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18CSC206J

SEPM REPORT

SEMESTER – IV

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Degree: B.Tech.(CSE Core)

Section: B-2

PROJECT TITLE

AND

BUSINESS CASE

Aim

To Frame a project team, analyze and identify a Software project

Team Members:

Sl No	Register No	Name	Role
1	RA1911003010633	Amit Srivastav	Lead
2	RA1911003010636	Roshan Singh	Member
3	RA1911003010640	Aman Kalla	Member

Project Title: Airline Reservation System

Project Description

This software has two parts. First is user part and the administrator part. User part is used as a front end and administrator is the back end. Administrator is used by airline authority. It will allow the customers to access database and allow new customers to sign up for online access. The system allows the airline passenger to search for flights that are available between the two travel cities, namely the “Departure city” and “Arrival city” for a particular departure and arrival dates. The system displays all the flight’s details such as flight no, name, price and duration of journey etc. After search the system display list of available flights and allows customer to choose a particular flight. Then the system checks for the availability of seats on the flight. If the seats are available then the system allows the passenger to book a seat. Otherwise it asks the user to choose another flight. To book a flight the system asks the customer to enter his details such as name, address, city, state, and credit card number and contact number. Then it checks the validity of card and book the flight and update the airline database and user database. The system also allows the customer to cancel his/her reservation, if any problem occurs.

Result:

Thus, the project team formed and the project is described

Aim:

To create a business case and Arrive at a Problem Statement for the Airline Reservation System.

Business Case

DATE	27.01.2021
SUBMITTED BY	Amit Srivastav (633), Roshan Singh (636) and Aman Kalla (640)
TITLE / ROLE	Airline Reservation System

THE PROJECT

In bullet points, describe the problem this project aims to solve or the opportunity it aims to develop.

- The project is aimed at exposing the relevance and importance of Airline Reservation Systems(ARS).
- It is projected towards enhancing the relationship between customers and airline agencies through the use of ARSs, and thereby making it convenient for the customers to book the flights as when they require such that they can utilize this software to make reservations.
- The main purpose of this software is 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 reservations or cancel a particular reservation.

THE HISTORY

In bullet points, describe the current situation.

In few countries, if a person wants to book a flight ticket, the following disadvantages are as follows:

- Manually goes to the airport and book the ticket.
- Downloading the ticket as paper document and filling it manually and submitting it at airport.
- Fill the ticket form as paper documents.
- Even if the ticket was reserved online, the freedom of approach/choice of the passenger has not much freedom.
- Cannot upload and download the latest updates.
- Less Security.
- Less user-friendly.

LIMITATIONS

List what could prevent the success of the project, such as the need for expensive equipment, bad weather, lack of special training, etc.

- This software does not provide the customers with details of cost of the ticket and it does not allow the customer to modify a particular part of his reservation and he/she can modify all his details.
- There must be a 64 MB on board memory.

APPROACH

List what is needed to complete the project.

- To provide the front end of a website is the part that users interact with. In order to have a better user interaction the approach used to develop the front end are HTML, CSS and JavaScript.
- A back end developer is responsible for server-side web application, which is accomplished using software such as Java and Node.js.
- The text editor apps used are atom text editor and VS code.

BENEFITS

In bullet points, list the benefits that this project will bring to the organization.

- This system provides a facility to easy access towards a customer and a real time user. They can be easily connected through it in just 3 steps. There is no requirement for any type of Agent.
- 24/7 booking available for customers.
- Increase the number of loyal customers.
- Provides security to the customer database.
- Save Paper and Printing expense.

Result

Thus the business case was prepared and the problem statement was arrived

PROJECT METHODOLOGY

AND

STAKEHOLDER

IDENTIFICATION/ANALYSIS

1. Executive Summary

The model implemented for this project is Incremental Model.

Incremental Model is a process of software development where requirements divided into multiple standalone modules of the software development cycle. Our project employs three module:

- Registration module- Passenger details are accepted and if the user exist then the passenger login to his/her account and if he is a new user, then his/her registration is done.
- Administrator module- Keeping a track of the available seats in the flight, timing and fare of the flight and cancel the ticket on passenger request.
- Passenger module- Viewing all the available flights and fare and timing details of the flight, booking the ticket and cancelling the ticket.

For the Identification of stakeholder, the answer lies in discovering and then aligning our project requirements with the communicated and non-communicated derived requirements (i.e., needs and expectations) of all parties interested in our project.

The stakeholder for our project includes the passenger who travel via flights, the owner responsible for allocating and managing resources, the developer team, sponsors who sponsor food and resort to the airline company, the cabin-crew members and the staff and support team.

2. Selection of Methodology

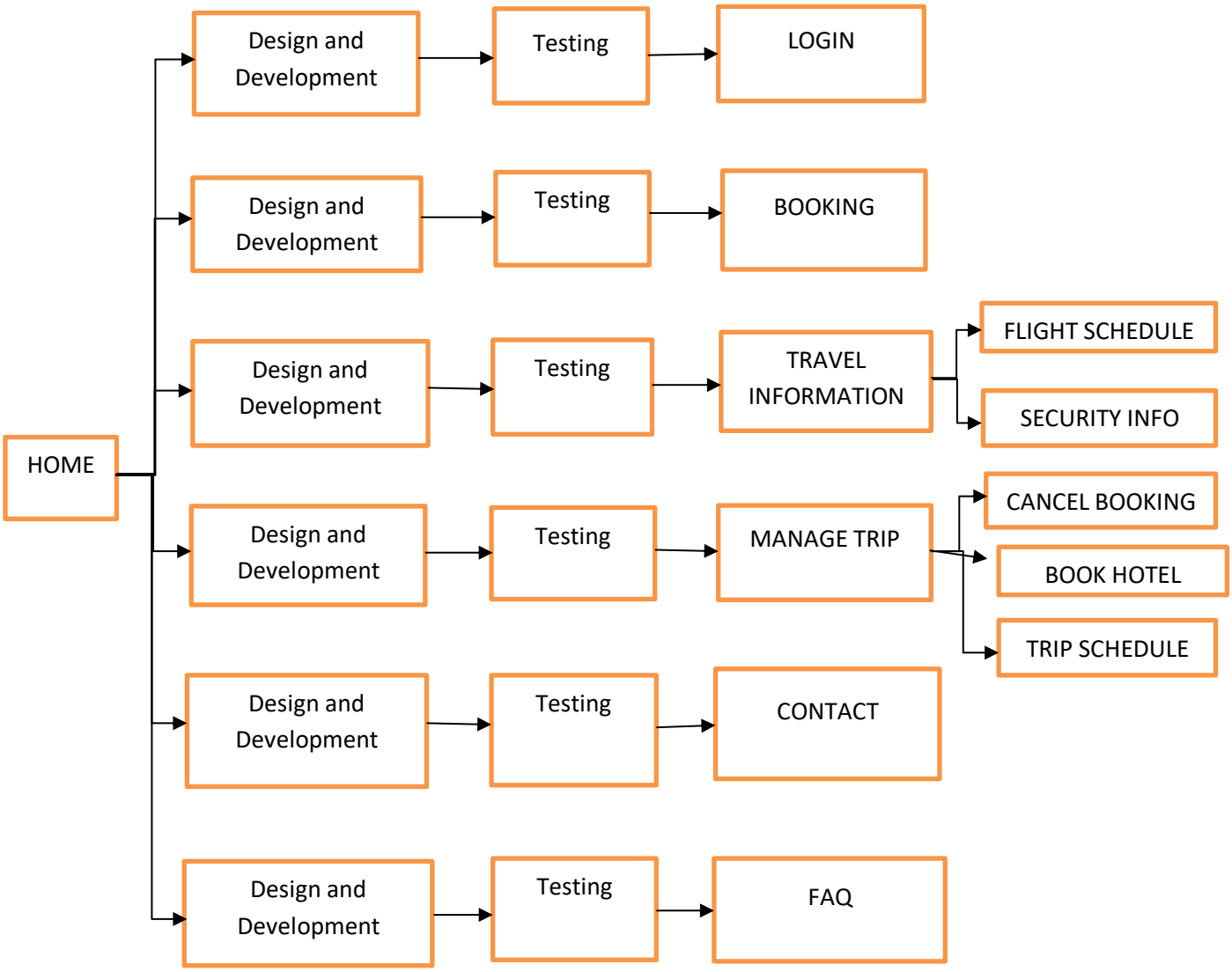
Since the project aims at developing models which would be tested after each phase and every time something new will be added hence the projects implements the methodology followed in incremental process model.

Moreover the given below benefits of Incremental model led to the selection of this methodology:

- Generates working software quickly and early during the software life cycle.

- More flexible – less costly to change scope and requirements.
- Easier to test and debug during a smaller iteration.
- Easier to manage risk because risky pieces are identified and handled during its iteration.
- Each iteration is an easily managed milestone.

INCREMENTAL PROCESS MODEL INCORPORATED IN OUR PROJECT



2.1. Roles and Methods

- End users : The end user for our project are the passenger who travel via flight.
- Principals : Principal for our project are the principal consultant and co-founder of Indigo.
- Partners : This includes operations staff, support staff and cabin-crew members.
- Insiders : These are members of the development team and the leader along with the sponsor team which sponsor Sarovar hotel and Resort

3. Stakeholder Management

3.1. Identification of Stakeholders

Stakeholder identification is the process used to identify all stakeholders for a project. It is important to understand that not all stakeholders will have the same influence or effect on a project, nor will they be affected in the same manner.

The stakeholders for our projects include:

- **Owner** - Provides all the resources, but don't appear to have specific requirements.
- **Sponsor (Sarovar Hotel &Resort)** – Promoting the airlines to help the airlines generate sales.
- **Team Members -** Appear to be happy with new processes and system equipment.
- **Passenger -** These are the people whose satisfaction matters the most for a successful project.
- **Cabin-crew -** These are the people whose feedback after interaction with the passenger brings new scope for advancement and betterment of the project.
- **Support-Staff -** Technical assistance and providing travel information to the passengers.

3.2. Interest and Influence matrix

Interest	Influence
High	High
Low	High
High	Low
Low	Low

Low Interest, High Influence Keep them satisfied as they can be 'defenders' Help them engage more	**High Interest, High Influence** Engage them closely as they are key 'drivers'
Low Interest, Low Influence Low Priority as they are 'spectators'	**High Interest, Low Influence** Keep them informed as they can be 'blockers'

Stakeholder Name	Estimated Project Influence	Estimated Project Interest	Assumptions and Risks	Priority (High / Medium/Low)
Owner	High	High	Providing all the resources, but don't appear to have specific requirements	High
Sponsor (Savora Hotel &Resort)	High	Low	We don't really know if the funding in the out years will continue	Medium
Team Members	Low	High	Appear to be happy with new processes and system equipment. Strike threat supposedly have decreased	Low
Passenger	HIgh	Low	These are the people whose satisfaction matters the most for a successful project. If these lot of people are not kept satisfied then the project may fail.	High
Cabin-crew	High	High	These are the people whose feedback after interaction with the passenger brings new scope for advancement and betterment of the project.	High
Support-Staff	Low	High	These are people responsible for technical assistance and helping the passenger with information's needed. Without support-staff the project would be difficult to be successful.	Low

3.3. Communication Plan for Stakeholders

A clear strategy is vital to identifying and resolving problems before they become significant issues, and for keeping project stakeholders in the project loop.

- A communication objective will be set before every meeting
- Defining and prioritising our key stakeholders
- Developing communication tactics for each stakeholder group

- Allocating budget and responsibilities
- Developing a quarterly communication calendar
- Accessing results and adapting the plan

Example:

- Walk through of progress to High Interest and High Influence stakeholders
- Providing single page dashboard and communicate via meetings
- Weekly report for High Interest and Low Influence

Result

Thus the Project Methodology was identified stakeholders were described.

PROJECT SCOPE AND REQUIREMENTS MANAGEMENT

4. Executive Summary

This system incorporates the use of registration module, passenger and administrator module in an airline.

Using the registration and administrator module, the passenger is logged into the system and all details of available flights will be displayed and the passenger will reserve a flight seat desire location, departure time and arrival time using the passenger module. After the flight confirmation is done the passengers will receive a confirmation after the payment is done.

In administrator module modification on flights, cancellation and addition of flights can be done. The features and documentation will be within the bound of these modules mentioned which provides the clear scope of this project.

5. Project Scope

The different activities of online Airline Reservation System in different phases as per our incremental model includes the following functions:

- Establish a secure connection
- Login to the system
- Search for available flights
- Create reservation
- View reservation
- Cancel reservation
- Accepting payment.

The ability of the software is to provide the details of the flights available and allow the customers to choose a particular destination and make a reservation.

S.No	Activities In Scope	Activities Out of Scope
1	Account creation of new passenger	Building new company specific software's
2	Login to the system	Displaying advertisements to visitors
3	Displaying of flight and seat availability	Automatically selecting ads that fit the visitor's interests
4	Creation, viewing and cancellation of reservation.	Tracking all user activity on the database and producing custom reports
5	Accepting payment	Billing advertisers for impressions

5.1. In Scope

- Designing of the login and account creation page.
- Coding for the account creation page and testing.
- Storing the passenger details.
- Displaying the flights available with the arrival and departure time, fare, time and seat availability.
- Designing and implementing of the administrator and passenger module which will allow reservation of flights, cancellation of flights and viewing of the reservation.
- Accepting the payment.

5.2. Out of Scope

• Building new company specific software's. .

• Tracking all user activity on the database and producing custom reports.

• Displaying advertisements to visitors.

• Billing advertisers for impressions.

• Automatically selecting ads that fit the visitor's interests.

• On-line management of advertising or real-time reporting to advertisers. Participating in existing banner advertising.

6. Epics [Major Functions]

Epic (#)	Epic Description
E1	Registration Module
E2	Administrator Module
E3	Passenger Module
E4	Payment accepting Module

7. Requirements

7.1. Functional Requirements

Functional Requirements can also be expressed in the form of “user story”. It’s an end goal, not a feature, expressed from the software user’s perspective.

Requirement (#)	Requirement Specification	Department	Name of Business User	Status
E1FR1	As a passenger, login to the system if exists or create an account.	Development	Amit Srivastav	Pending
E2FR1	Maintaining of airline schedule, fair, timings.	Database Manager	Aman Kalla	Pending
E2FR2	Viewing the passenger list and available seats	Database Manager	Aman Kalla	Pending
E3FR1	Book a flight after selecting the source and destination and the feasible flight for the passenger.	Development	Amit Srivastav	Pending
E3FR2	View the reservation or cancel the reservation	Technical	Roshan Singh	Pending
E4FR1	Passenger pays for the reservation made.	Financial	Roshan Singh	Pending

7.2. Non-Functional Requirements

Requirement (#)	Category of NFR	Requirement Specification	Department	Name of Business User	Status
NFR1	Performance	All pages should load within 3 seconds	Server	Technical Team: Amit Srivastav Roshan Singh Aman Kalla	Pending
NFR2	Performance	Search should bring the results less than 7 seconds	Server	Technical Team: Amit Srivastav	Pending

				Roshan Singh Aman Kalla	
NFR3	Availability	Application should be available for 24x7	Server	Technical Team: Roshan Singh	Pending
NFR4	Scalability	Registration Service should scale to serve 1000 request per second over 5 minutes timespan	Database	Database Specialist: Aman Kalla	Pending
NFR5	Confidentiality	All data should be encrypted.	Database	Database Specialist: Aman Kalla	Pending
NFR6	Usability	Website should work on all devices	Front-end	Technical Team: Amit Srivastav	Pending
NFR7	Flexibility	Should be User Friendly	Development	Technical members	Pending
NFR8	Extensibility	Service should be available to all.	Management	Project Manager	Pending

7.3. Infrastructure Requirements

Requirement (#)	Requirement Specification	Department	Name of Business User / Project Team Member	Status
IR1	Development Machine with 6 GB Ram and 4 Cores	Technical	Amit Srivastav	Pending
IR2	Code Repository	Technical	Aman Kalla	Pending
IR3	IDE – Visual Studio and Atom	Development	Roshan Singh	Pending
IR4	Front end-HTML + CSS + Bootstrap + JavaScript	Development	Amit Srivastav	Pending
IR5	Back end-RDBMS, Node.js and Java	Development	Aman Kalla	Pending

7.4. User Story

How to write a user story…

- Who are we building it for, who the user is? — As a <type of user>
- What are we building, what is the intention? — I want <some goal or objective >
- Why are we building it, what value it brings for the user? — So that <benefit, value>

User Story	Acceptance Criteria	Size of User Story
As customer, I can view all available flights with best price between the selected source and destination	View all flights of that particular day from a selected source and destination. Allow to choose the flights feasible for the passenger.	Medium
As a customer, I want airline reservation to be dynamic such that it can inform the passenger about the change such as rescheduling or cancellation of some flight and must provide alternatives.	Will be able to get the information about any change made due to rescheduling and cancellation of flights. Will provide alternative in case of cancellation.	Big

Reference

1. https://www.pmi.org/
2. https://www.atlassian.com/agile/project-management/user-stories

Result:

Thus, the requirements are identified, collected and documented.

PROJECT MANAGEMENT PLAN, EFFORT AND COST ESTIMATION AND TEAM FORMATION

8. Executive Summary

In a time when establishing and maintaining a market advantage is crucial, the use of technical innovations such as the Airline Passenger Reservation Systems (APRS) becomes a competitive necessity. Good business strategies in developing strategic alliances and exposing the consumer to a globally expanded product base allows airlines to compete. A wider range of products, the ability to be flexible with fluctuating consumer needs are all potentially exploitable through the power of technology and strategic planning.

The following report provides an understanding concerning the Airline Passenger Reservation System. It will briefly discuss the advantages associated with integrating the system across the airline industry and what are the project management plan, cost estimate and effort put into the project, infrastructure requirement and project team formation.

9. Project Management Plan

- The objective of our project is to design and develop a software which would automate the major airline operations. It would be providing the facilities for the reservation of online air tickets or any other operations through an effective and yet simple GUI for a normal passenger intending to travel through airways.
- The main purpose of this software is 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 reservations or cancel a particular reservation.
- This system provides a facility to easy access towards a customer and a real time user. They can be easily connected through it in just few steps. There is no requirement for any type of Agent. 24/7 booking available for customers. Increase the number of loyal customers. Provides security to the customer database. The methodology used is incremental as our project delivers model with incorporated added functionality at each incremental stage.
- The system developed is technically feasible as all technical requirements are available.
- Since the project development is done keeping in mind the user requirements hence it is operationally feasible as there would be no resistance from the user.
- For economic feasibility, the success of the project judged by the stakeholders depends on the efficient airline operation with maximum passengers, passengers opting for food and stay at the sponsored resort thereby maximising the profit of the organisation and thereby contributing toward the growth of the sponsored brand determines the success of the project.
- Moreover, the website would contain the advertisement of the sponsored brand, Sarovar Hotel and resort and would provide coupons to its travellers which would provide them rebate for their stay and food in the resort. The sponsored brands even have the logo of the airline company as a part of advertisement of Indigo Airlines. The count of coupon is maintained which helps in knowing how many times the coupon is used.
- For the success of the project for the key stakeholders i.e., the passenger- the airline offers business as well as economy class as two different classes with varying price range, where

middle seats cost less when booked first and the window side seats cost more. Moreover at varying times to attract passengers airline offers relatively cheap flights

- The active participation of employee in the project also leads to the success of the project as they are the one who works for attaining the objectives of the organisation thereby helping in the process of maximising profits. The project would turn out to be economically feasible it the expenses exceeds the cost.

Focus Area	**Details**
Integration Management	Governance Framework Project Team Structure Roles & Responsibilities of Team Change Management (Change Control, Issue Management) Project Closure
Scope Management	Scope Statement Requirement Management (Gathering, Control, Assumption, Constraint Stakeholder) Define Deliverable Requirement Change Control Activities and Sub-Tasks
Schedule Management	Define Milestones Schedule Control
Cost Management	Estimate Effort Assign Team Budget Control

Quality Management	Quality Assurance: Quality assurance will be managed including governance, roles and responsibilities, tools and techniques and reporting Quality Control: Specify the mechanisms to be used to measure and control the quality of the work products
Resource Management	Estimate and Manage the need People: People & Skills Required Finance: Budget Required Physical: Facilities, IT Infrastructure
Stakeholder	Identifying, Analyzing, Engaging Stakeholders
Communication Management	Determine communication requirements, roles and responsibilities, tools and techniques. [Type of Communication, Schedule, Mechanism Recipient]
Risk Management	Identifying, analysing, and prioritizing project risks
Procurement Management	Adhering to organization procurement process

10. Estimation

10.1. Effort and Cost Estimation

WBS	Activity	Activity Description	Sub-Task	Sub-Task Description	Effort (in hours)	Cost in INR
E1FR1	E1R1A1	Design the user screen	E1R1A1T1	Log into the system for existing users	3	1500
			E1R1A1T2	Register new user	4	2000
E2FR1	E2R1A1	Displaying the available flights	E2R1A1T1	Flights are displayed with timings and fair	4	20002
E2FR2	E2R2A1	Display the available seat and	E2R2A1T1	Passenger list is displayed	4	2000

		passenger list.				
			E2R2A1T2	Seats which have been occupied and are yet to be occupied are listed.	3	1500
E3FR1	E3R1A1	Displaying of the flights of a particular route.	E3R1A1T1	Flights with specified source and destination are displayed.	3	1500
E3FR2	E3R2A1	Status of reservation is displayed	E3R2A1T1	If the reservation exists shows the details of the reservation or display that the reservation has been cancelled.	4	2000
E4FR1	E4R1A1	Accepting of payment	E4R1A1T1	Payment for the reservation made by the passenger is stored in the database.	3	1500

Effort (hr)	Cost (INR)
1	500

10.2. Infrastructure/Resource Cost [CapEx]

Infrastructure Requirement	Qty	Cost per qty(INR)	Cost per item(INR)
IR1	3	50,000	50,000
IR2	3	4500	4500
IR3	3	8000	8000
IR4	4	5000	5000
IR5	3	4000	4000

11. Maintenance and Support Cost [OpEx]

Category	Details	Qty	Cost per qty per annum	Cost per item
Key Business User, Project	Network, System, Middleware and DB admin	3	2,000,000	6,000,000

Manager, Business Analyst and Database Specialist	Developer, Support Consultant			
License	Operating System Database IDE	8	10000	100,000
Infrastructures	Server, Storage and Network	10	20000	400,000

12. Project Team Formation

12.1. Identification Team members

Name	Role	Responsibilities
Amit Srivastav	Key Business User (Product Owner)	Provide clear business and user requirements
Aman Kalla	Project Manager	Manage the project
Roshan Singh	Business Analyst	Discuss and Document Requirements
Amit Srivastav	Technical Lead	Design the end-to-end architecture
Aman Kalla	UX Designer	Design the user experience
Amit Srivastav	Frontend Developer	Develop user interface
Aman Kalla	Backend Developer	Design, Develop and Unit Test Services/API/DB
Roshan Singh	Cloud Architect	Design the cost effective, highly available and scalable architecture
Roshan Singh	Cloud Operations	Provision required Services
Amit Srivastav	Tester	Define Test Cases and Perform Testing

12.2. Responsibility Assignment Matrix

RACI Matrix	Team Members			
Activity	**Name (BA)**	**Name (Developer)**	**Name (Project Manager)**	**Key Business User**
User Requirement Documentation	Amit Srivastav	Amit Srivastav Aman Kalla Roshan Singh	Aman Kalla	Passenger Sponsor Indigo Airline Corporation.

Discuss and Documents Requirement	Roshan Singh	Amit Srivastav Aman Kalla Roshan Singh	Aman Kalla	Passenger Sponsor Indigo Airline Corporation.
Design of the end-to-end architecture.	Amit Srivastav	Amit Srivastav Aman Kalla Roshan Singh	Aman Kalla	Passenger Sponsor Indigo Airline Corporation.
Development of the user interface	Amit Srivastav	Amit Srivastav Aman Kalla Roshan Singh	Aman Kalla	Passenger Sponsor Indigo Airline Corporation.
Design, Development and database management.	Aman Kalla	Amit Srivastav Aman Kalla Roshan Singh	Aman Kalla	Passenger Sponsor Indigo Airline Corporation.
Management of the storage and cloud operations.	Roshan Singh	Amit Srivastav Aman Kalla Roshan Singh	Aman Kalla	Passenger Sponsor Indigo Airline Corporation.
Testing	Amit Srivastav	Amit Srivastav Aman Kalla Roshan Singh	Aman Kalla	Passenger Sponsor Indigo Airline Corporation.

A	Accountable
R	Responsible
C	Consult
I	Inform

Reference

1. https://www.pmi.org/
2. https://www.projectmanagement.com/
3. https://www.tpsgc-pwgsc.gc.ca/biens-property/sngp-npms/ti-it/ervcpgpm-dsfvpmpt-eng.html

Result:

Thus, the Project Plan was documented successfully.

WBS

AND

RISK MANAGEMENT PLAN

13. Executive Summary

The planning phase of the project has come to an end and identifying the risks involved in our project and ways to manage them are discussed among the team members. The airline reservation project implementation has been planned to start on 12th March,2021 and is expected to be completed by 20th May,2021. The risks identified are some of technical nature while some of business and includes loss of faith and support of sponsors, data management risk leading to displaying of incorrect information of the flight details, as well as managing the passenger data and even the issues pertaining to breaching of data leading to loss of the company and benefit of the competitors.

The risks are managed by encouraging stakeholders communication, integrating risks during the course of planning and mitigating risk by providing data encryption, gaining the support of sponsors and incorporating the skills and experience of the staff and team members.

14. WBS With Project Schedule

Module (#)	Activity (#)	Sub-Task(#)	Assignee(s)	Planned Start Date	Planned End Date	Actual Start Date	Actual End Date	Status
Registration	Log in/sign up page creation	Creating an account for the new user and allowing log in for existing user.	Amit Srivastav Roshan Singh Aman Kalla	12.03.2021	26.03.2021	----	----	Pending
Administrator	Displaying the available flights, seat and passenger list.	Flights and passenger list is displayed.	Amit Srivastav Roshan Singh Aman Kalla	27.03.2021	14.04.2021	----	----	Pending
Passenger	Displaying of the flights of a particular route.	Flights with specified source and destination	Amit Srivastav Roshan Singh Aman Kalla	15.04.2021	30.04.2021	----	----	Pending

	Status of reservation is displayed.	are displayed. If the reservation exists shows the details of the reservation or display that the reservation has been cancelled.						
Payment	Accepting of payment.	Payment for the reservation made by the passenger is stored in the database.	Amit Srivastav Roshan Singh Aman Kalla	1.05.2021	12.05.2021	----	----	Pending

15. Risk Identification

- Maintaining and management risk.
- Risk of insufficient data due to manual errors.
- Budgetary risk due to lack of faith of sponsor.
- Security issues leading to data breaching.

15.1. List (Describe) Register

Risk ID (#)	Risk Description	Impact Description
R01	Maintaining and managing data is costly and tedious.	It can lead to an increase in the expense of the budget of the software project.
R02	Security issues like leaking of data and corruption of database.	Can benefit the competitors and can bring heavy loss to the airlines company and ultimately the failure of the project.

R03	Losing the support of the existing sponsors.	Can bring a heavy impact on the budget of the project and can bring down the quality of the software produce.
R04	Insufficient data due to loss of data or due to some manual errors.	It will lead to passing up of wrong information to the customers and failure of the database management system.

15.2. Managing Risk

Risk ID (#)	Status [Open / Closed]	Risk Appetite [Accept/ Mitigate/ Transfer/Avoid]	Action	Action Owner	Target Date	Remarks
R01	Open	Accept	Accept	Amit Srivastav Aman Kalla	13.05.2021	Risk is taken under action.
R02	Open	Mitigate	Provide data encryption.	Aman Kalla Roshan Singh	18.05.2021	Risk is taken under action.
R03	Open	Transfer	Gain support of other sponsors.	Roshan Singh	20.05.2021	Risk is taken under action.
R04	Open	Mitigate	Data management is performed and tested at each phase after implementation.	Amit Srivastav Roshan Singh Aman Kalla	10.05.2021	Risk is taken under action.

Result:

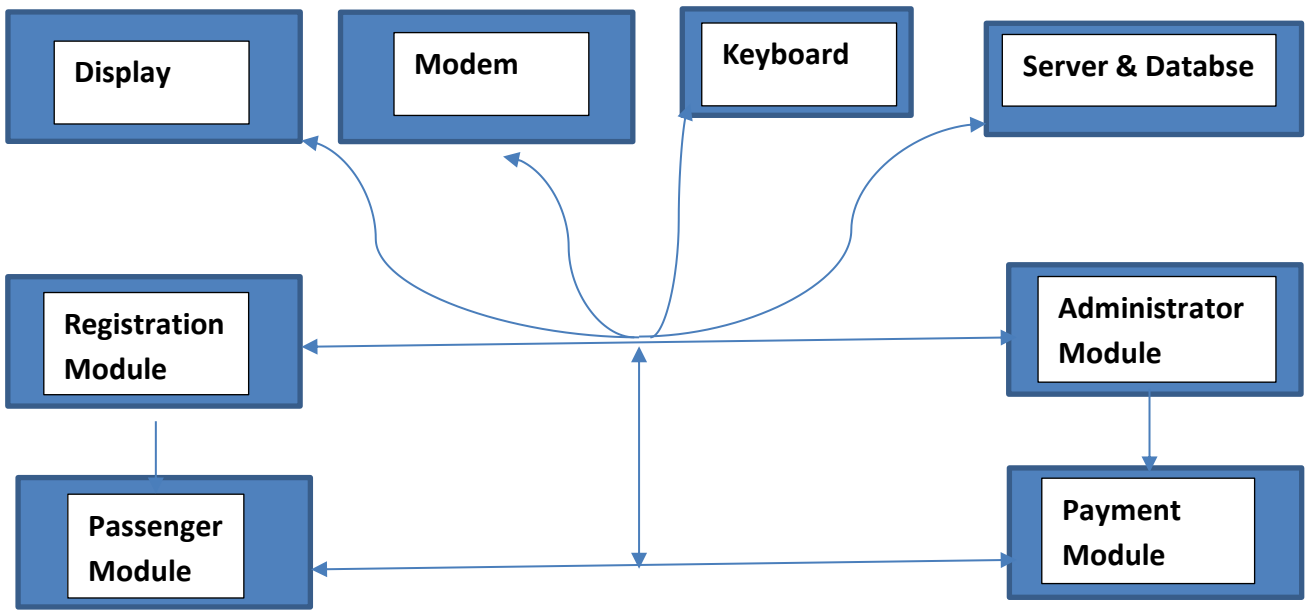
Thus, the WBS and Risk Plan was documented successfully.

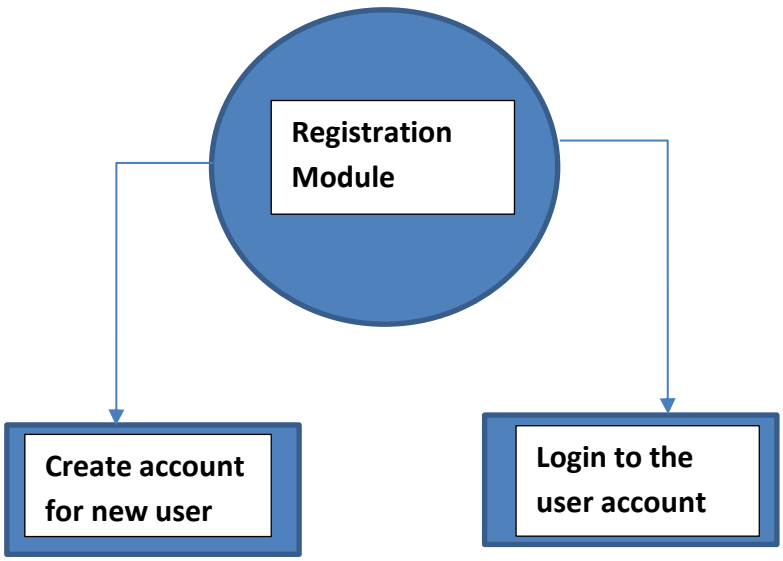
ARCHITECTURE DIAGRAM WITH DESCRIPTION

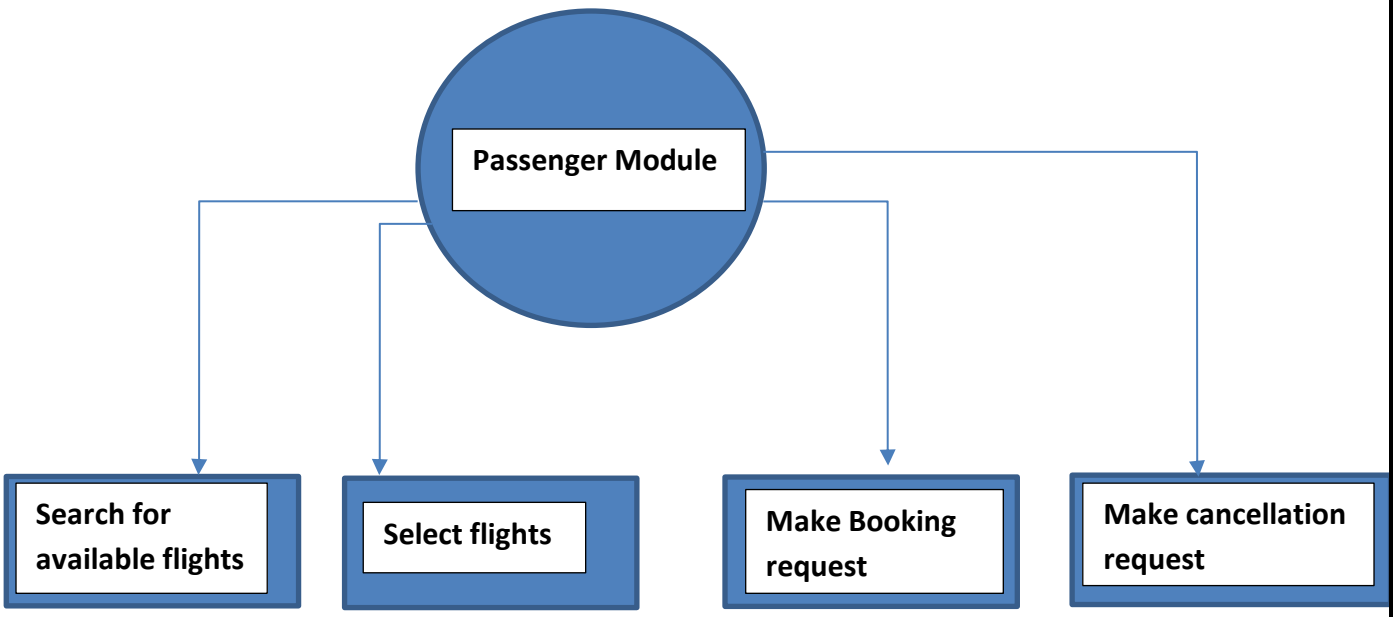
Software Used

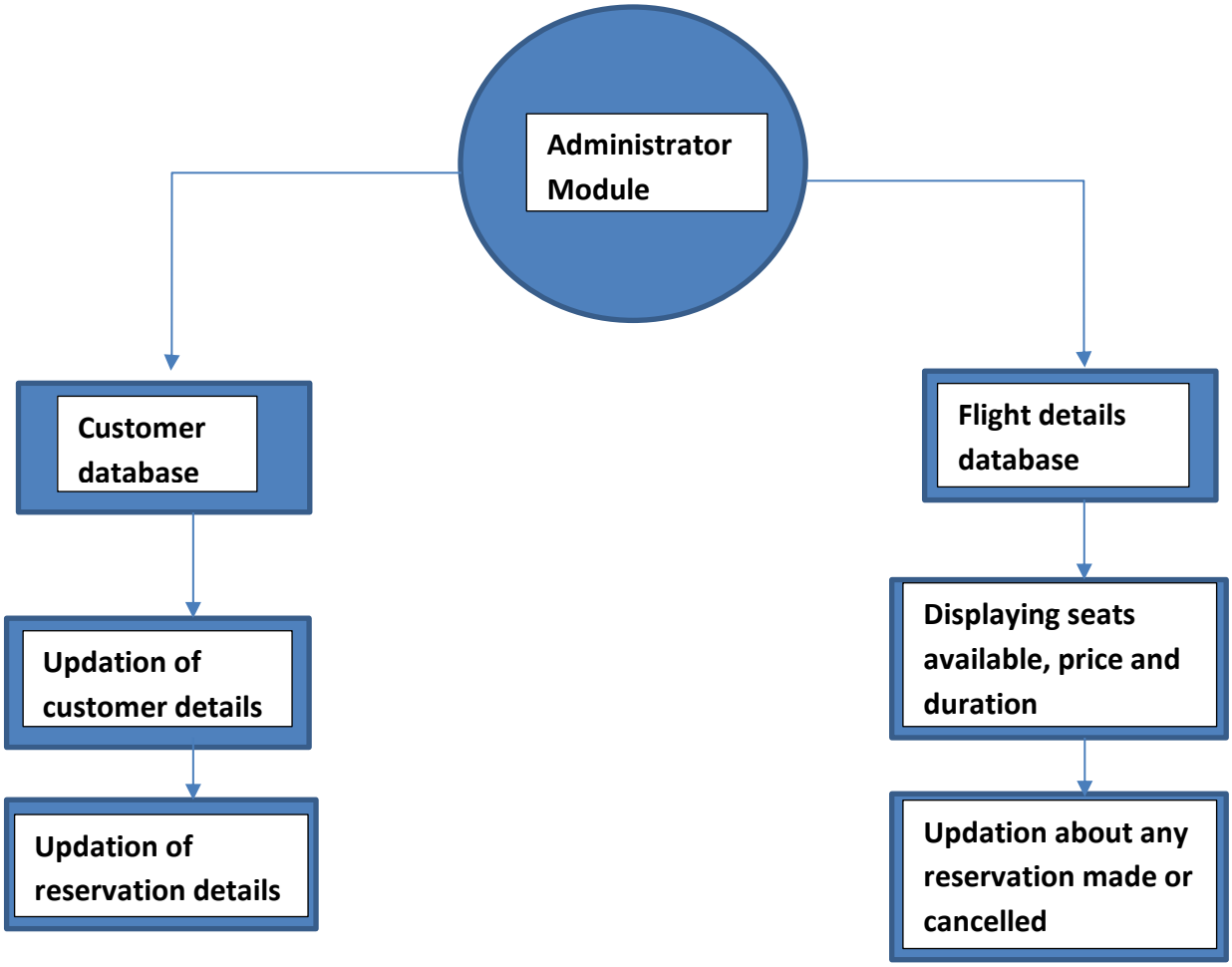
- **Star UML**
- **ERD Plus**
- **Lucid chart**

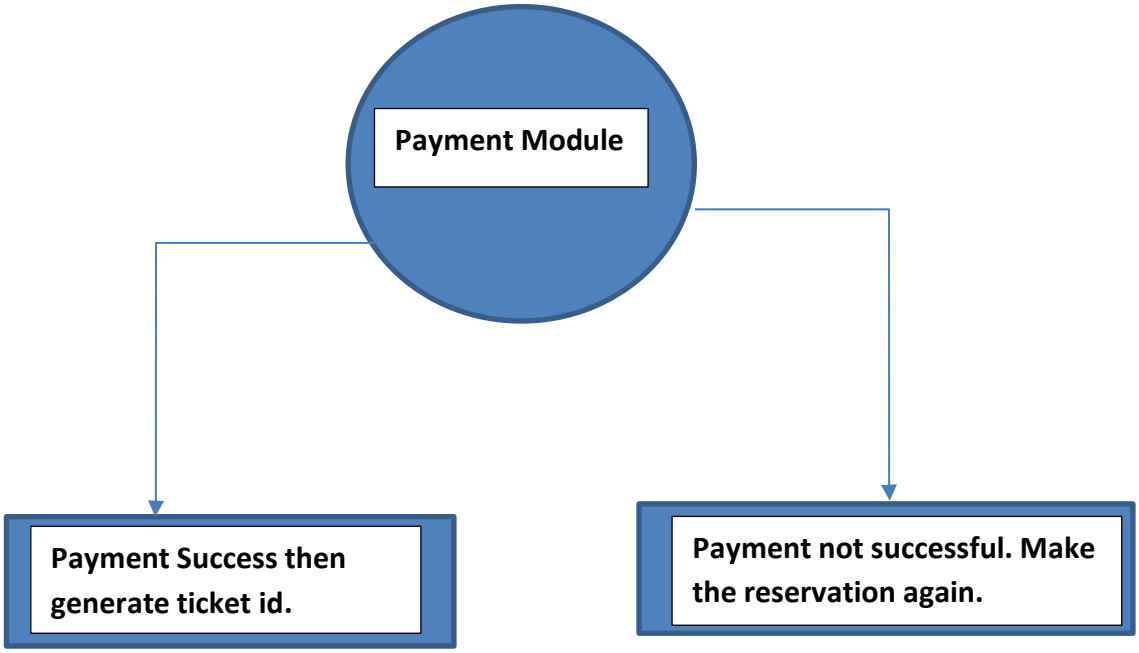
Architecture Diagram with description



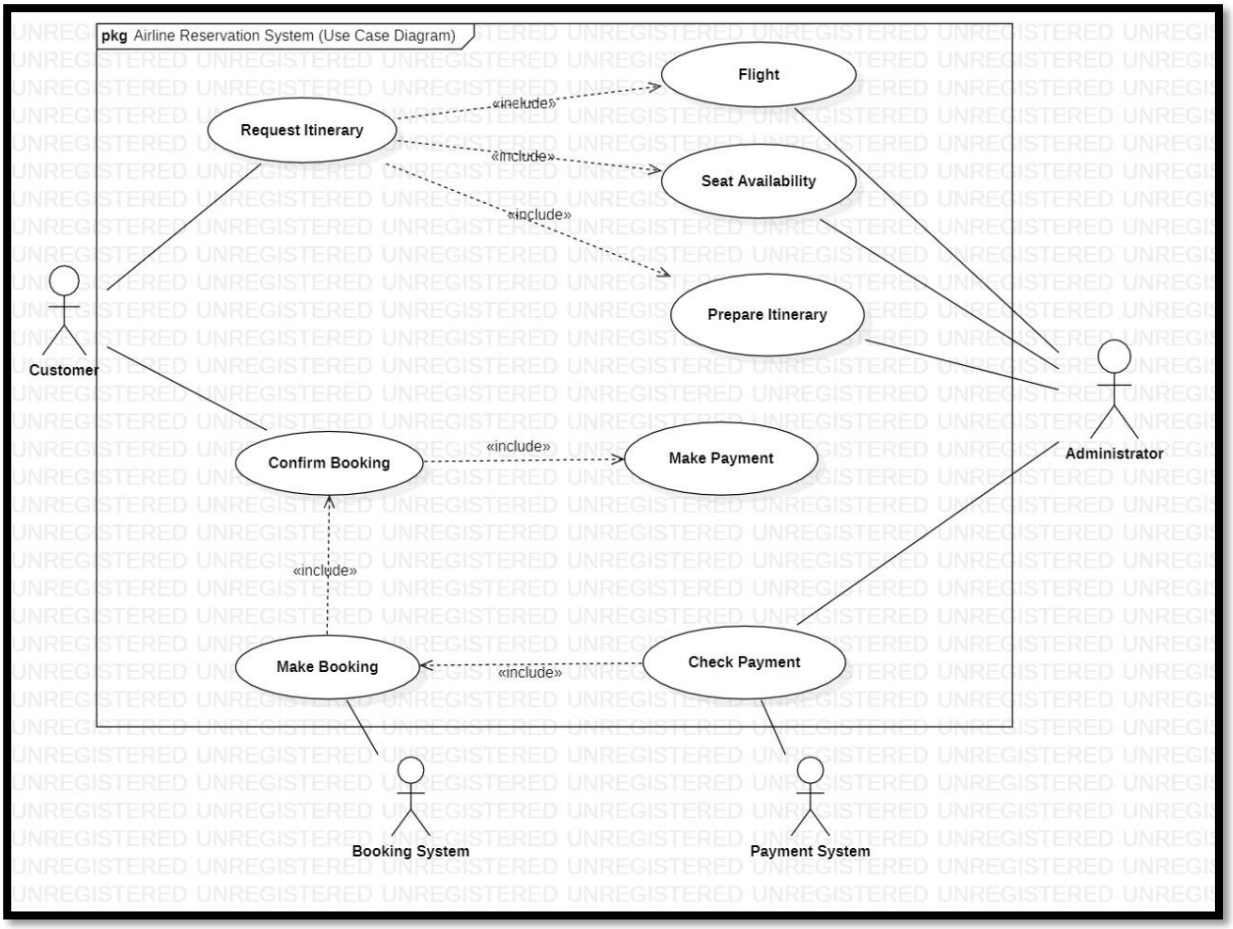



Passenger Module
Search for available flights
Select flights
Make Booking request
Make cancellation request


Administrator Module
Customer database
Updation of customer details
Updation of reservation details
Flight details database
Displaying seats available, price and duration
Updation about any reservation made or cancelled


Payment Module
Payment Success then generate ticket id.
Payment not successful. Make the reservation again.

Use Case Diagram With Description



The above use case diagram depicts all the functions or activities that a user or a customer can perform on the application and also about the roles of the administrator. They can be discussed in detail as follows:

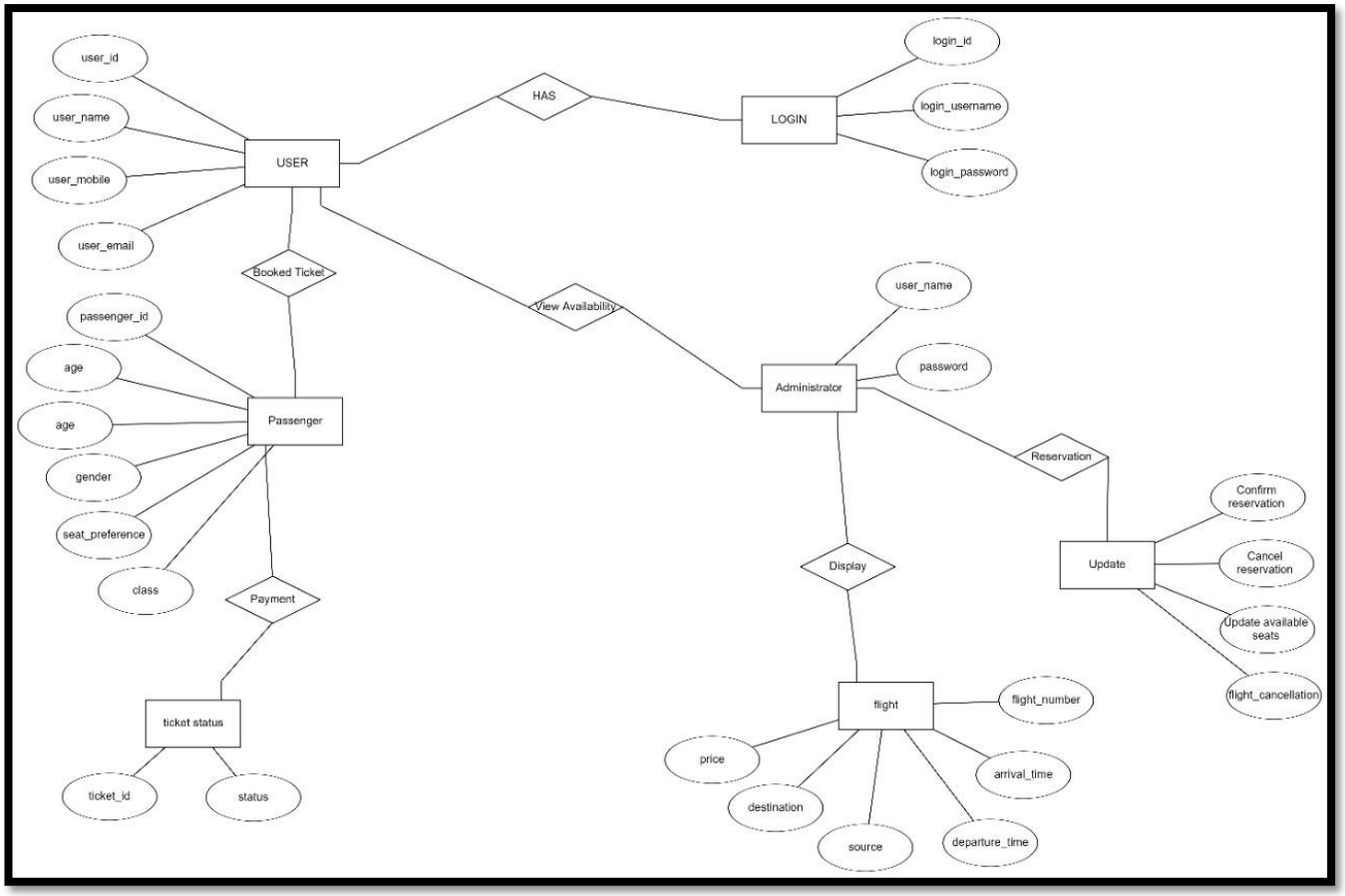
- **Login and Register:** The Airline Reservation System also comes with the customer registration details page, where the customer can enter his details and register. He can also create a username and password. Booking Flights: The customer can also search for the flights available and reserve his place on the flight by purchasing a ticket.

  The administrator has to login first in order to be able to make changes to the Airline Reservation System, by adding, deleting or modifying the data in the Airline Reservation System database. After making the necessary changes, he then has to logout of the system, in order to prevent misuse of the data.

- **Add/Modify Customer Information:** Daily the Airline Reservation System will have many customers registering with the website and many of them unsubscribing. Only the administrator will have the sole rights to modify the database accordingly.

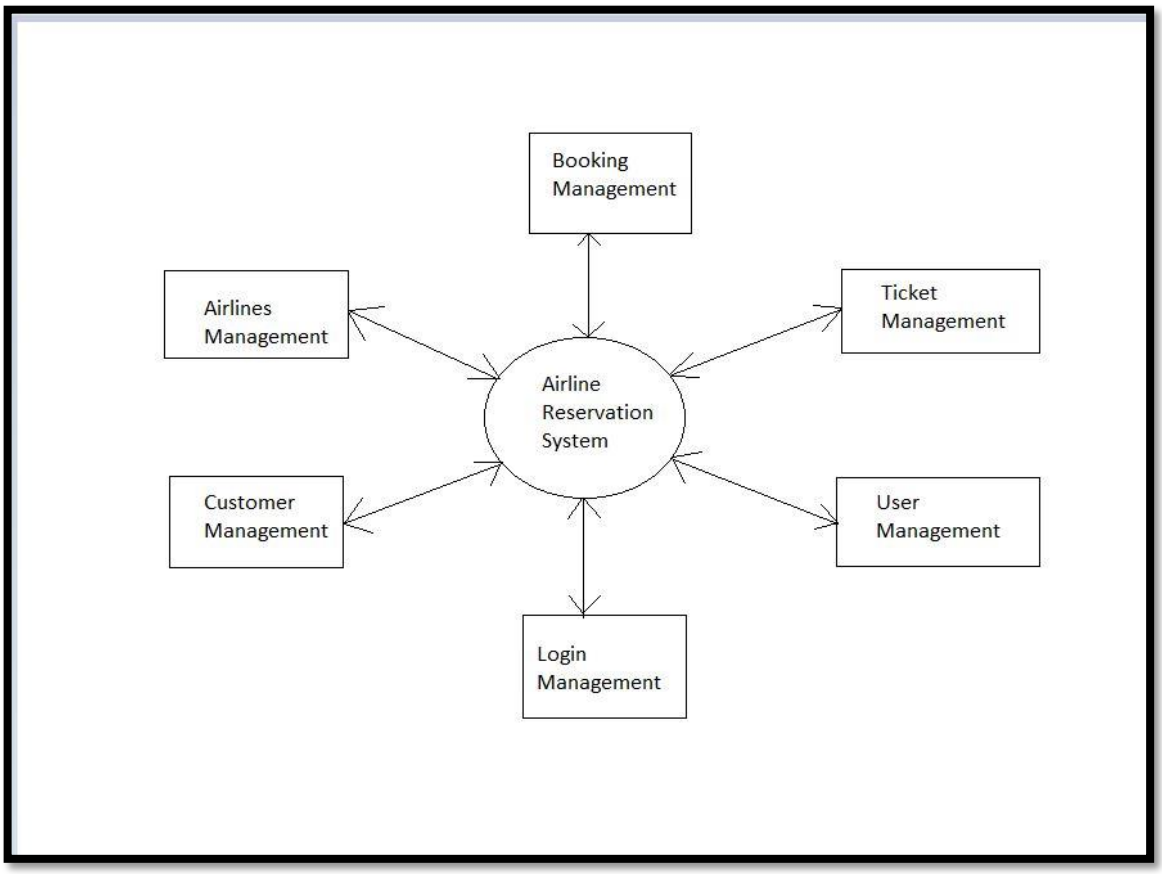
- **Add/Modify Flight Information:** The Administrator also has the sole rights to add, delete or modify the flight information. Sometimes, flights get cancelled for some reason, so such flights would be removed from the list of flights available to the customer. Similarly whenever any flight information has to be modified or if any new flights need to be added to the database, these operations are performed by the administrator.
- **Cancellation of Reservations:** Sometimes, after making a reservation, a customer might cancel the reservation he has made. So, the administrator also handles such special situations and sends the customer an e-mail confirmation after deleting the specific transaction.

ER Diagram:



DFD Diagram (process) With Description

Zero-level DFD



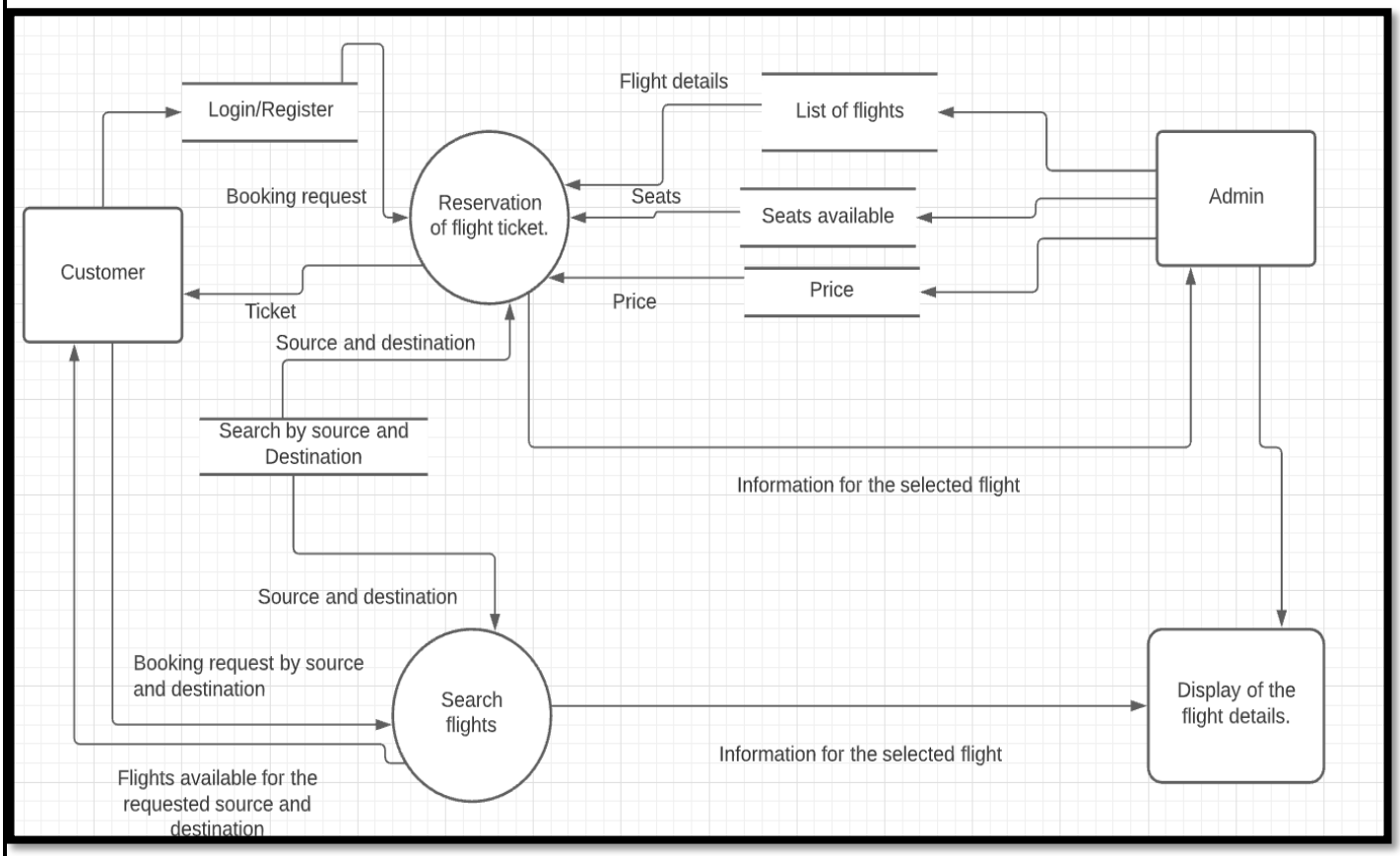
This is the zero level DFD of ARS where we have elaborated the process of our Airline Reservation System.

It outlines the modules used in our project.

The processes are:

- **User management**
- **Airlines management**
- **Ticket management**
- **Login management**
- **Booking management**
- **Customer management**

First-level DFD



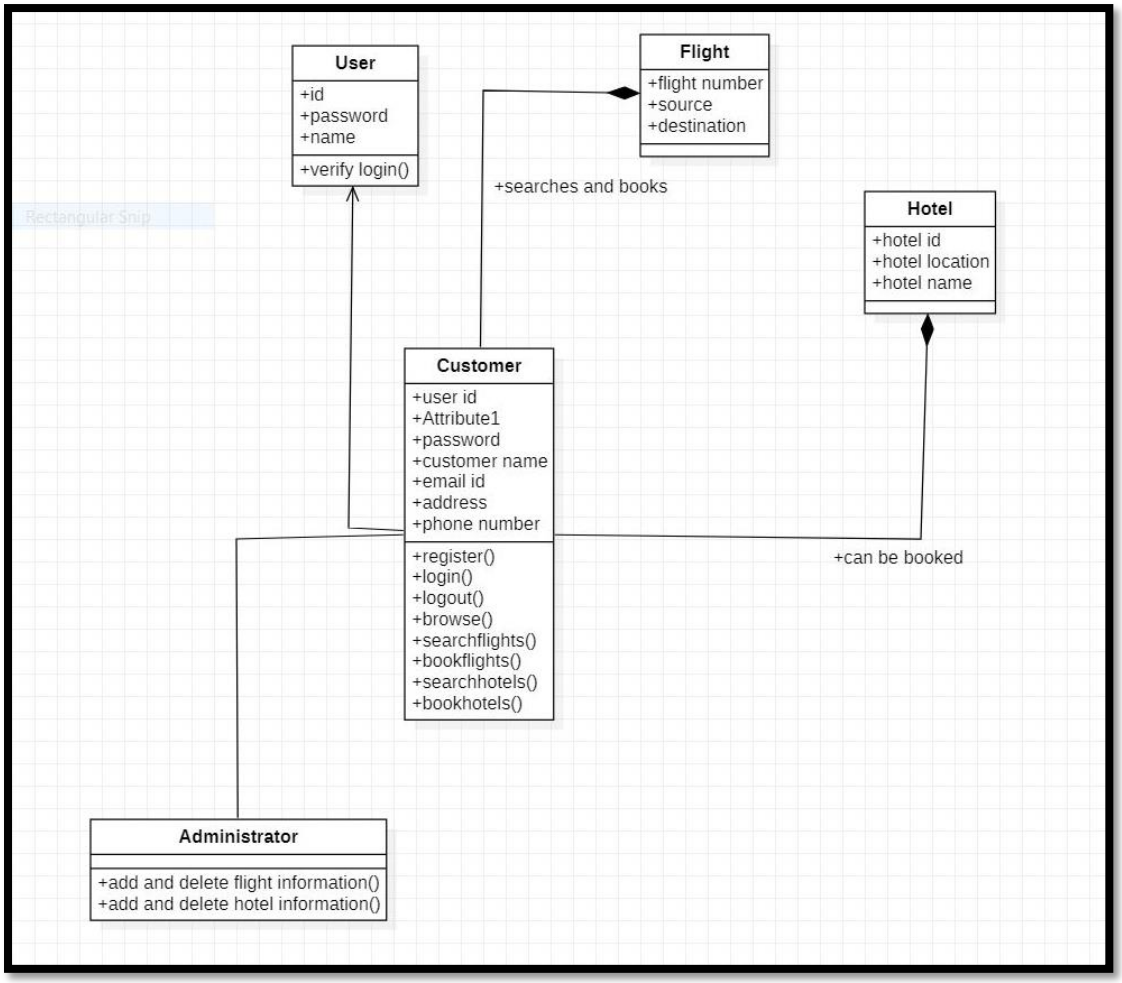
This is the first level DFD of ARS where we have elaborated the main functionality or subprocess of our Airline Reservation System.

It identifies the data stores such as flight details, price and available seats as per the requested source and destination and the booking request made by the external entity i.e. the customer and passing the output to the external entity by displaying the list of available flights.

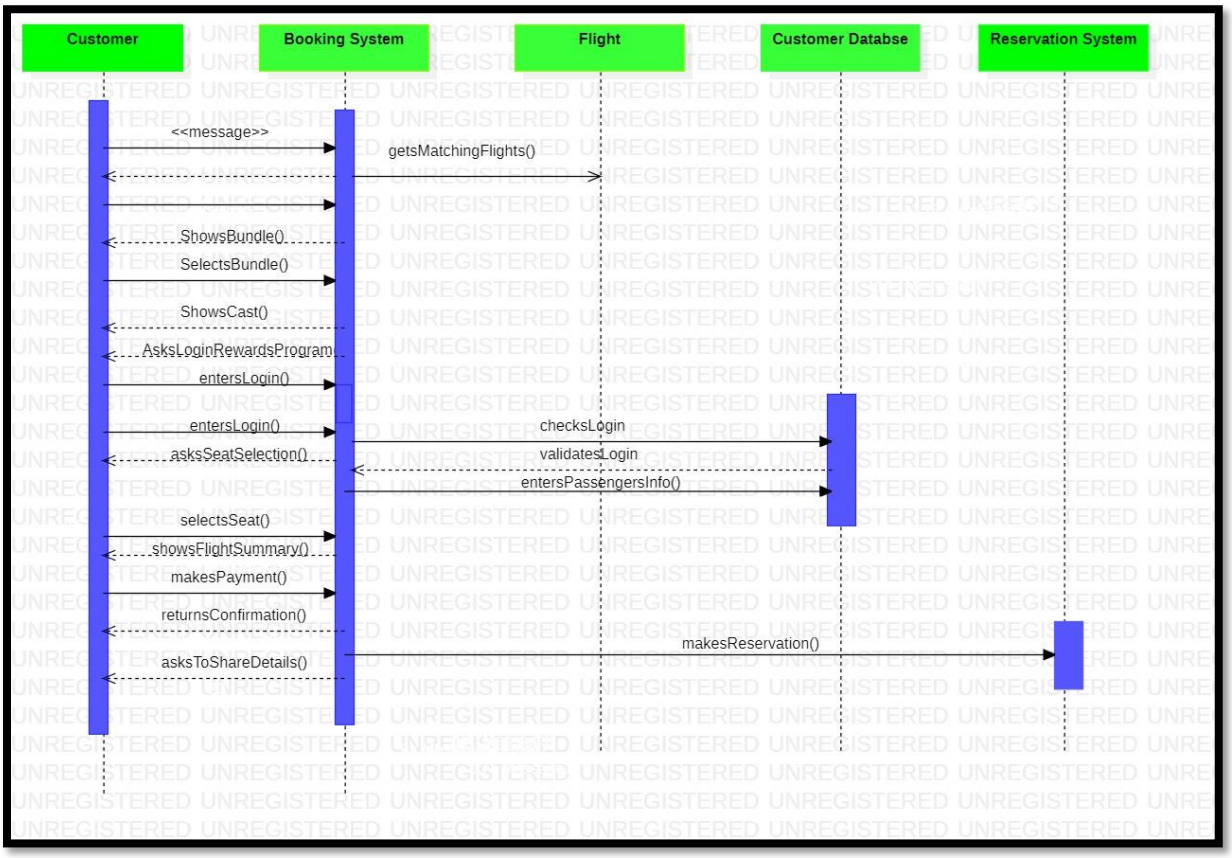
The processes includes:

- **Booking request made by the customer**
- **Displaying of the flights available according to the source and destination.**
- **Displaying of the price and seats available.**
- **Providing the ticket id to the customer for successful booking request.**

Class Diagram



Sequence Diagram



Result:

Thus, architecture and design of the system was documented successfully.

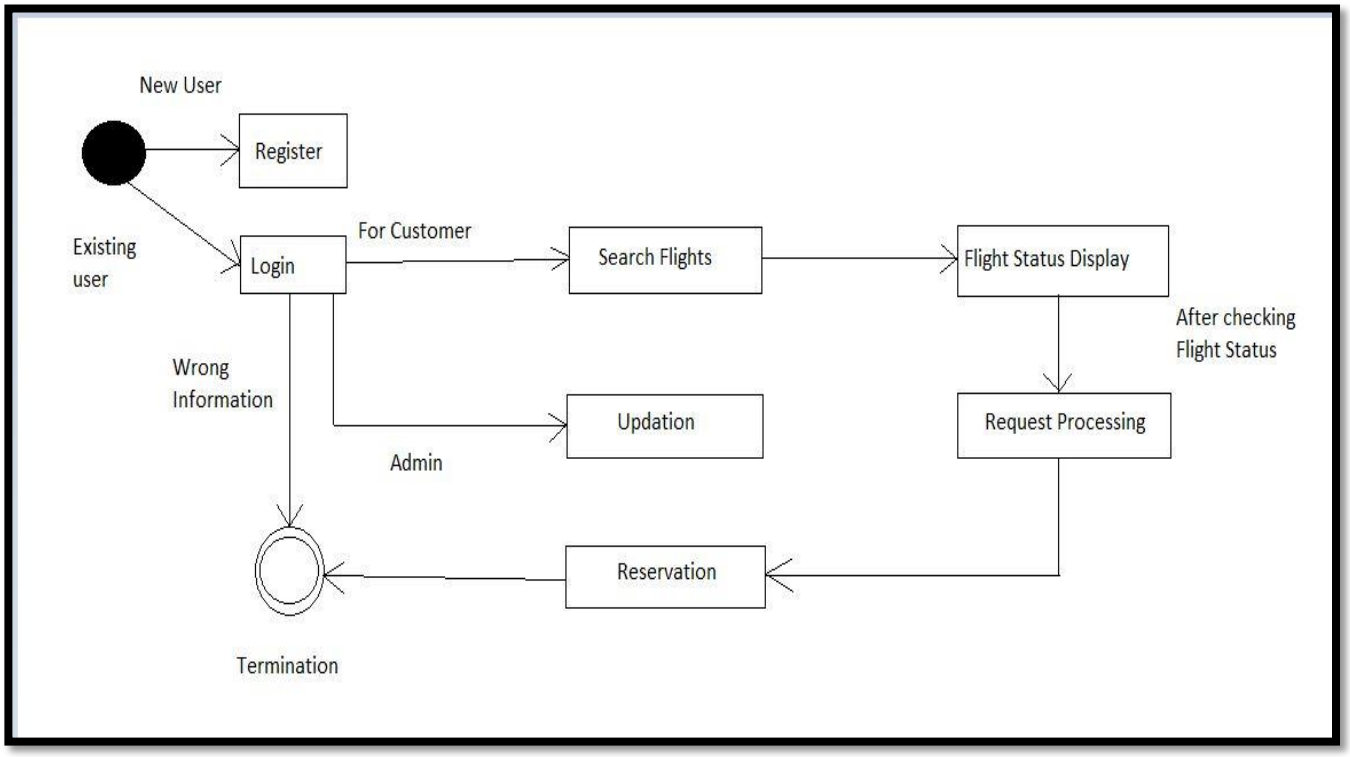
STATE, COLLABORATION, DEPLOYMENT DIAGRAM, SAMPLE FRONTEND DESIGN (UI/UX)

Software Used

Star UML, Rational Rose, Etc…

State Diagram with Description

State chart diagram defines the states of a component and these state changes are dynamic in nature. Its specific purpose is to define the state changes triggered by events.



The above state diagram depicts the flow from one level to another starting from the user enrolling or getting themselves logged into to the application.

In case of wrong login credentials, the process of logging in to the system terminates otherwise the services of the system can be availed by the user.

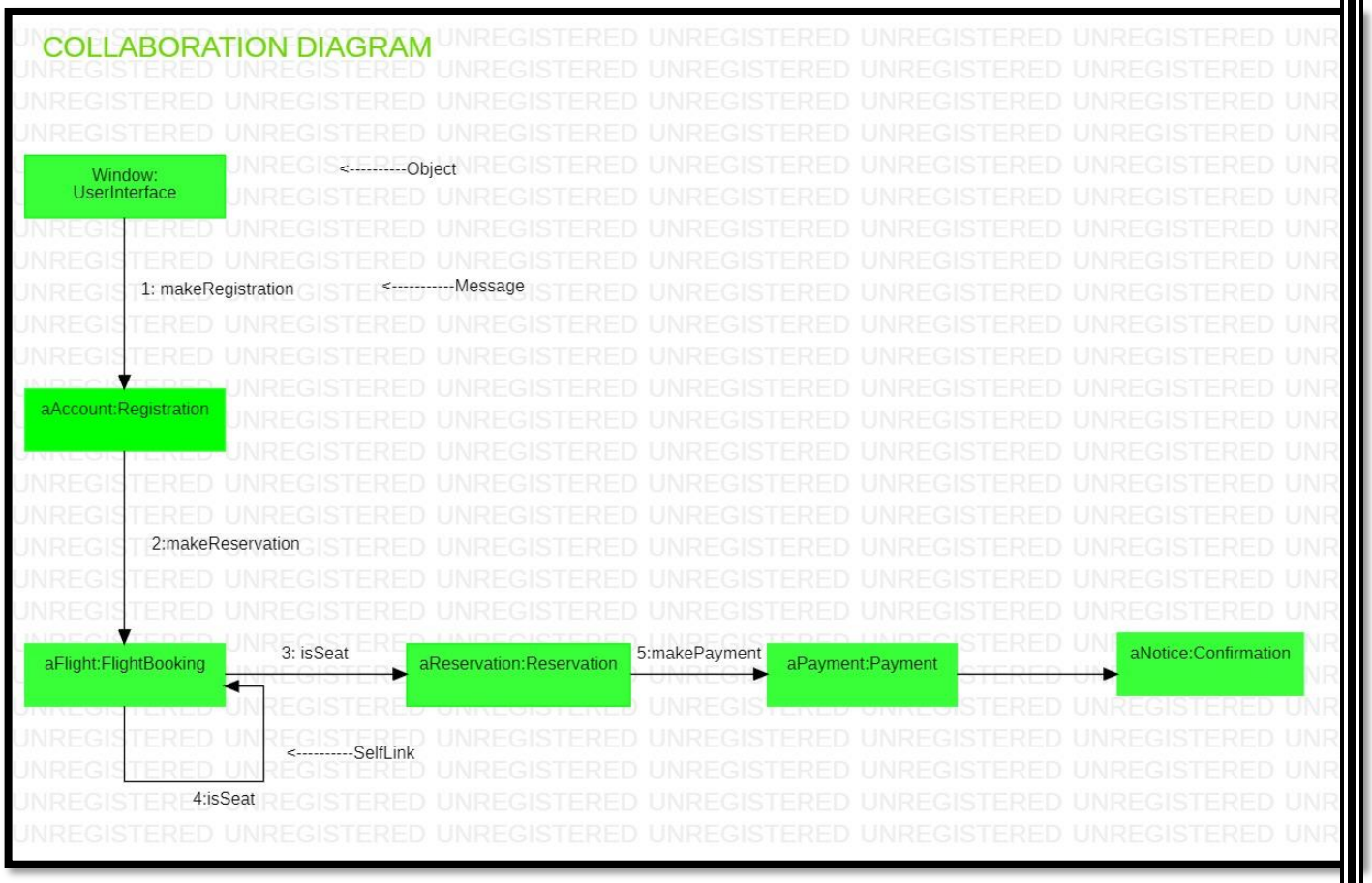
The user can search for flights and the flights search results are displayed by the admin module through the database as per the search crtiteria.

Then the user books the ticket and the payment is made.

Finally, the entire process terminates with successful reservation.

Collaboration Diagram with Description

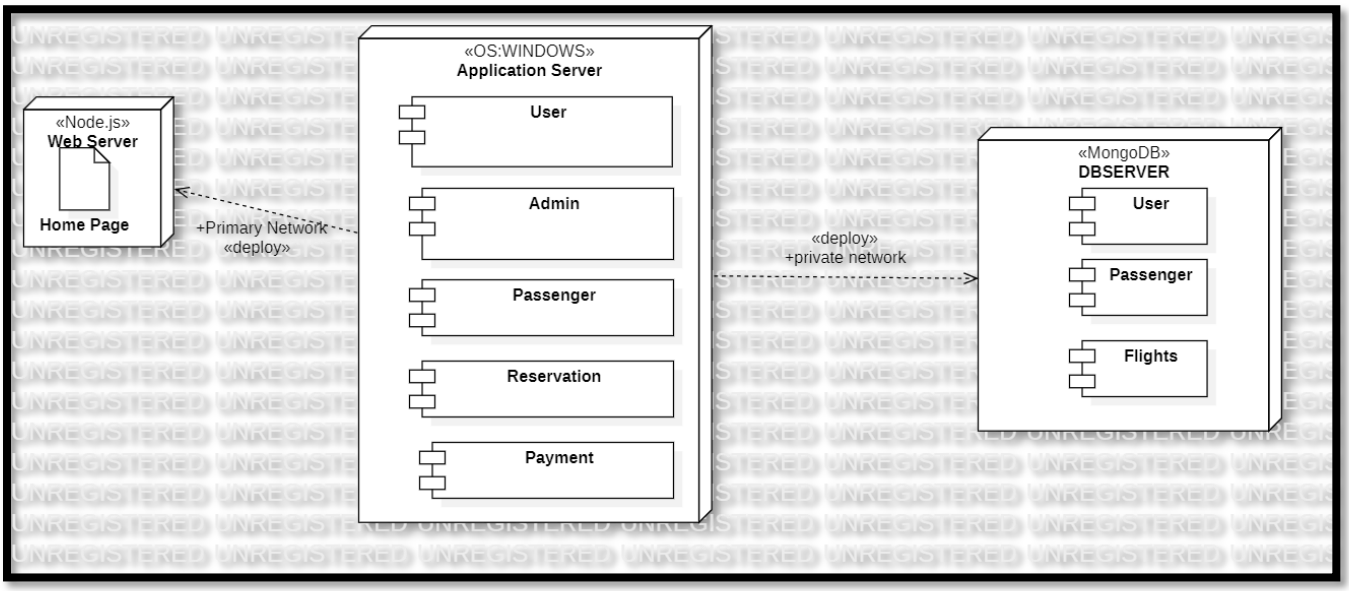
Collaboration diagrams are used to show how objects interact to perform the behavior of a particular use case, or a part of a use case.



The above collaboration diagram depicts the sequence in which how the different objects of our project interact to perform the needed functionality of an Airline Reservation System. The user interface allows our object i.e., the user module to allow the user to interact via registration or enrollment which is then followed by flight booking and a self-message which checks the availability of the seat and perform the further confirmation of the reservation which is then completed by payment done by the user and a confirmation of the information passed.

Deployment Diagram with Description

Deployment diagrams are used to describe the static deployment view of a system. Deployment diagrams consist of nodes and their relationships.



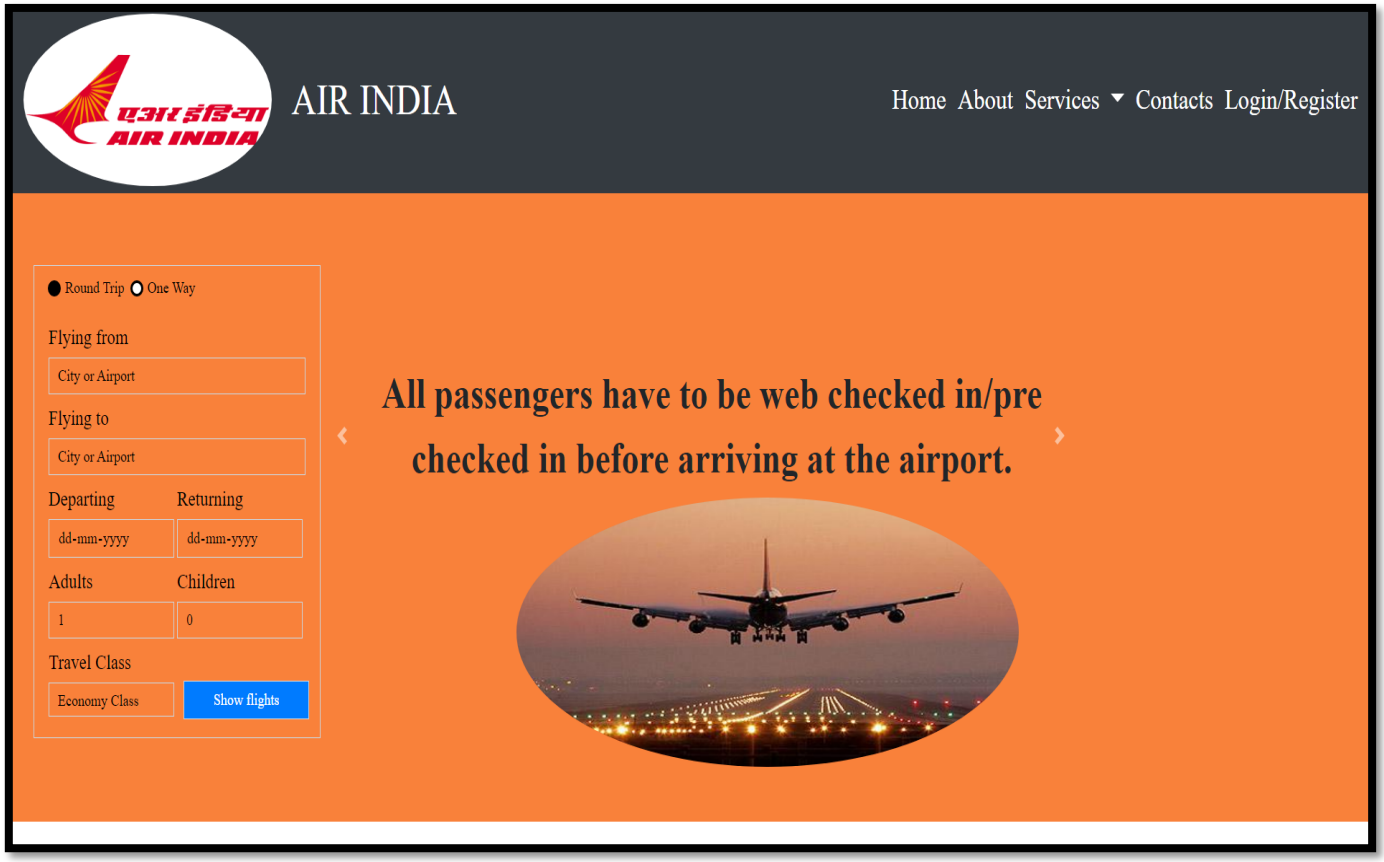
The above deployment diagram depicts the description of the web server, database server and the OS used for deploying our website.

The web server used for hosting our website would be done using the local host as well as would be serviceable for other hosts using the Heroku deploy center and node.js.

The application server which contains all the information and code snippets for the user module passenger module, admin system, payment module and reservation module uses Windows as the operating system.

The database for our web is deployed on the server using MongoDB and node.js which contains all the details of the user, the passenger and the flight details.

Sample Frontend design



Result:

Thus, above mentioned designs of the system were documented successfully.

MODULE DESCRIPTION & IMPLEMENTATION

MODULE-I

Software Used

JavaSript, HTML,CSS, Node.js,MongodB, Etc…

Code of Module 1

Login Module:

```
<!DOCTYPE html>
<html lang="en">
<head>
<meta charset="UTF-8">
  <meta http-equiv="X-UA-Compatible" content="IE=edge">
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
  <title>Airline Reservation System</title>
  <script src="https://kit.fontawesome.com/c7819ef3be.js" crossorigin="anonymous"></script>
  <!-- CSS only -->
  <link rel="stylesheet" href="https://maxcdn.bootstrapcdn.com/bootstrap/4.0.0/css/bootstrap.min.css"
integrity="sha384-
Gn5384xqQ1aoWXA+058RXPxPg6fy4IWvTNh0E263XmFcJlSAwiGgFAW/dAiS6JXm"
crossorigin="anonymous">
  <link rel="stylesheet" href="login.css">
  <link rel="stylesheet" href="style.css">
  <script src="https://code.jquery.com/jquery-3.2.1.slim.min.js" integrity="sha384-
KJ3o2DKtIkvYIK3UENzmM7KCkRr/rE9/Qpg6aAZGJwFDMVNA/GpGFF93hXpG5KkN"
crossorigin="anonymous"></script>
  <script src="https://cdnjs.cloudflare.com/ajax/libs/popper.js/1.12.9/umd/popper.min.js"
integrity="sha384-
ApNbgh9B+Y1QKtv3Rn7W3mgPxhU9K/ScQsAP7hUibX39j7fakFPskvXusvfa0b4Q"
crossorigin="anonymous"></script>
  <script src="https://maxcdn.bootstrapcdn.com/bootstrap/4.0.0/js/bootstrap.min.js"
integrity="sha384-
JZR6Spejh4U02d8jOt6vLEHfe/JQGiRRSQQxSfFWpi1MquVdAyjUar5+76PVCmYl"
crossorigin="anonymous"></script>
</head>
```

```
<body>
  <nav class="navbar navbar-expand-lg navbar-dark bg-dark">
    <img src="images/1.png" alt="Air-India-logo" class="logo1">
  <a class="navbar-brand" href="#">AIR INDIA</a>
  <button class="navbar-toggler" type="button" data-toggle="collapse" data-
target="#navbarSupportedContent" aria-controls="navbarSupportedContent" aria-expanded="false"
aria-label="Toggle navigation">
    <span class="navbar-toggler-icon"></span>
  </button>
  <div class="collapse navbar-collapse" id="navbarSupportedContent">
     <ul class="navbar-nav ml-auto">
       <li class="nav-item active">
         <a class="nav-link" href="index.html">Home <span class="sr-only">(current)</span></a>
       </li>
       <li class="nav-item active">
         <a class="nav-link" href="about.html">About</a>
       </li>
       <li class="nav-item dropdown active">
       <a class="nav-link dropdown-toggle" href="#" id="navbarDropdown" role="button" data-
toggle="dropdown" aria-haspopup="true" aria-expanded="false">
         Services
       </a>
       <div class="dropdown-menu" aria-labelledby="navbarDropdown">
         <a class="dropdown-item" href="login.html">Manage Trip</a>
           <div class="dropdown-divider"></div>
         <a class="dropdown-item" href="login.html">Book Hotels</a>
         <div class="dropdown-divider"></div>
         <a class="dropdown-item" href="login.html">Cancellation</a>
       </div>
     </li>
       <li class="nav-item active">
         <a class="nav-link" href="contact.html">Contacts</a>
       </li>
       <li class="nav-item active">
         <a class="nav-link" href="login.html">Login/Register</a>
       </li>
</ul>
```

```
</div>
</nav>
   <div class="content" style="margin-top: 50px";>
      <div class="text">Login Form</div>
   <form action="#">
      <div class="field">
      <span class="fas fa-user"></span>
      <input type="text" placeholder="Email or Phone"  required>

      </div>
      <div class="field">
         <span class="fas fa-lock"></span>
         <input type="password" placeholder="Password" required>
      </div>
      <div class="forgot-pass">
         <a href="#">Forget Password</a>
      </div>
      <button>Sign in</button>
      <div class="signup">New User-Register <a href="register.html">Sign Up</a></div>
      </form>
   </div>
   <div style="height: 700px;">
<img class="logo2" src="images/3.jpg" alt="Logo 1">
   </div>
   <footer id="footer">
<div class="conclude">
  <a href="about.html" class="last">About Air India</a>

  <a href="about1.html" class="last">About Air India's Services</a>

  <a href="contact.html" class="last">Contact Details</a>
  </div>
  <i class="social-icon fab fa-facebook fa-2x"></i>
  <i class="social-icon fab fa-instagram fa-2x"></i>
  <i class="social-icon fab fa-twitter fa-2x"></i>
  <i class="social-icon far fa-envelope fa-2x"></i>
     <p class="b">© Copyright 2021. All Rights Reserved.</p>
```

```
    </footer>
</body>
</html>
</body>
</html>
```

Registration Module:

```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta http-equiv="X-UA-Compatible" content="IE=edge">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>Registration</title>
    <link rel="stylesheet" href="register.css">
</head>
<body>
    <div class="container">
        <div class="title">Flying Returns Account Registration</div>
        <form action="#">
            <div class="user-details">
                <div class="input-box">
                    <span class="details">Full Name</span>
                    <input type="text" placeholder="Enter your name" required>
                </div>
                <div class="input-box">
                    <span class="details">Username</span>
                    <input type="text" placeholder="Enter your username" required>
                </div>
                <div class="input-box">
                    <span class="details">Email</span>
                    <input type="text" placeholder="Enter your email" required>
                </div>
                <div class="input-box">
                    <span class="details">Mobile Number</span>
```

```
      <input type="text" placeholder="Enter your number" required>
    </div>
    <div class="input-box">
      <span class="details">Password</span>
      <input type="text" placeholder="Enter your password" required>
    </div>
    <div class="input-box">
      <span class="details">Confirm Password</span>
      <input type="text" placeholder="Confirm your password" required>
    </div>
    <div class="input-box">
      <span class="details">Nationality</span>
      <input type="text" placeholder="Enter your nationality" required>
    </div>
    <div class="input-box">
      <span class="details">Full Address</span>
      <input type="text" placeholder="Full address" required>
    </div>
    <div class="input-box">
      <span class="details">Passport Number</span>
      <input type="text" placeholder="Passport number" required>
    </div>
    <div class="input-box">
      <span class="details">Passport Expiry Date</span>
      <input type="text" placeholder="Passport expiry date" required>
    </div>
  </div>
  <div class="gender-details">
    <input type="radio" name="gender" id="dot-1">
    <input type="radio" name="gender" id="dot-2">
    <input type="radio" name="gender" id="dot-3">
    <span class="gender-title">Gender</span>
    <div class="category">
      <label for="dot-1">
        <span class="dot one"></span>
        <span class="gender">Male</span>
      </label>
```

```
            <label for="dot-2">
              <span class="dot two"></span>
              <span class="gender">Female</span>
            </label>
            <label for="dot-3">
              <span class="dot three"></span>
              <span class="gender">Prefer not to say</span>
            </label>
          </div>
        </div>
        <div class="button">
          <input type="submit" value="Register">
        </div>
      </form>
    </div>
</body>
</html>
```

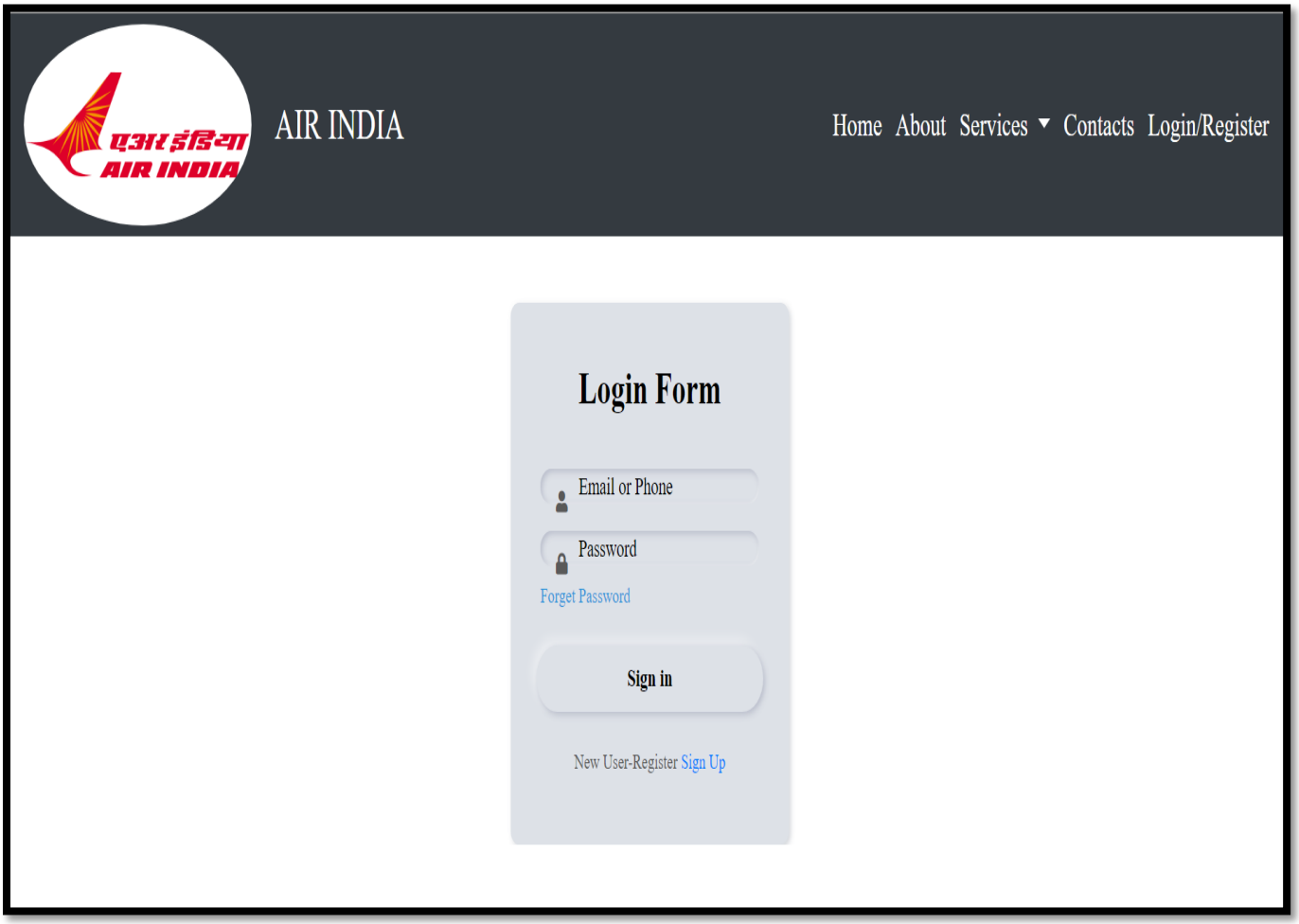
Description of Module 1

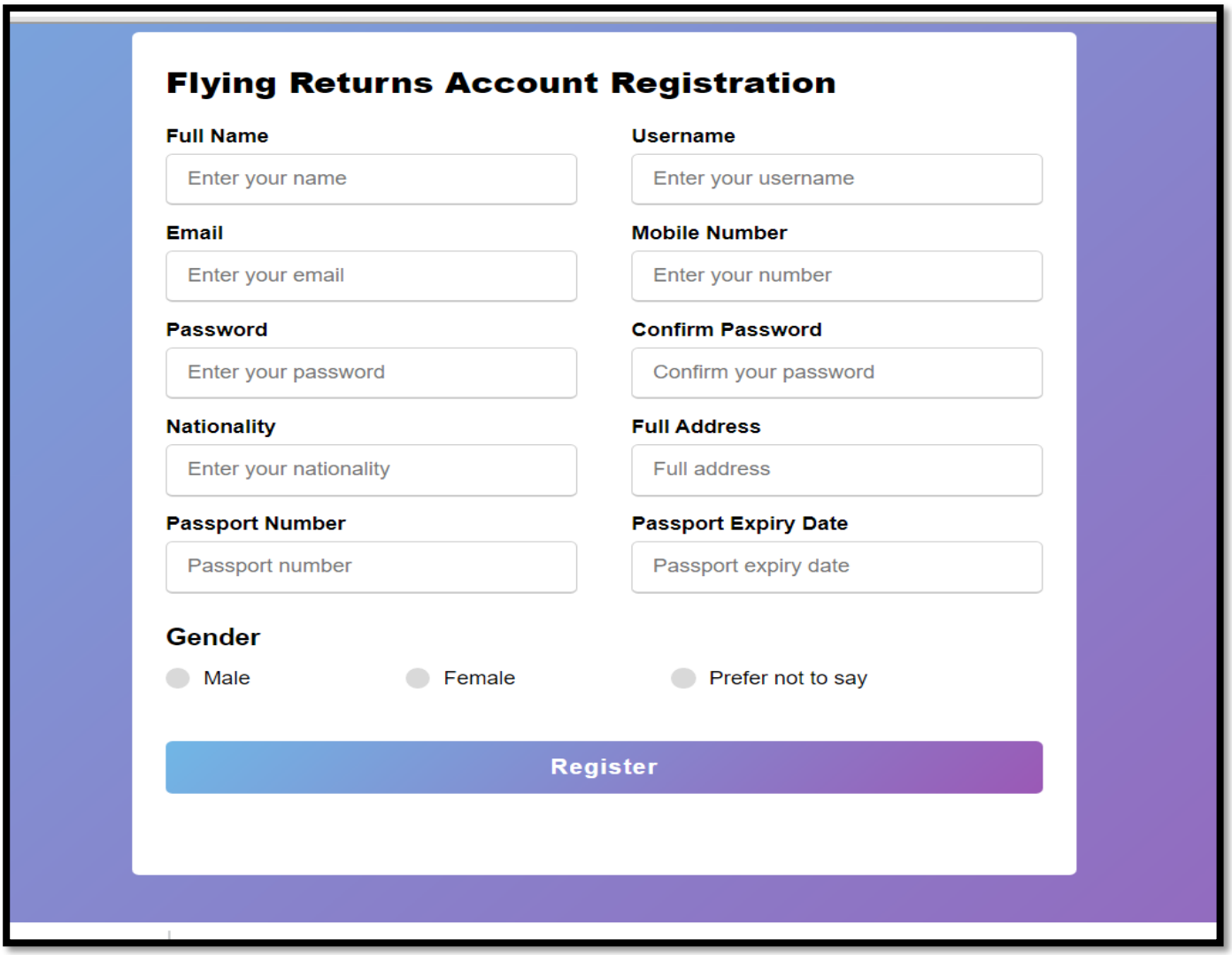
The module 1 of our project titled "Airline Reservation System" deals with the registration/login process of the system.

For a new user, the sign-up option is available for getting him/her enrolled as a user and the details entered by the user in the registration form gets stored in the database.

For an existing user login option ensures him/her getting logged in to the system after verifying the user credentials.

Result of Module 1





Result:

Thus, modules are described, Module 1 was implemented and documented successfully.

MODULE-II

Software Used:

JavaSript, HTML,CSS, Node.js,MongodB, Etc…

Code of Module 2

```
<!doctype html>
<html>
        <head>
                <title>Users</title>
    <meta charset="utf-8">
    <meta name="viewport" content="width=device-width, initial-scale=1">
    <link rel="stylesheet"
href="https://maxcdn.bootstrapcdn.com/bootstrap/3.3.7/css/bootstrap.min.css">
    <script src="https://ajax.googleapis.com/ajax/libs/jquery/3.2.1/jquery.min.js"></script>
    <script src="https://maxcdn.bootstrapcdn.com/bootstrap/3.3.7/js/bootstrap.min.js"></script>
    <link rel="stylesheet" href="https://cdnjs.cloudflare.com/ajax/libs/font-
awesome/4.7.0/css/font-awesome.min.css">
    <link rel="stylesheet" type="text/css" href="http://fonts.googleapis.com/css?family=Poppins">
                                <script type="text/javascript" src="myjs.js"></script>
  </head>

        <body>
<nav class="navbar navbar-inverse" style="border-radius:0px !important; margin-bottom: 0">
          <div class="container-fluid">
            <div class="navbar-header">
              <button type="button" class="navbar-toggle" data-toggle="collapse" data-
target="#myNavbar">
                <span class="icon-bar"></span>
              </button>
              <a class="navbar-brand" href="#">AIR INDIA</a>
            </div>
            <div class="collapse navbar-collapse" id="myNavbar">
              <ul class="nav navbar-nav navbar-right">
```

```
                    <li class="dropdown">
                     <a class="dropdown-toggle" data-toggle="dropdown" href="#"><span
class="glyphicon glyphicon-user"></span>
                     <span class="caret"></span></a>
          <ul class="dropdown-menu" style="padding: 1rem 2rem 1rem 2rem; text-align: center;" >
          <li><a href="#"><b>Amit Srivastav</b></a></li>
          <hr>
          <li><a href="admin.html">Logout</a></li>
          </ul>
          </li>
            <li><a href="admin.html"><span class="glyphicon glyphicon-log-out"></span>
          Logout</a></li>
             </ul>
              </div>
           </div>
         </nav>
<div class="container-fluid" style="margin: 0 0 0 0; padding: 0 0 0 0">
<div class="container-fluid" style="margin-left: 0;margin-right:0;padding: 0 0 0 0;width: 20%; float:
left;">
<ul class="nav nav-pills nav-stacked" style="width:100%;">
             <li class="active">
                     <a href="#" id="m1">Dashboard</a>
                     <ul id="sub1" style="padding: 0 0 0 0">
                     <div class="list-group" style="text-align: center;margin: 0">
                           <a href="#" class="list-group-item">Users</a>
                           </div>
                    </ul>
</li>
          <li class="nav-item dropdown active">
          <a class="nav-link dropdown-toggle" href="#" id="navbarDropdown" role="button" data-
toggle="dropdown" aria-haspopup="true" aria-expanded="false">Flight Schedule</a>
                     <div class="dropdown-menu" aria-labelledby="navbarDropdown">
        <a class="dropdown-item" href="admin.html">Add Flight</a>
         <div class="dropdown-divider"></div>
```

```
        <a class="dropdown-item" href="admin.html">Manage Flights</a>
        <div class="dropdown-divider"></div>
        <a class="dropdown-item" href="admin.html">Cancellation</a>
      </div>
</li>
 <li  class="active">
          <a href="#" id="m4">Passenger</a>
          <ul id="sub4" style="padding: 0 0 0 0; display: none;">
          <div class="list-group" style="margin: 0;text-align: center;">
          </div>
</ul>
 </li>
</ul>
</div>
          <div class="container-fluid" style="float: right; width: 80%">
          <h2>Users</h2>
          <hr>
          </div>
          <div class="container" style="margin-left: 0; float: right; width:80%; margin-top: 10px;
padding: 0 5rem 0 5rem">
<div>
<button class="btn btn-primary"><i class="fa fa-plus"></i> New User</button>
</div>
<br>
<table class="table table-striped table-hover">
           <thead>
           <tr>
          <th>#</th>
          <th>ID</th>
          <th>FirstName</th>
          <th>LastName</th>
          <th>Phone</th>
           <th>Email</th>
          </tr>
```

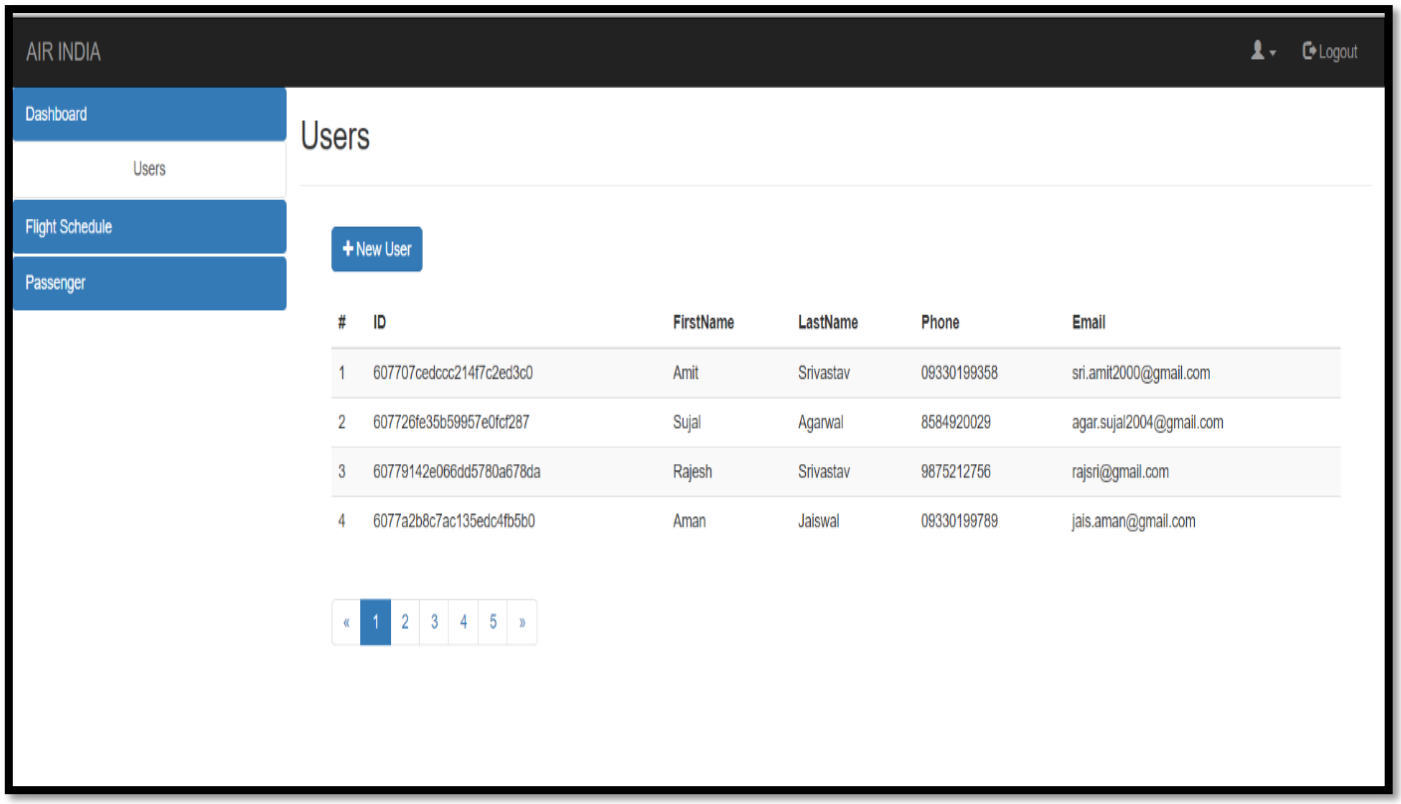
```
</thead>
        <tbody>
        <% for(var i=0;i<a.length;i++){ %>
        <tr>
                <td><%=i+1%></td>
                <td><%=a[i]._id%></td>
                <td><%=a[i].Firstname%></td>
                 <td><%=a[i].Lastname%></td>
                <td><%=a[i].Phonenumber%></td>
                <td><%=a[i].username%></td>
                <!-- <td>
                <a href=""><i class="fa fa-pencil"></i></a>
                <a href="#myModal" role="button" data-toggle="modal"><i class="fa fa-trash
o"></i></a>
</td> -->
        </tr>
        <%}%>
</tbody>
        </table>
        <ul class="pagination">
                <li ><a href="#">&laquo;</a></li>
                 <li class="active"><a href="#">1</a></li>
                <li><a href="#">2</a></li>
                <li><a href="#">3</a></li>
                <li><a href="#">4</a></li>
                <li><a href="#">5</a></li>
                <li><a href="#">&raquo;</a></li>
                </ul>
                </div>
        </div>
<div class="modal small fade" id="myModal" tabindex="-1" role="dialog" aria-
labelledby="myModalLabel" aria-hidden="true">
 <div class="modal-dialog">
        <div class="modal-content">
```

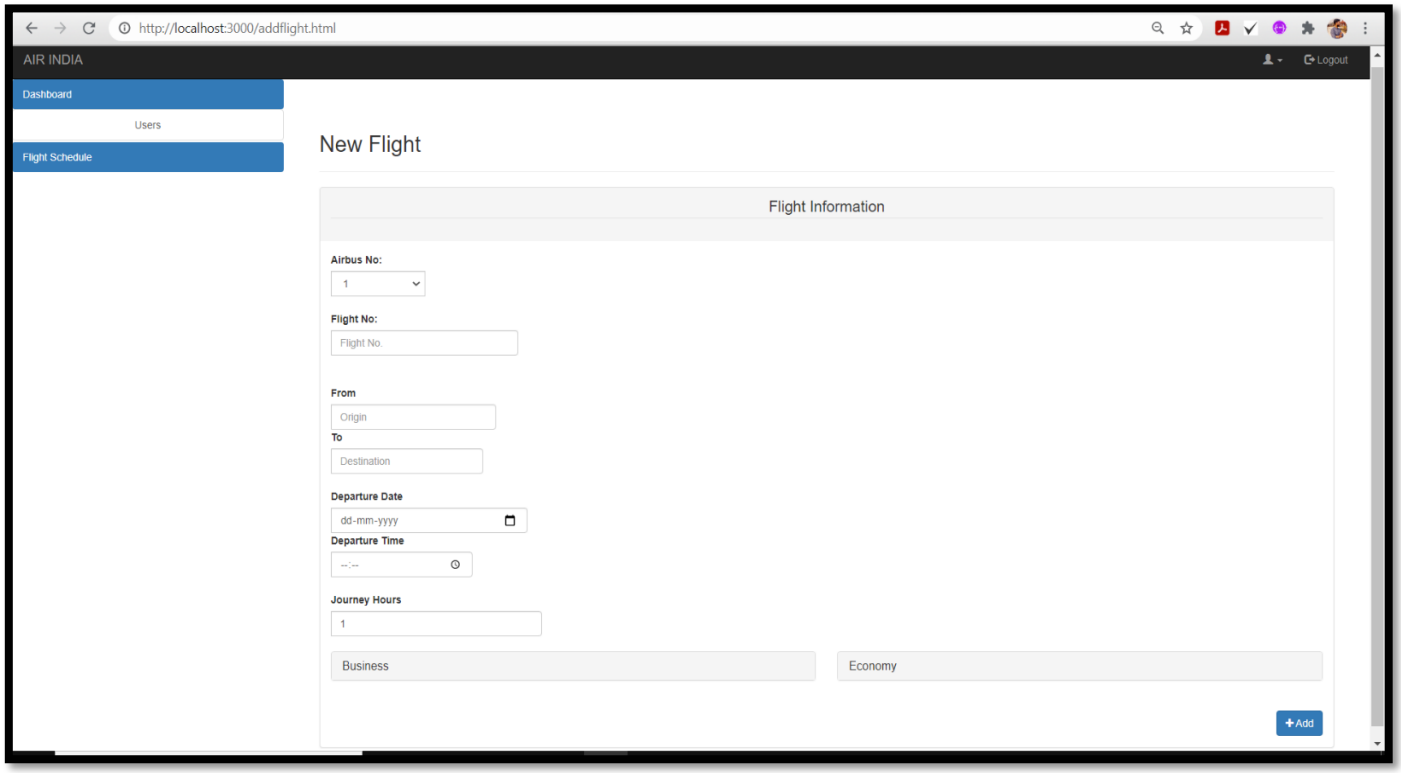
```
        <div class="modal-header">
        <button type="button" class="close" data-dismiss="modal" aria-hidden="true">×</button>
        <h3 id="myModalLabel">Delete Confirmation</h3>
</div>
<div class="modal-body">
<p class="error-text"><i class="fa fa-warning modal-icon"></i> Are you sure you want to delete the user?<br>This cannot be undone.</p>
</div>
<div class="modal-footer">
<button class="btn btn-default" data-dismiss="modal" aria-hidden="true">Cancel</button>
<button class="btn btn-danger" data-dismiss="modal">Delete</button>
        </div>
         </div>
        </div>
</div>
<!-- Footer -->
<footer id="footer" class="container-fluid" style="position: absolute;bottom: 0">
<div class="copyright">
        &copy; AIR INDIA. All rights reserved.
        </div>
        </footer>
        </body>
</html>
<script type="text/javascript">
        $("#m1").click({param1:"#sub1",param2:"#sub2",param3:"#sub3",param4:"#sub4"},navbar_
movment);
        $("#m2").click({param1:"#sub2",param2:"#sub1",param3:"#sub3",param4:"#sub4"},navbar_
movment);
        $("#m3").click({param1:"#sub3",param2:"#sub1",param3:"#sub2",param4:"#sub4"},navbar_
movment);
        $("#m4").click({param1:"#sub4",param2:"#sub1",param3:"#sub2",param4:"#sub3"},navbar_
movment);
                </script>
```

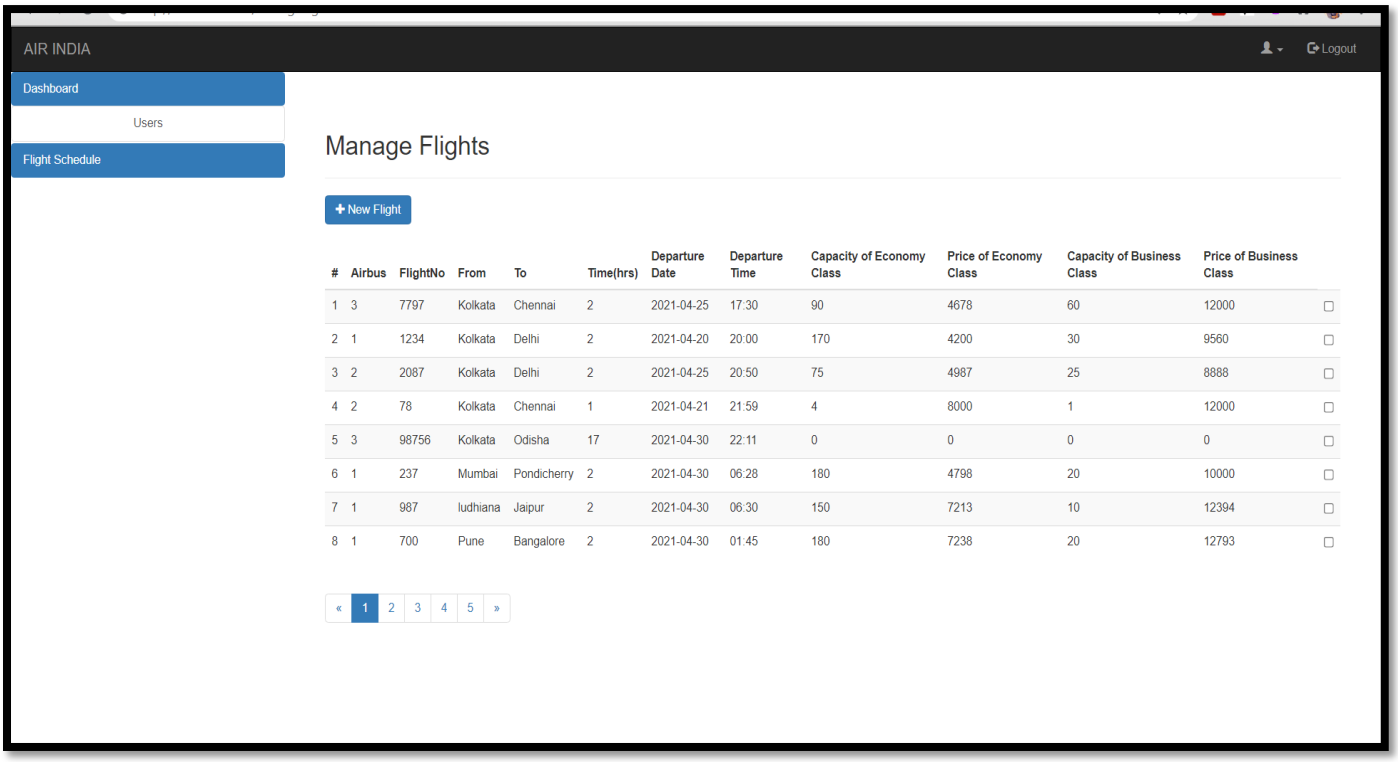
Description of Module 2

- The module 2 of our project titled “Airline Reservation System” deals with the authentication of the login process into the system for the admin.
- While registering a new user, the details entered by the user in the registration form gets stored in the database which can be viewed by the admin under the user section of the admin page.
- The admin can add the flights into the databse as well as remove the flights from the database using manage flight option available under flight schedule dropdown.

Result of Module 2


AIR INDIA
Logout
Dashboard
Users
Flight Schedule
Passenger
Users
+New User
ID FirstName LastName Phone Email
1 607707cedccc214f7c2ed3c0 Amit Srivastav 09330199358 sri.amit2000@gmail.com
2 607726fe35b59957e0fcf287 Sujal Agarwal 8584920029 agar.sujal2004@gmail.com
3 60779142e066dd5780a678da Rajesh Srivastav 9875212756 rajsri@gmail.com
4 6077a2b8c7ac135edc4fb5b0 Aman Jaiswal 09330199789 jais.aman@gmail.com
« 1 2 3 4 5 »


http://localhost:3000/addflight.html
AIR INDIA
Logout
Dashboard
Users
Flight Schedule
New Flight
Flight Information
Airbus No:
1
Flight No:
Flight No.
From
Origin
To
Destination
Departure Date
dd-mm-yyyy
Departure Time
--:--
Journey Hours
1
Business
Economy
+Add



Result:

Thus, the module2 was implemented and documented successfully.

MODULE-III & IV

Software Used:

JavaSript, HTML,CSS, Node.js,MongodB, Etc…

Code of Module 3

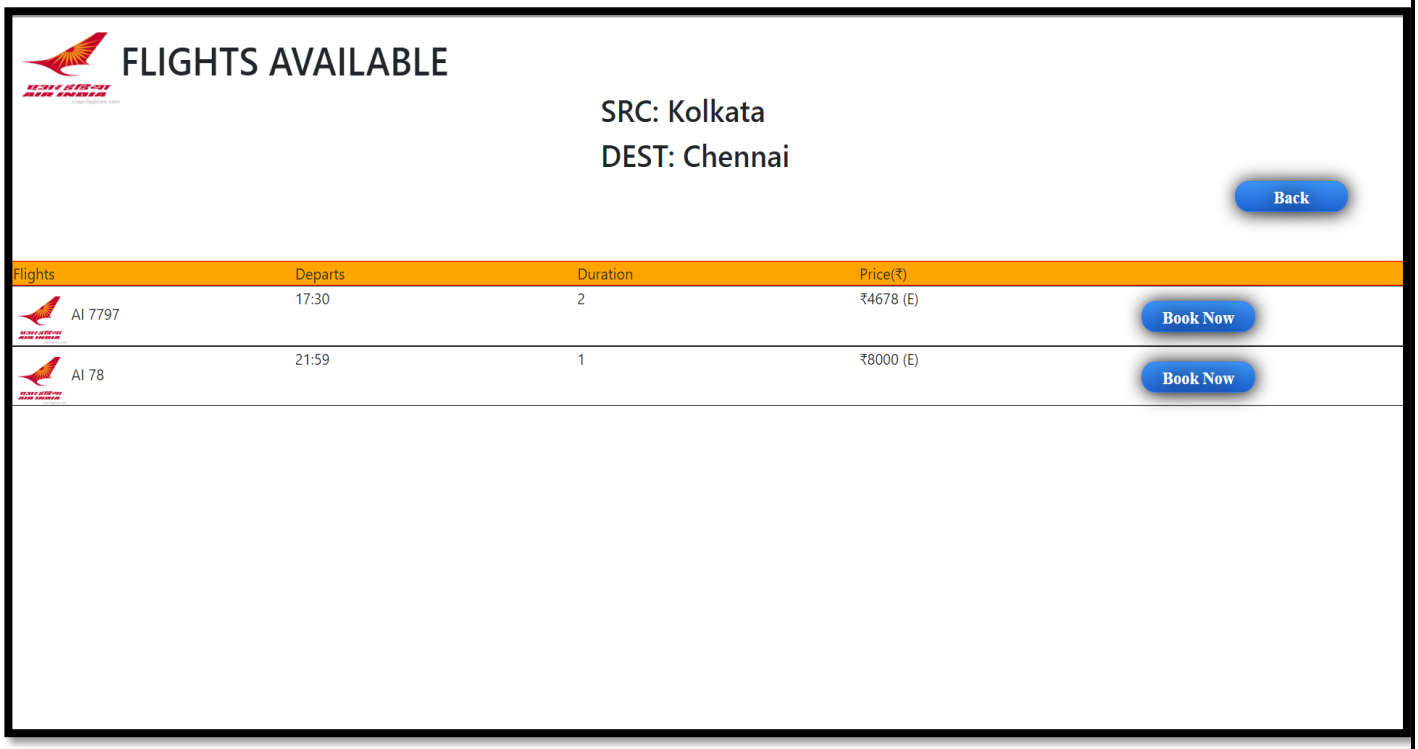
```
<% for(var i=0;i<flightDb.length;i++){ %>
  <div class="row" style="border: 1px solid;">
    <div class="col">
      <img src="images/AILOGO.jpg" alt="" height="60" width="60">
      AI <%=flightDb[i].flightNumber%>
    </div>
    <div class="col">
      <%=flightDb[i].dt%>
    </div>
    <div class="col">
      <%=flightDb[i].Journey%>
    </div>
    <% if(am.tc==='1'){ %>
    <div class="col">
      ₹<%=flightDb[i].pe%> (E)
    </div>
    <% } %>
<% if(am.tc==='2'){ %>
    <div class="col">
      ₹<%=flightDb[i].pb%> (B)
    </div>
    <% } %>
    <div class="col" id="butt">
      <button type="button" id="myBtn" name="button" class="BUTTON_MYG"
value="<%=i+1%>"><a href="https://rzp.io/l/i9wwwBj" style="color: white; text-
decoration: none;">Book Now</a></button>
    </div>
  </div>
```

<% } %>

Description of Module 3

- The module 3 of our project titled “Airline Reservation System” is the passenger module.
- It deals with the displaying of the available flights as per the source and destination entered by the user.
- It displays the price of the flights as per the class, i.e. Economy or Business class, selected by the user.
- The book now button directs the passenger to the payment gateway.

Result of Module 3



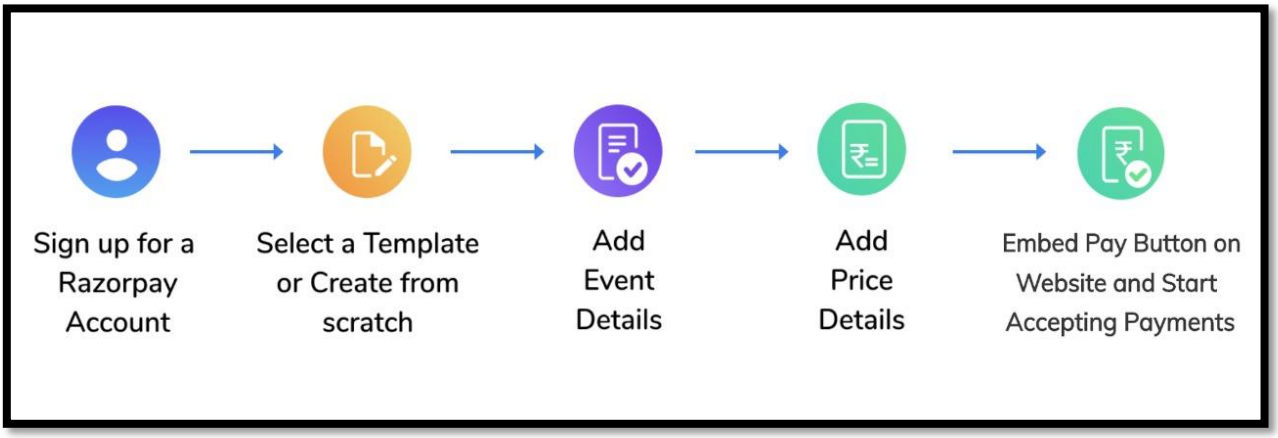
Code of Module 4

```
var paymentPageData = data.payment_link;
paymentPageData.description = paymentPageData.description ?
JSON.parse(paymentPageData.description).value : null;
var requestParams = [];
var templateData = {
    key_id: data.key_id,
    base_url: data.base_url,
    is_test_mode: data.is_test_mode,
    merchant: data.merchant,
    org: data.org,
    payment_page_data: data.payment_link,
    context: {
      page_title: data.payment_link.title,
      form_title: 'Payment Details'
    },
    requestParams: requestParams,
    view_preferences: data.view_preferences};
```

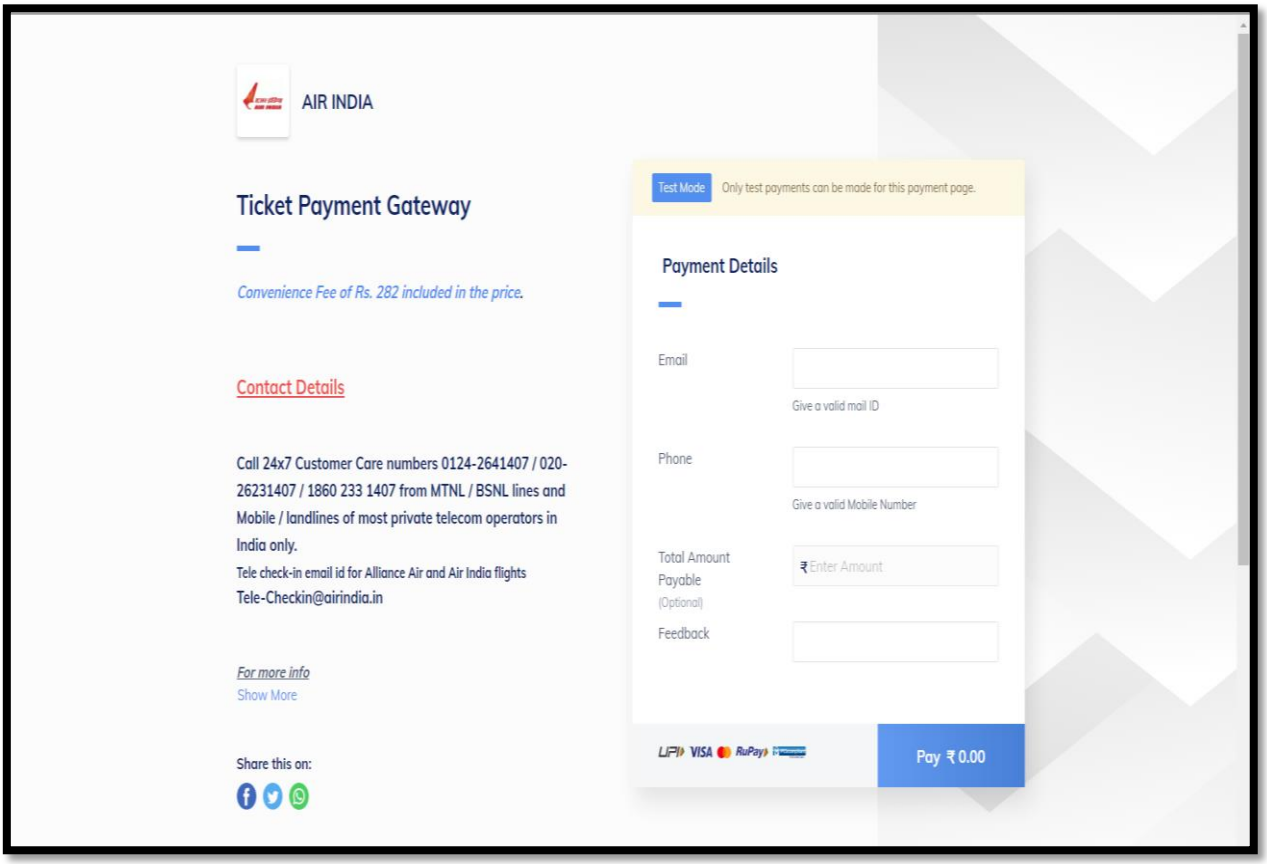
Description of Module 4

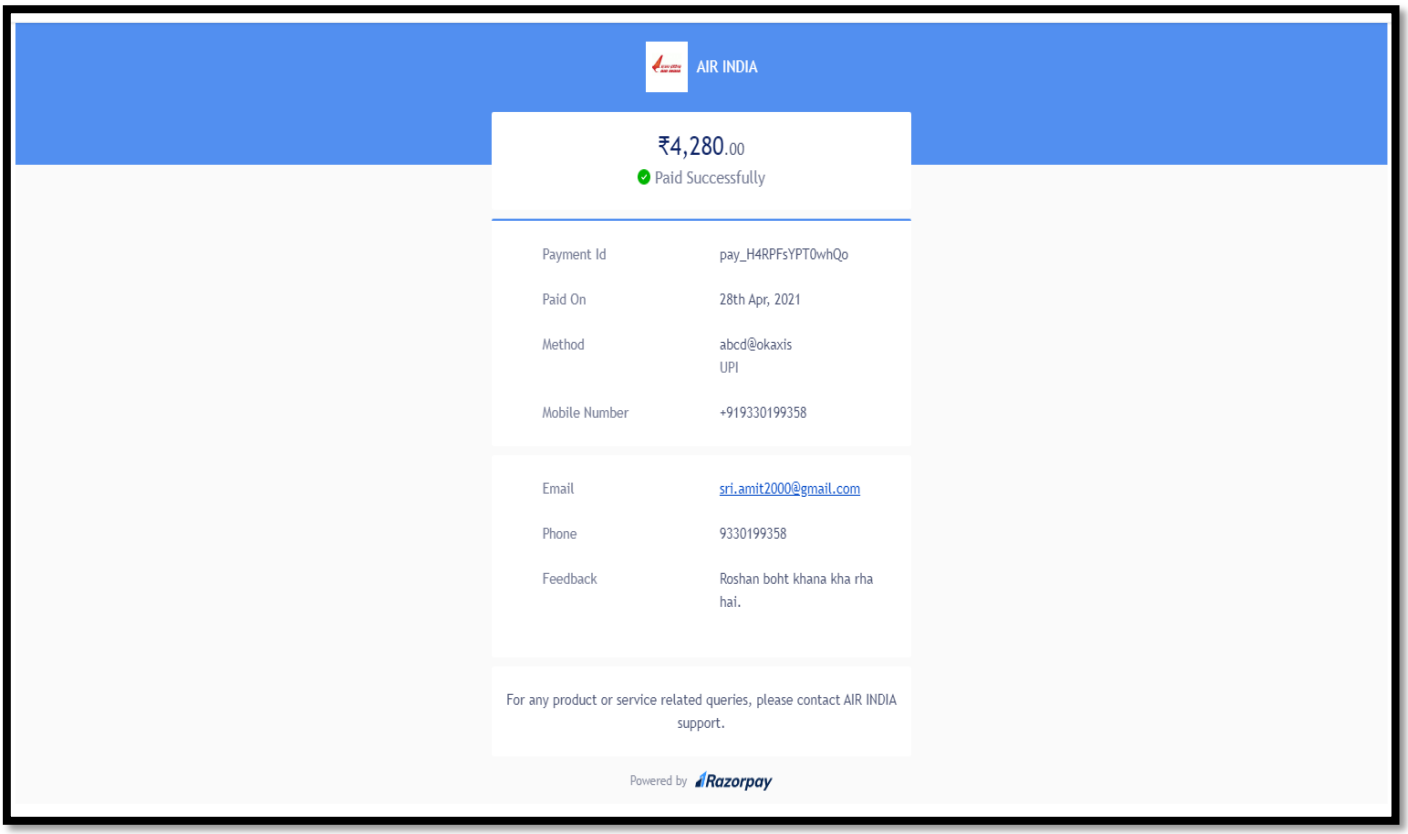
- The module 4 of our project titled “Airline Reservation System” is the paymentmodule.
- When the user clicks on the book now button, it directs him/her to the payment gateway.
- The user need to fill in the details and on clicking the pay option the different modes of payement appears.
- The user selects the mode of payment and once the payment mode is selected the payment is done successfully and the user receives the payment receipt of the reservation made.

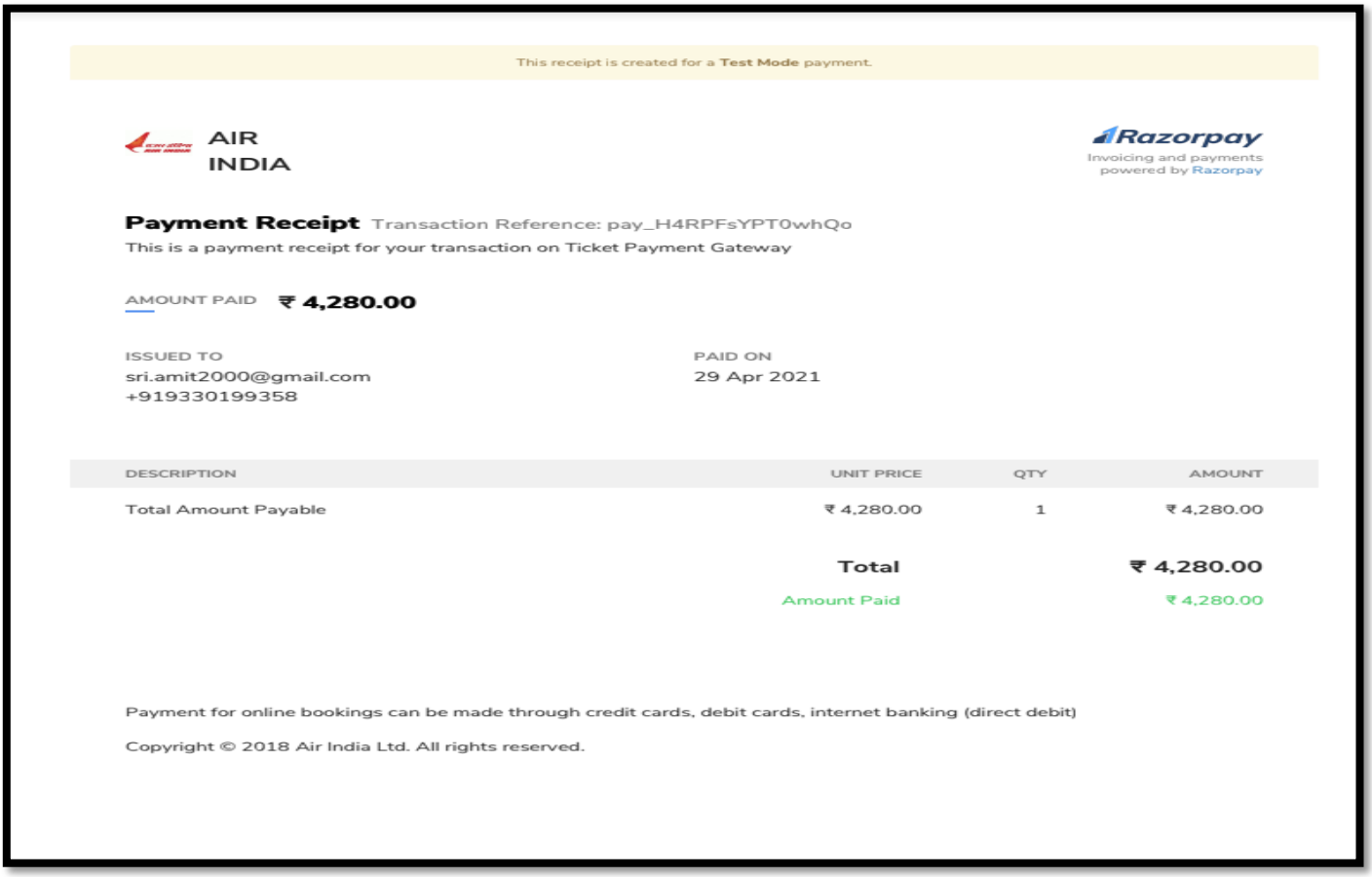
Implementation of Module 4



Result of Module 4







Result:

Thus, the module3 and module 4 was implemented and documented successfully.

MASTER TEST PLAN

&

TEST CASE DESIGN

16. Executive Summary

The main purpose of the test plan for the Airline Reservation System is to discuss the testing details of the use cases of the Airline Reservation System. The software project test plan also describes the objective, scope and approach of the software testing effort for the Airline Reservation System project. The test plan for the Airline Reservation System also indicates the personnel responsible for each task and also specifies the risks associated with the test plan

17. Test Plan

A Test Plan is a detailed document that describes the test strategy, objectives, schedule, estimation, deliverables, and resources required to perform testing for a software product. Test Plan helps us determine the effort needed to validate the quality of the application under test. The test plan serves as a blueprint to conduct software testing activities as a defined process, which is minutely monitored and controlled by the test manager.

17.1. Scope of Testing

Functional:

- Check and validate email ID and password at the time of login/registration
- Check whether data fields are left empty in registration page.
- Check whether wrong format entered of not in input fields in registration page.
- Incorrect search criteria entered or incorrect format of data entered into the data entry fields of the flight search and booking page.

Non-Functional: Are all NFR (Non-Functional Requirements) covered?

- Check the possibility of crashing and feasibility of the software
- Test the time for loading of the different pages.

17.2. Types of Testing , Methodology , Tools

Category	Methodology	Tools Required
Functional Requirements	Manual	HTML, CSS, Javascript, Mongo dB

17.3. Test Deliverables

- Before Testing
  1. Test Plan Document
  2. Test Cases
  3. Test Design Specifications
- During Testing
  1. Test Scripts
  2. Test Data
  3. Error logs and Execution Logs
- After Testing
  1. Test Report
  2. Defect Report
  3. Release Report

17.4. Functional Test Cases

Test ID (#)	Test Scenario	Test Case	Execution Steps	Expected Outcome	Actual Outcome	Status	Remarks
1.	USER LOGIN	Check username, which is the email-id in the case of the Airline Reservation System.	1. User clicks on User Registration link 2. Enter the email ID on Login page 3. Click Login/Register button	A valid e-mail id of the user and a correct password associated with the email-id which he uses to log in.	same	Pass / Failure	success

2.	USER REGISTRATION	Checks for wrong format entered in the input fields for the registration page.	1. Open the registration window 2. Fill up the credentials 3. Click on submit button	A correct format entered by the customer into the input fields of the registration page.	same	Pass/ Failure	success
3.	USER REGISTRATION	Check whether the data fields left out empty in the registration page.	1. Open the registration window 2. Fill up the credentials 3. Click on submit button	The customer would enter the data in all the fields in the registration form.	same	Pass/ Failure	success
4.	SEARCH AND BOOK FLIGHTS	Check the incorrect search criteria entered or incorrect format of data entered into the data entry fields of the flight search and booking page.	1. Open the book flights window 2. Fill up details as per your choice of booking 3. Click on Search flights	Enter the data into the data entry fields in a correct format.	same	Pass/F ailure	success

3.1. Non-Functional Test Cases

Test ID (#)	Test Scenario	Test Case	Execution Steps	Expected Outcome	Actual Outcome	Status	Remarks
1.	Page	Check the loading time of page	1. Go to different window after execution of previous page/window	Loading of page in 5 seconds	same	Pass/ Failure	success

4. Test ReportReference

3. https://www.pmi.org/

Result:

Thus, the test plan and test cases are documented successfully

MANUAL TESTING WITH REPORT

18. Executive Summary

The main purpose of the test plan for the Airline Reservation System is to discuss the testing details of the use cases of the Airline Reservation System. The software project test plan also describes the objective, scope and approach of the software testing effort for the Airline Reservation System project.

The test plan for the Airline Reservation System also indicates the personnel responsible for each task and also specifies the risks associated with the test plan

19. Test Plan

A Test Plan is a detailed document that describes the test strategy, objectives, schedule, estimation, deliverables, and resources required to perform testing for a software product. Test Plan helps us determine the effort needed to validate the quality of the application under test. The test plan serves as a blueprint to conduct software testing activities as a defined process, which is minutely monitored and controlled by the test manager

19.1. Scope of Testing

Functional:

- Check and validate email ID and password at the time of login/registration
- Check whether data fields are left empty in registration page.
- Check whether wrong format entered of not in input fields in registration page.
- Incorrect search criteria entered or incorrect format of data entered into the data entry fields of the flight search and booking page.

Non-Functional: Are all NFR (Non-Functional Requirements) covered?

- Check the possibility of crashing and feasibility of the software
- Test the time for loading of the different pages.

19.2. Types of Testing , Methodology , Tools

Category	Methodology	Tools Required
Functional Requirements	Manual	HTML, CSS, Javascript, Mongo dB

19.3. Test Deliverables

- Before Testing
  1. Test Plan Document
  2. Test Cases
  3. Test Design Specifications
- During Testing
  1. Test Scripts
  2. Test Data
  3. Error logs and Execution Logs
- After Testing
  1. Test Report
  2. Defect Report
  3. Release Report

20. Test Case

20.1. Functional Test Cases

Test ID (#)	Test Scenario	Test Case	Execution Steps	Expected Outcome	Actual Outcome	Status	Remarks
1.	USER LOGIN	Check username, which is the email-id in the case of the Airline Reservation System.	5. User clicks on User Registration link 6. Enter the email ID on Login page 7. Click Login/Register button	A valid e-mail id of the user and a correct password associated with the email-id which he uses to log in	Same	Pass / Failure	success
2.	USER REGISTRATION	Checks for wrong format entered in the input fields for the registration page.	4. Open the registration window 5. Fill up the credentials Click on submit button	A correct format entered by the customer into the input fields of the registration page.	Same	Pass / Failure	success
3.	USER REGISTRATION	Check whether the data fields left out empty in the registration page.	4. Open the registration window 5. Fill up the credentials Click on submit button	The customer would enter the data in all the fields in the registration form.	Same	Pass / Failure	success
4.	SEARCH AND BOOK FLIGHTS	Check the incorrect search criteria entered or incorrect format of data entered into the data entry fields of the flight search and booking page.	4. Open the book flights window 5. Fill up details as per your choice of booking Click on Search flights	Enter the data into the data entry fields in a correct format.	Same	Pass / Failure	success

7.1. Non-Functional Test Cases

Test ID (#)	Test Scenario	Test Case	Execution Steps	Expected Outcome	Actual Outcome	Status	Remarks
1.	Page	Check the loading time of page	Go to different window after execution of previous page/window	Loading of page in 5 seconds	Same	Pass/Failure	Success

8. Defect Log

Requirement #	Defect ID #	Defect Description	Assignee	Status
M1R1	BTN1	On searching a Flight's destination, it shows insufficient data	Amit Srivastav	Success
M1R2	BTN2	Login button doesn't accept the data of some registered data	Roshan Singh	Success

9. Test Report

The test cases failed were negligible and were checked easily.

Category	Progress Against Plan	Status
Functional Testing	Red	Completed

Non-Functional Testing	Red	Completed

Functional	**Test Case Coverage (%)**	**Status**
BTN1	100%	Completed
BTN2	100%	Completed

Reference

4. https://www.pmi.org/

Result:

Thus, the software test conducted and documented the report successfully.