items in the cart the user can submit the cart by providing a delivery address. On successful submitting the cart will become empty.
- System must ensure that, only a registered customer can purchase items.

2.   **Admin module**: The administrator can add user, delete user, view user and block user.
- The administrator can add product, delete product and view product.
- The administrator can view orders and delete orders.
- The system must identify the login of the admin.
- Admin account should be secured so that only owner of the shop can access that account.

3.   **Moderator module**: A moderator is considered as a staff who can manage orders for the time being. As a future update moderator may give facility to add and manage his own products.
- Moderator has all the privilege of an admin having except managing other moderators.
- He can manage users and manage products. He can also check the orders and edit his profile.
- The system must identify the login of a moderator.

⬜ Non-Functional System Requirements:

i. EFFICIENCY REQUIREMENT:

When an online shopping cart android application implemented customer can purchase product in an efficient manner.

ii. RELIABILITY REQUIREMENT:

The system should provide a reliable environment to both customers and owner. All orders should be reaching at the admin without any errors.

iii. USABILITY REQUIREMENT:

The android application is designed for user friendly environment and ease of use.

iv. IMPLEMENTATION REQUIREMENT:

Implementation of the system using CSS and html in front end with jsp as back end and it will be used for database connectivity. And the database part is developed by MySQL. Responsive web designing is used for making the website compatible for any type of screen.

v. DELIVERY REQUIREMENT:

The whole system is expected to be delivered in four months of time with a weekly evaluation by the project guide.

4.2 Feasibility Study

The feasibility study of any system is mainly intended to study and analyze the proposed system and to decide whether the system under consideration will be viable or not after implementation. That is, it determines the usability of the project after deployment. To come to result a set of queries is answered keeping the efficiency of the software and its impact on the domain for which it was developed.

4.3 Technical Feasibility:

In technical feasibility, we study all technical issues regarding the proposed system. It is mainly concerned with the specifications of the equipment's and the software, which successfully satisfies the end-user's requirement. The technical needs of the system may vary accordingly but include:

⬡   The feasibility to produce outputs in a given time.

⬡   Response time under certain conditions.

⬡   Ability to process a certain volume of the transaction at a particular speed. ⬡

Facility to communicate data.

4.3 Selection of Hardware and Software and Justification

The configuration of the existing systems is:

    Processor   : Pentium III, 500 MHz (or above)

    Memory   : 128 MB (or above) Secondary storage: 20 GB (or above)

                                  For Software there are following alternatives:

    Operating System   : Window 10,9,8, 2000, XP, NT

    Development tools   : PHP, CSS, HTML

    Database   : SQL

    Documentation tool   : MS-Word

5. System Design

5.1 Input /output interface

➢ **Login page**
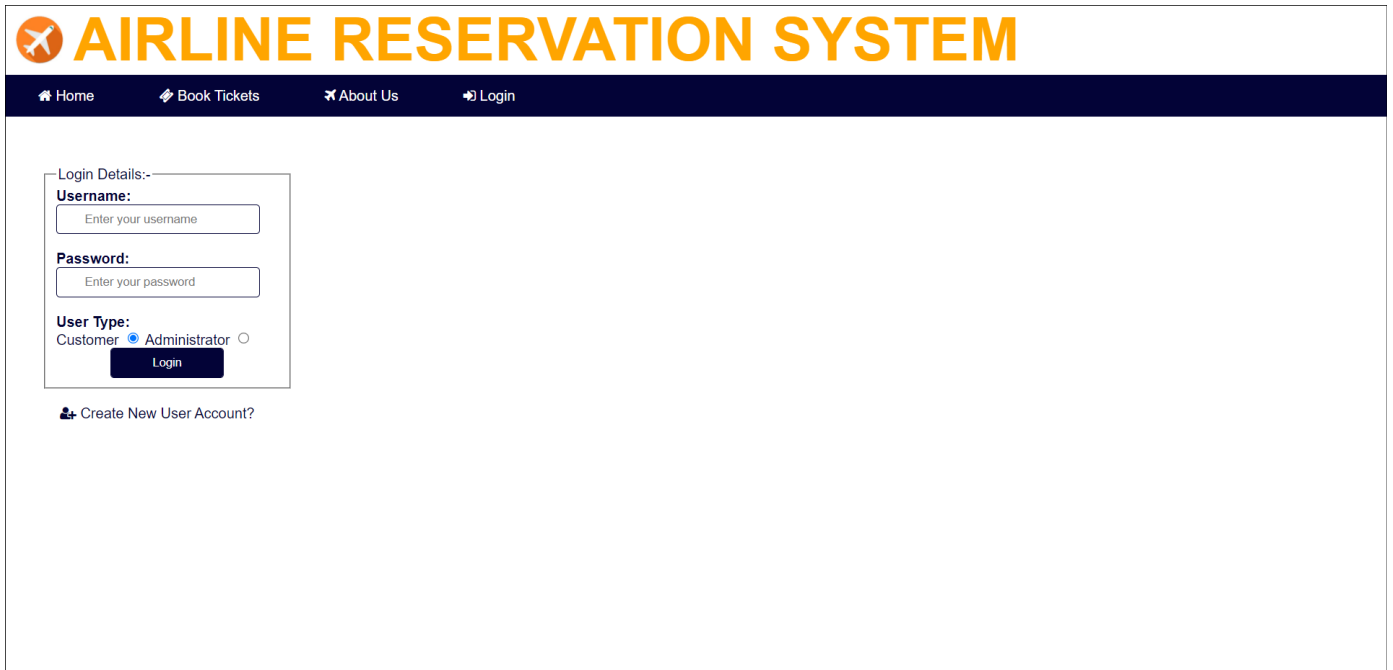
Figure 5.1.1 login page

➢ **User Home page**
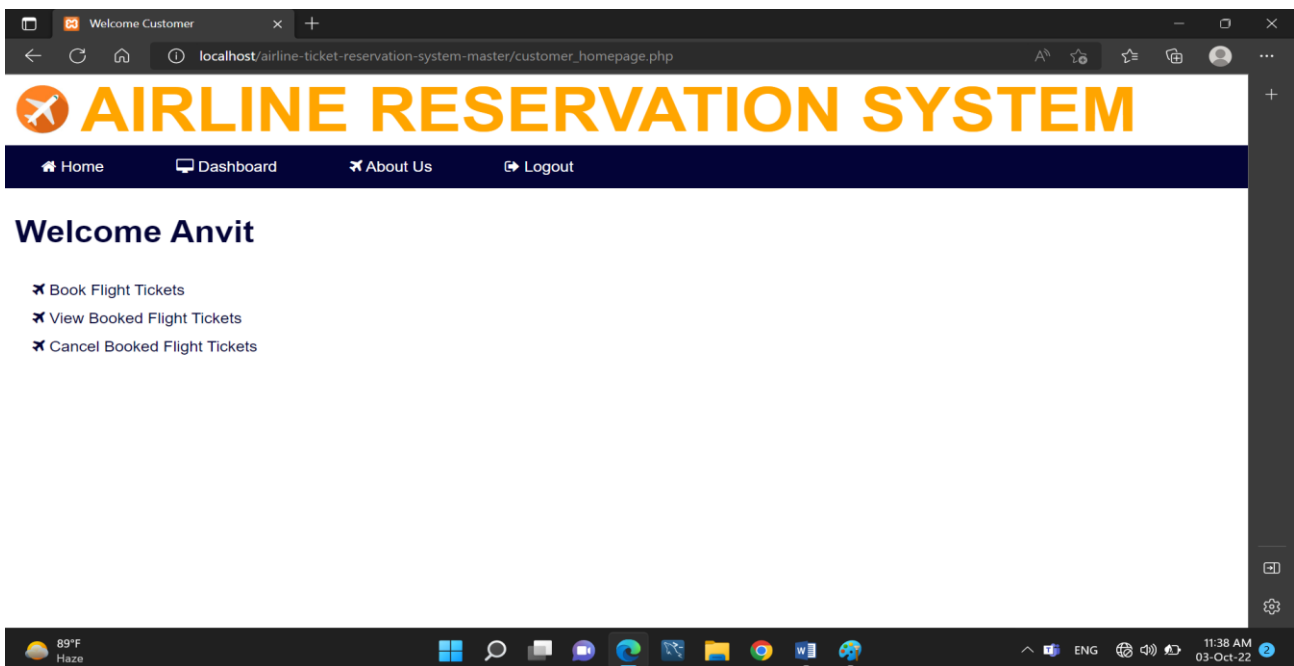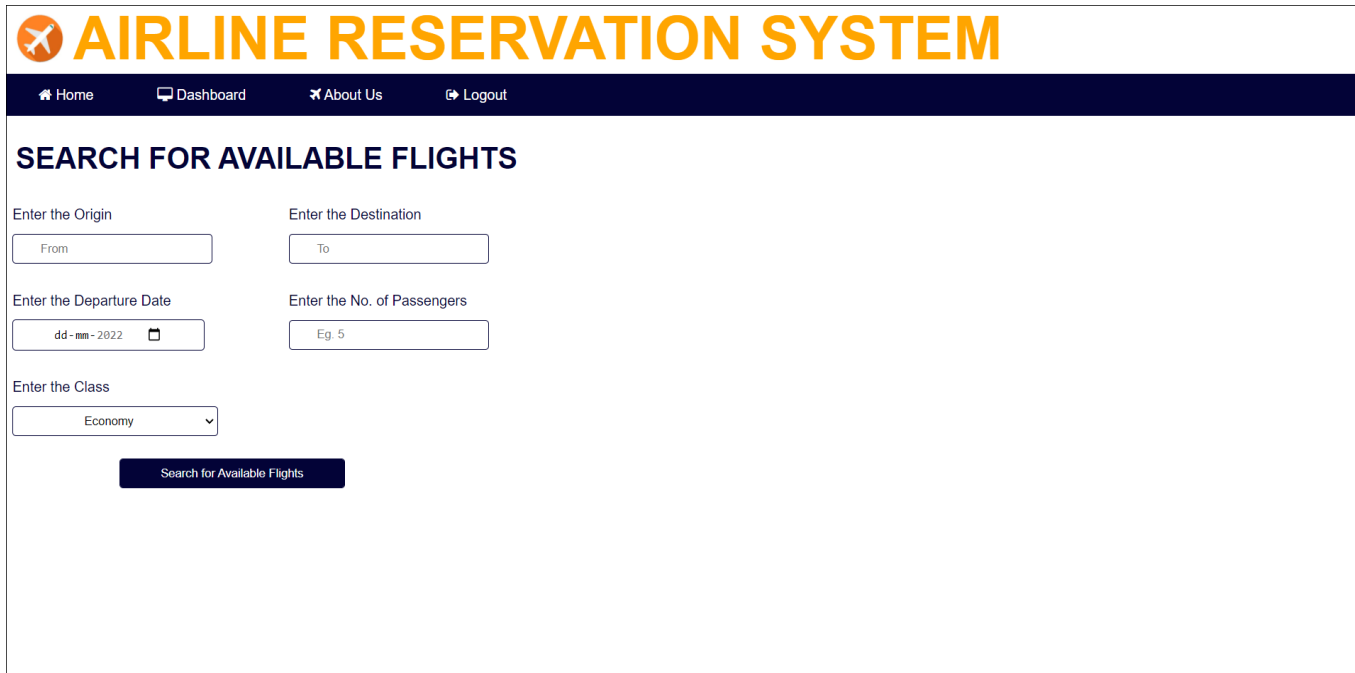
Figure 5.1.2 User Home page

➢ **Book tickets**

Figure 5.1.3 book tickets

➢

➢ **Admin page**

Figure 5.1.4 Admin page

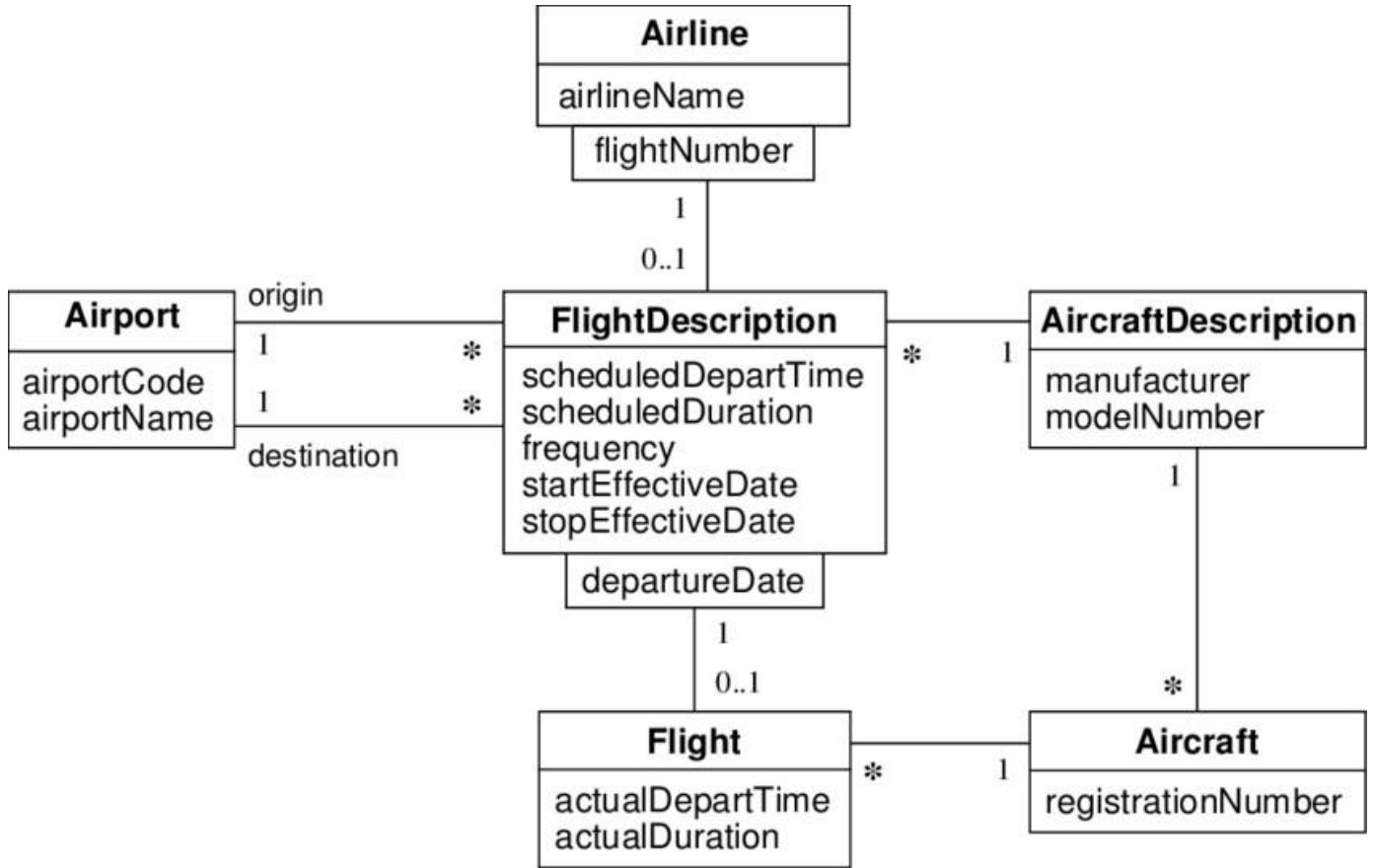## 5.2 Interface Design

5.2.1 Class Diagram

Figure 5.3.1.1 Class Diagram

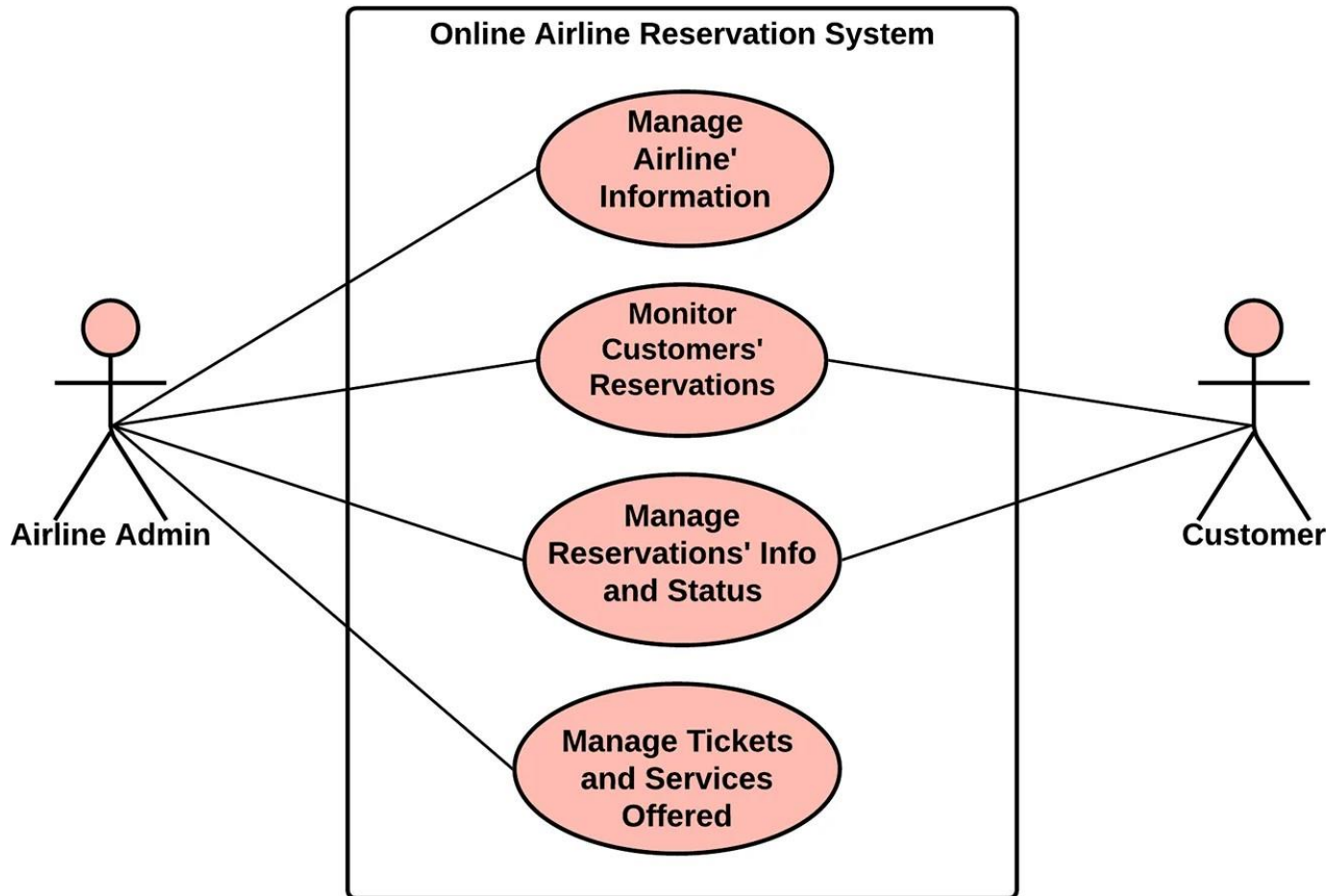## 5.2.2 Use Case Diagram

Figure 5.3.2.1 Use Case Diagram

5.2.3 Activity Diagram
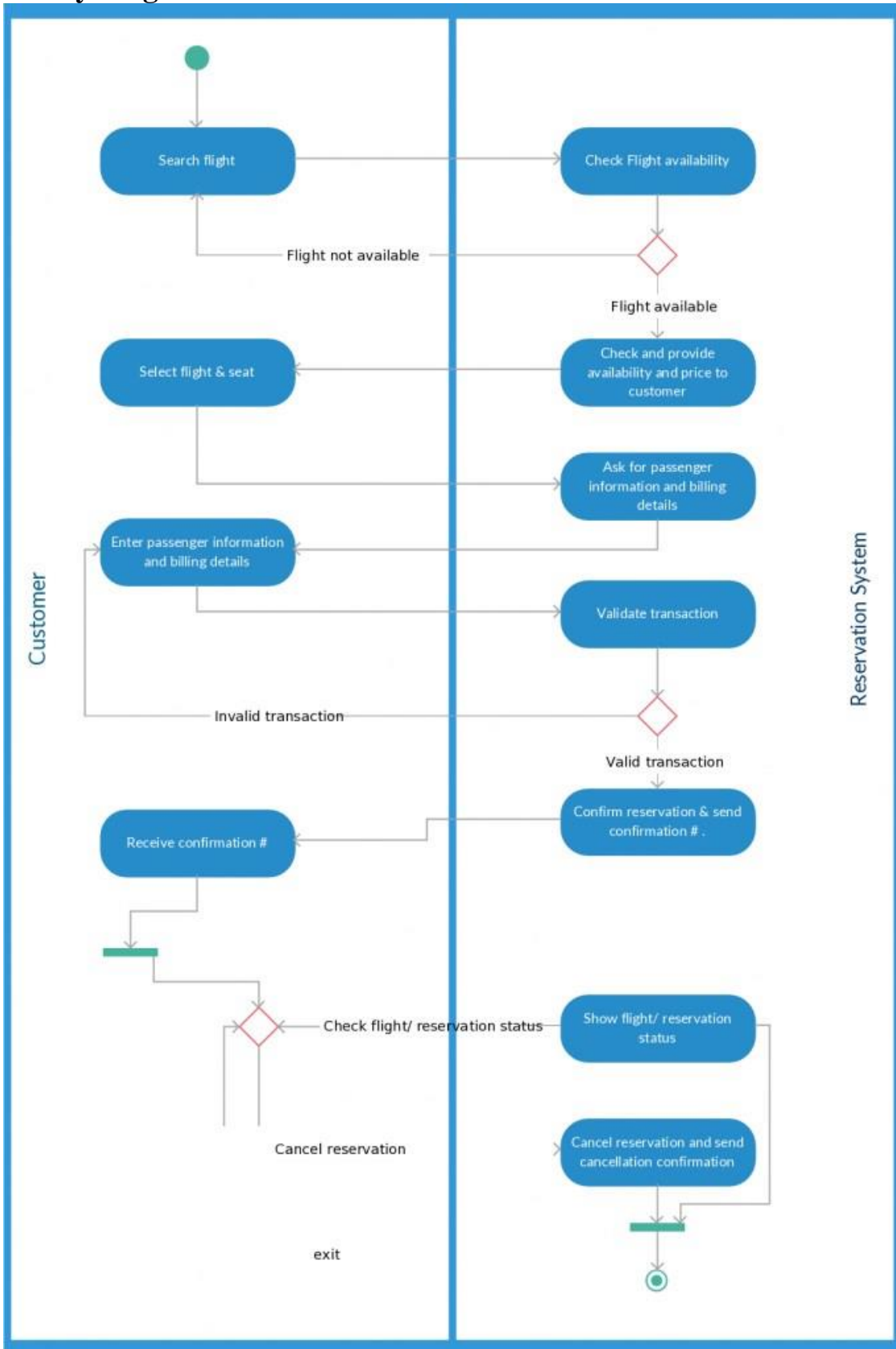

Figure 5.3.3.1 Activity Diagram

5.2.4 Data Flow Diagram
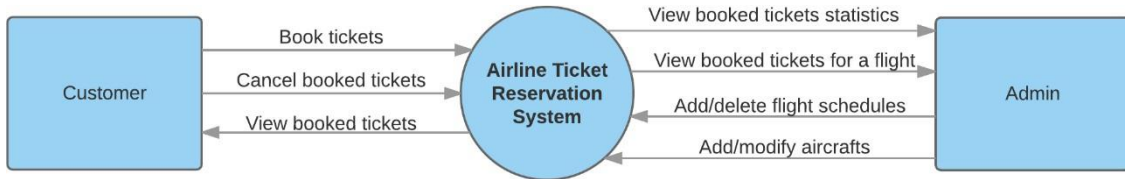
☐   # Context Level DFD
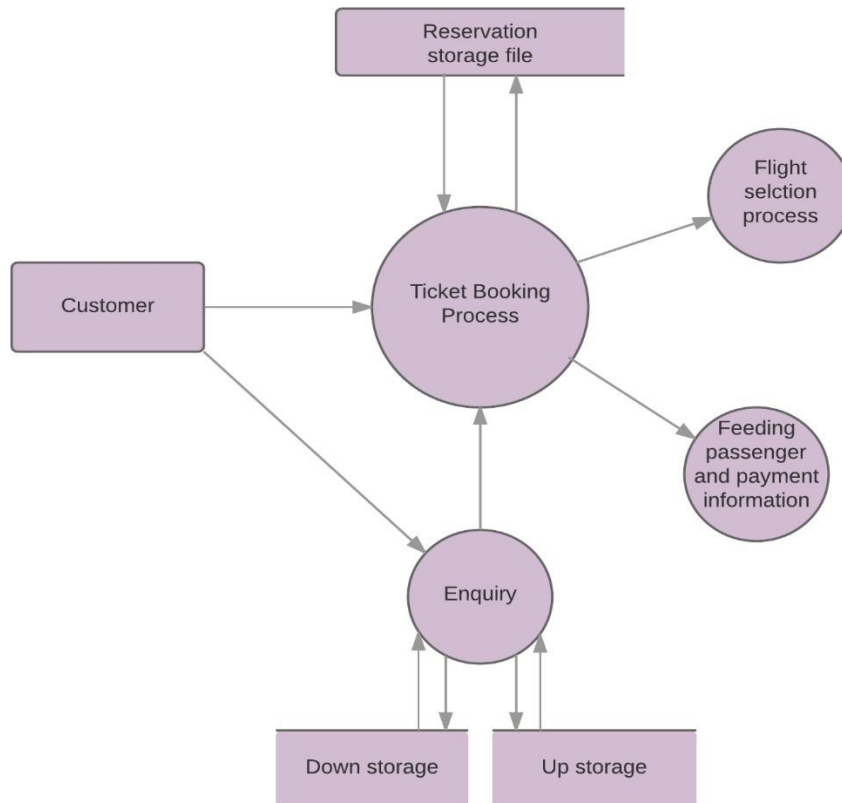

Figure 5.3.4.1 Context level DFD

First Level DFD

Figure 5.3.4.2 First level DFD

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6. Code Implementation

6.1 Implementation Environment

Challenges identified for successful design and implementation of this project are dominated by:

⧆ Complexity, reliability/availability, transparent data access. The project was a result of a group consensus. The team was having two members. The team was guided by project manager. The team structure depends on the management style of the organization, the no. of people in the team, their skill levels and the problem difficulty.

6.2 Program/Module Specification

•   System GUI must be as simple and user friendly as anyone can use it. At front side we implemented login form to access the system.

•   A Session is maintained throughout the system when a particular user enters into the system. The Session is regularly checked whenever it is required Proper validation is placedas and when it is required.

6.3 Coding Standards

•   Normally, good web development organization requires their programmers tomaintain some well-defined and standard style of coding called coding standard.

6.3.1 Comment Standards:

•   The comment should describe what is happening, how it is being done, what parametersmean, which global are used and which are modified, and any registration or bugs.

        The standards I have followed are:

•   Comment may also be used in the body of the Cascading style sheets to explain individual sections or lines of codes to easily get access and easily review or managethe classes or properties for the pages.

•   Inline comments should be made with the //. Comment style and should be indented at the same level as the code described.

•   For multiple line comments we write between /*   */.

7. Testing

7.1 Testing Strategy

A strategy for web testing integrates software test case design method into a well-planned series of steps that result in the successful construction of the software. The strategy provides the roadmap that describes the steps to be conducted as a part of testing, then these steps are planned and then undertaken, and how much effort, time and resource will be required.

7.2 Testing Method

7.2.1   Unit Testing

The unit testing is meant for testing smallest unit of software. There are two approaches namely bottom-up and top-down. In bottom-up approach the last module is tested and then moving towards the first module while top-down approach reverses the action. In present work we opt for the first one. The bottom-up approach for the current project is carried out as shown in.

7.2.2   Validation Testing

After the integration testing software is completely assembled as a package, interfacing error have been uncovered and corrected, and then validation testing may begin. Validation can be defined in many ways but a simple definition is what a validation succeeds when software functions in a manner that can be reasonably accepted by the user.

7.2.3   Integration Testing

The integration testing is meant to test all the modules simultaneously because it is possible that all the modules may function correctly when tested individually. But they may not work altogether and may lead to unexpected outcome.

8. Limitations and Future Enhancement

8.1 LIMITATIONS:

Though we tried our best in developing this system but as limitations are mere parts of any System so are of our system. Some limitations of Online Management system are as under:

•   Low storage capacity.
•   Communication between admin and customer.

8.2 FUTURE ENHANCEMENT:

There is always a scope for enhancements in any developed system, especially when our nature of the project is iterative waterfall which allows us to rethink on the method of developmentto adopt changes in the project. Below mentioned are some of the changes possible in the future to increase the adaptability, and efficiency of the system.

•   More attractive GUI (Graphical user interface).
•   Communication options like chat.
•   Online payment option

9.   Conclusion

Airline reservation web-site is a user-friendly system, which is very easy and convenient to use. The system is complete in the sense that it is operational and it is tested by entering data and getting the reports in proper order. But there is always a scope for improvement and enhancement. During the development of this, coding standards are followed for easy maintainability and extensibility.

10. References

WEBSITES:

•   https://www.w3schools.com/php/default.asp

•   https://getbootstrap.com

•   https://github.com/

Books

•   Software Engineering by Roger Pressman

•   Learning PHP, MySQL, JavaScript, CSS & HTML5 by Robin Nixon