Visvesvaraya Technological University

Belagavi, Karnataka – 590018

Project report on

AIRLINE RESERVATION SYSTEM(*AeroSafe)*

Submitted in partial fulfillment of the requirements for the course

DBMS laboratory with mini project (18CSL58)

Submitted by

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CERTIFICATE

This is to certify that the project work entitled "**Airline reservation management system**" is a bona fide work carried out by **Mr. SANJAY N T(1JS18CS139)** and **Mr. YASHWANTH R(1JS18CS191)** in partial fulfillment of the requirements for the course DBMS laboratory with mini project of 5th semester, Bachelor of engineering in Computer Science and engineering of the Visvesvaraya Technological University, Belagavi, during the academic year 2020 – 2021. It is certified that all corrections and suggestions indicated for internal assessment have been incorporated in the report. The project report has been approved as it satisfies the academic requirements in respect of the project work prescribed for the said degree.

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Abstract

In the past two decades, aviation reforms in India have dramatically changed the passenger share from conventional rail mode to air mode for the long distance journeys. Indian government's initiative of open market policy for aviation sector has encouraged different low cost carriers (LCC) as well as full service carriers (FSC) to increase their market in this scenario. Air travel potential in India is high due to rising income standard of individual. The growth of IT and service sector like finance and telecommunication are major booster for this development. The turbulent phase of Indian aviation market in early decade of this century is now slowly shifting to the transient phase. This phase of the air travel market attributed due to heavy price fluctuations of aviation turbine fuel.

Airline reservation System is a computerized system used to store and retrieve information and conduct transactions related to air travel. The project is aimed at exposing the relevance and importance of Airline Reservation Systems. 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.

ACKNOWLEDGEMENTS

I express my humble greetings to his holiness **Jagadguru Sri Sri Sri Shivaratri Deshikendra Mahaswamiji** who has showered their blessings on us for framing our career successfully.

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Last but not the least, I am pleased to express our heart full thanks to all the teaching and non-teaching staff of department of Computer and Science engineering and my friends who have rendered their help, motivation and support.

SANJAY N T

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Chapter 1: Preamble

1.1 INTRODUCTION:

A database is a collection of information that is organized so that it can be easily accessed, managed and updated. Computer databases typically contain aggregations of data records or files, containing information about sales transactions or interactions with specific customers. A Database Management System is a software designed to store, retrieve, define, and manage data in a database. Considering the chances of possible human errors that could occur in a station, an automated station.

1.1.1 Database management system

Database Management System is a software for storing and retrieving users' data while considering appropriate security measures. It consists of a group of programs which manipulate the database. The DBMS accepts the request for data from an application and instructs the operating system to provide the specific data. In large systems, a DBMS helps users and other third-party software to store and retrieve data. DBMS allows users to create their own databases as per their requirement. The term ‘DBMS’ includes the user of the database and other application programs. It provides an interface between the data and the software application.

1.2 PYTHON:

Python is an interpreted, high – level and general – purpose programming language. Python's design philosophy emphasizes code readability with its notable use of significant whitespace. Its language constructs and object – oriented approach aim to help programmers write clear, logical code for small and large-scale projects. Python is dynamically typed and garbage collected. It supports multiple programming paradigms, including structured, object – oriented and functional programming. Python is often described as a "batteries included" language due to its comprehensive standard library.

Python was created in the late 1980s, and first released in 1991, by Guido Van Rossum as a successor to the 'ABC programming language'. Python 2.0, released in 2000, introduced new features, such as list comprehension, and a garbage collection system with reference counting, and was discontinued with version 2.7 in 2020. Python 3.0, released in 2008, was a major revision of the language that is not completely backward – compatible and much Python 2 code does not run unmodified on Python 3. With Python 2's end of life, only Python 3.6.x and later are supported, with older versions still supporting e.g., Windows 7.

1.1.1 PyQT5

Qt is set of cross-platform C++ libraries that implement high-level APIs for accessing many aspects of modern desktop and mobile systems. These include location and positioning services, multimedia, NFC and Bluetooth connectivity, a Chromium based web browser, as well as traditional UI development. PyQt5 is a comprehensive set of Python bindings for Qt v5. It is implemented as more than 35 extension modules and enables Python to be used as an alternative application development language to C++ on all supported platforms including iOS and Android. PyQt5 may also be embedded in C++ based applications to allow users of those applications to configure or enhance the functionality of those applications.

1.2 MySQL

MySQL is an open – source relational database management system. Its name is a combination of "My", the name of co-founder Michael Wideniu's daughter, and 'SQL', the abbreviation for structured query language. A relational database organizes data into one or more data tables in which data types may be related to each other. These relations help structure the data. SQL is a language programmer use to create, modify and extract data from the relational database, as well as control user access to the database. In addition to relational databases and SQL, an RDBMS like MySQL works with an operating system to implement a relational database in a computer's

storage system, manages users, allows for network access and facilitates testing database integrity and creation of backups.

1.4 OBJECTIVES

The main objective of the Airlines Reservation System is to manage the details of Airlines Ticket, Flights, Route, Booking, Passenger.

It manages all the information about Airlines Ticket, Bookings, Passenger, Airlines Ticket. The project is totally built at administrative end and thus only the administrator is guaranteed the access. The purpose of the project is to build an application program to reduce the manual work for managing the Airlines Ticket, Flights, Bookings, Customer. It tracks all the details about the Customer, Booking Counter.

1.5 SUMMARY

The chapter discussed before is an overview about PYQT5 designer, python and Mysql. The scope of study and objectives of the project are mentioned clearly. The organization of the report is been pictured to increase the readability. Further, coming up chapters depicts the use of various queries to implement various changes like insert, update, delete and also triggers to perform various functions.

Chapter 2: Requirement Specifications

2.1 SOFTWARE SPECIFICATION

- Operating System: Windows Vista/7/8/10
- Front End: Qt designer
- Rear End: MySQL

2.2 HARDWARE SPECIFICATION

- Processor: x86 compatible processor with 1.7 GHz Clock Speed
- RAM: 512 MB or greater
- Hard Disk: 20 GB or grater
- Monitor: VGA/SVGA
- Keyboard: 104 keys standard
- Mouse: 2/3 button. Optical/Mechanical.

2.3 USER CHARACTERISTICS

Every user:

- Should be comfortable with basic working of the computer
- Must have basic knowledge of English
- Must carry a login ID and password used for authentication

Chapter 3 :System Design and Implementation

3.1 Introduction:

Software design is the process by which an agent creates a specification of a software artifact intended to accomplish goals, using a set of primitive components and subject to constraints. Software design usually involves problem – solving and planning a software solution.

A wide range of tools are used to design the Station management system.

- Pycharm IDE

  Used to create and edit the source code

- QT Designer

  Used for designing UI

- MySQL Workbench

  Used to store data and handle transactions

Project is implemented in Python, on a Windows 10 based computer. Python is used within pycharm., which is a third-party plug-in for pycharm. It is an IDE used for programming in Python supporting code refactoring, graphical debugging, code analysis among other features.

3.2 ER diagram:

An entity–relationship model or the ER Diagram describes inter-related things of interest in a specific domain of knowledge. An ER model is composed of entity types and specifies relationships that can exist between instances of those entity types.

In software engineering an ER model is commonly formed to represent things that a business needs to remember in order to perform business processes. Consequently, the ER model becomes an abstract data model that defines a data or information structure that can be implemented in a database, typically a relational database.

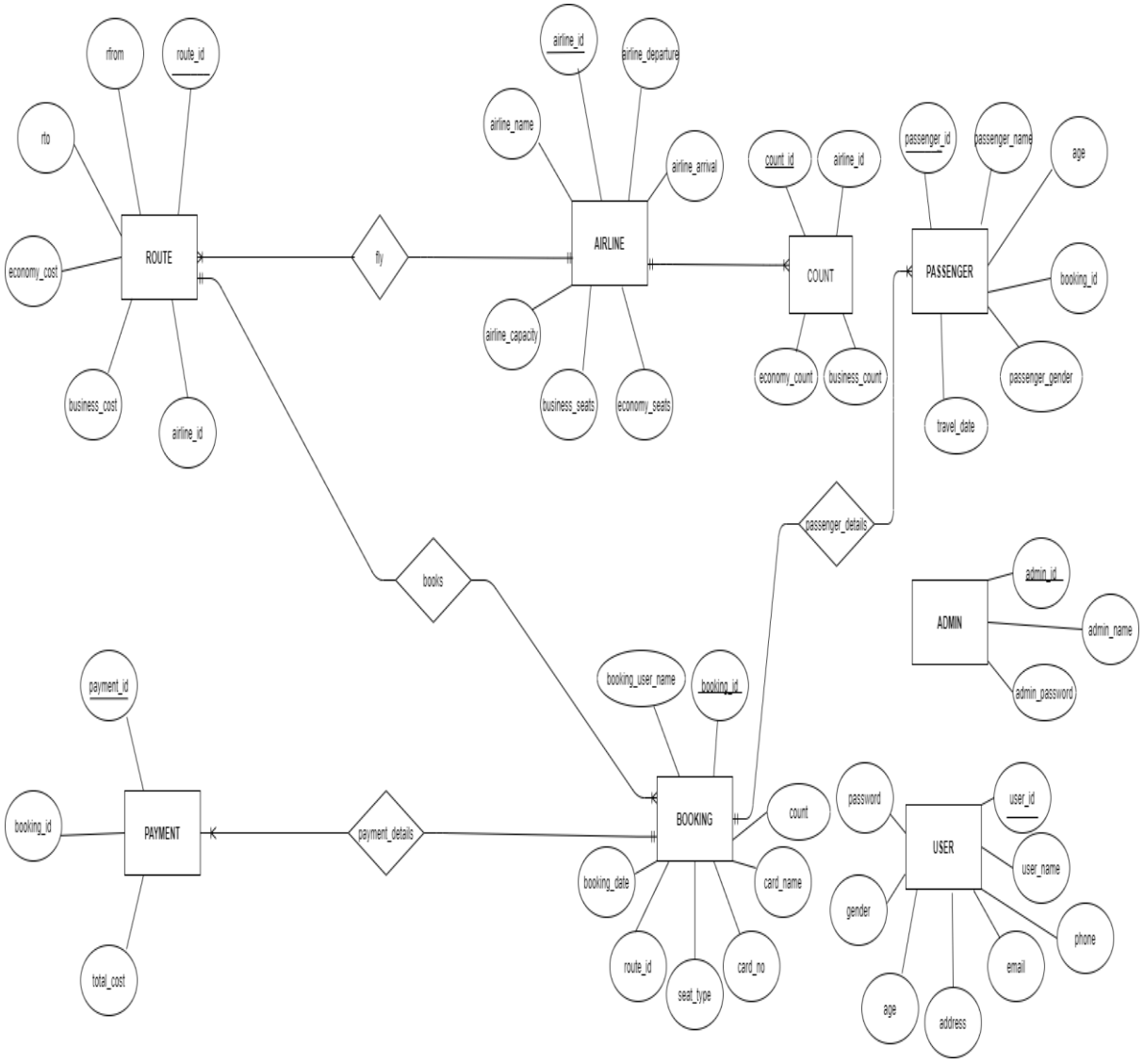

Figure 3.1: ER diagram of airline reservation system

3.3 Schema diagram:

The schema diagram of a database system is its structure described in a formal language supported by the database management system. The formal definition of a database schema is a set of formulas called integrity constraints imposed on a database.

The term ‘schema’ refers to the organization of data as a blueprint of how the database is constructed. These integrity constraints ensure compatibility between parts of the schema. All constraints are expressible in the same language. A database can be considered a structure in realization of the database

language. The states of a created conceptual schema are transformed into an explicit mapping, the database schema. This describes how real-world entities are modelled in the database.

Figure 3.2 represents the schema defined for the airline reservation system. All various tables used, primary keys and the foreign keys are represented.

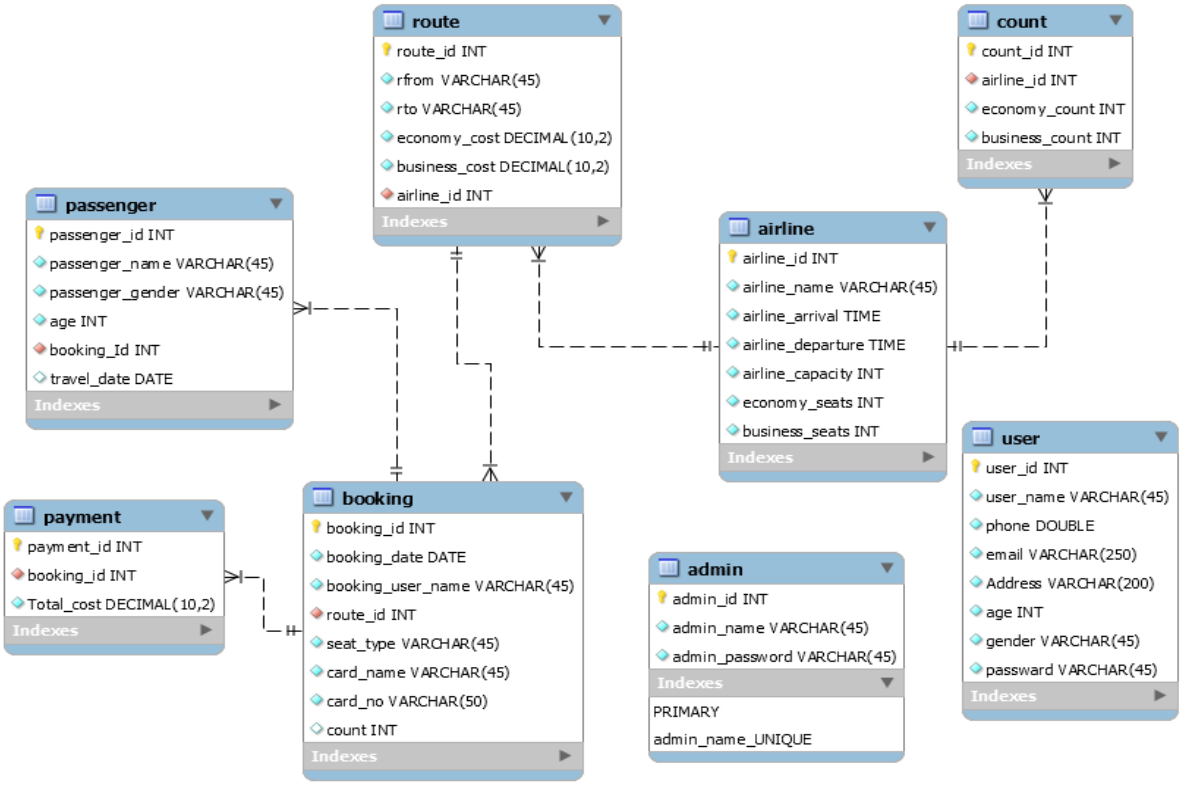

Figure 3.2: Schema diagram of airline reservation system

3.4 Queries:

A query is a request for data or information from a database table or combination of tables.

3.4.1 Basic queries:

Below mentioned are all the queries used to perform various tasks in MySQL such as insert, delete, update.

- Creating a table

This is used to create a new table in our database.

Syntax:

```
create table tableName
(
    columnName 1 dataType,
    columnName 2 dataType,
    …
    columnName n datatype
);
```

- Inserting values

This is used to insert values into the table which is created

Syntax:

```
insert into tableName ( columnNames ) values ( userEntry );
```

- Updating values

This is used to update existing values in a table

Syntax:

```
update tableName set columnName = ( userEntry );
```

- Deleting values

Used to delete tuples from a specified table

Syntax:

delete from tableName;

3.4.2 Stored procedure:

A stored procedure is a set of SQL statements with an assigned name that's stored in the database in compiled form so that it can be shared by a number of programs.

Following is the syntax to declare a stored procedure:

```
delimiter

create procedure procedureName ( )

begin

        procedure body;

end

delimiter;
```

3.4.3 Triggers:

A trigger is a stored program invoked automatically in response to an event such as insert, delete and update that occurs in the associated table. For example, you can define a trigger that is invoked automatically before a new row is inserted into a table.

Following is the syntax to declare a trigger:

```
create trigger triggerName (after|insert) (insert|delete|update)

on tableName for each row
```

begin

procedure body;

end;

3.5 Pseudo code:

Pseudocode is an informal high-level description of the operating principle of a computer program or other algorithm. It uses the structural conventions of a normal programming language, but is intended for human reading rather than machine reading.

Here are some of the algorithms used to implement airline reservation system:

3.5.1 User login algorithm

i. Begin
ii. Fetch credentials from text boxes
iii. Verify credentials with values in database
iv. If verified, login. Else, throw an error
v. End

3.5.2 Insert data algorithm

i. Begin
ii. Fetch credentials from text boxes, combo boxes
iii. Try inserting values into the database, throw an exception if not possible
iv. Perform commit operation
v. End

3.5.3 Delete data algorithm

i. Begin

ii. Fetch the keyword to be searched and deleted

iii. Try deleting values from the database, throw an exception if not possible

iv. Perform commit operation

v. End

3.5.4 Update data algorithm

i. Begin

ii. Fetch the keyword to be searched and updated

iii. Try updating values of the database, throw an exception if not possible

iv. Perform commit operation

v. End

3.5.5 Display table algorithm

i. Begin

ii. Select all the tuples of the table to be displayed from the database

iii. Reset the table row count to zero

iv. Using two enumerate iterations on the fetched data for row and column, insert item into the table widget

v. End

3.5.6 Booking algorithm

i. Begin

ii. Fetch booking details based on date and route id

iii. Select number of seats for booking and click on pay to book the ticket

iv. Cancel booking based on name and card no

v. End

3.5.7 Ticketing algorithm

i. Begin

ii. Fetch destination station and flight type from combo boxes

iii. Pass all parameters and the price generated by the algorithm to the database

iv. Fetch required parameters, including total price (generated by trigger) and display the ticket

v. End

Chapter 4: Observations and Results

Here are a few snaps from various instances of the application:

Figure 4.1: Main Tab(Login page)

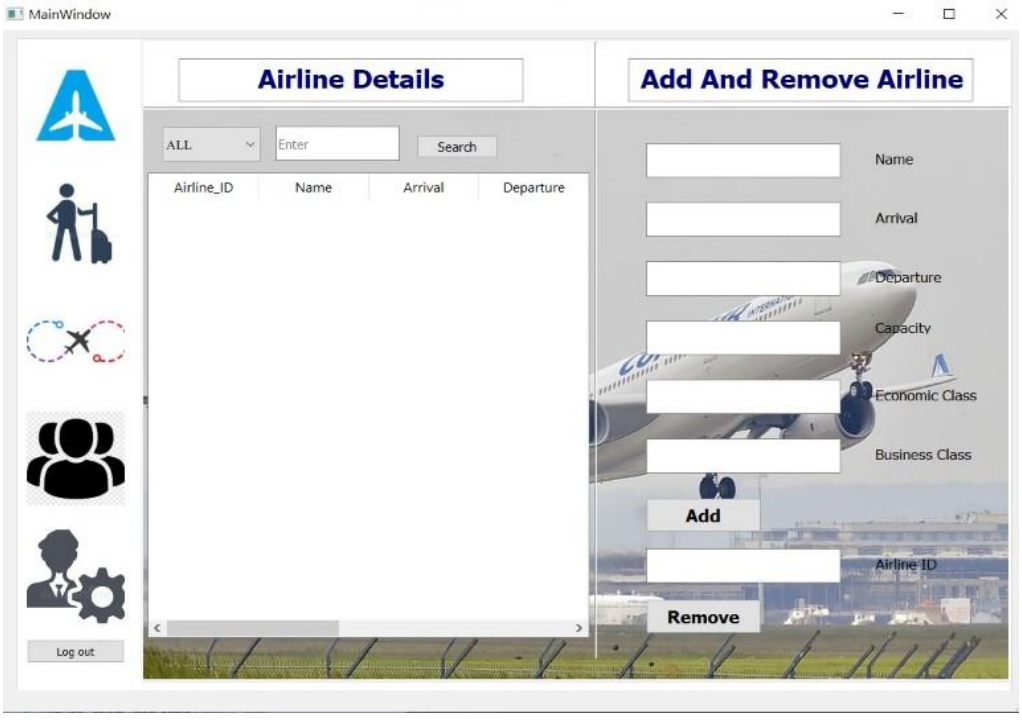

Figure 4.2: Admin Airline Details page

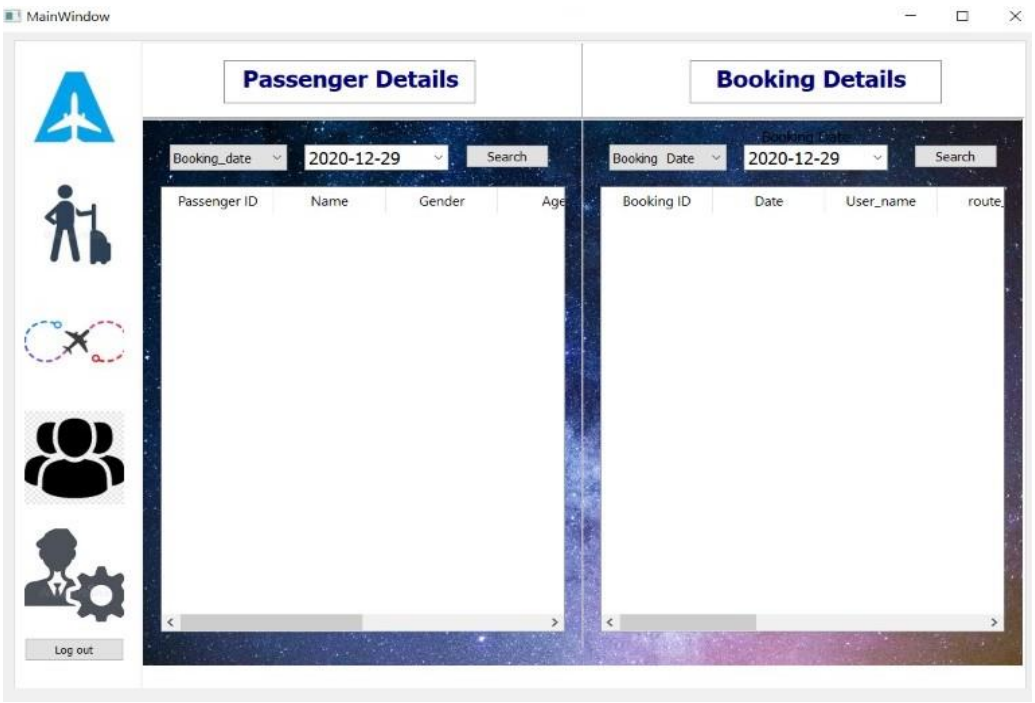

Figure 4.3: Admin Passenger and Booking Details page

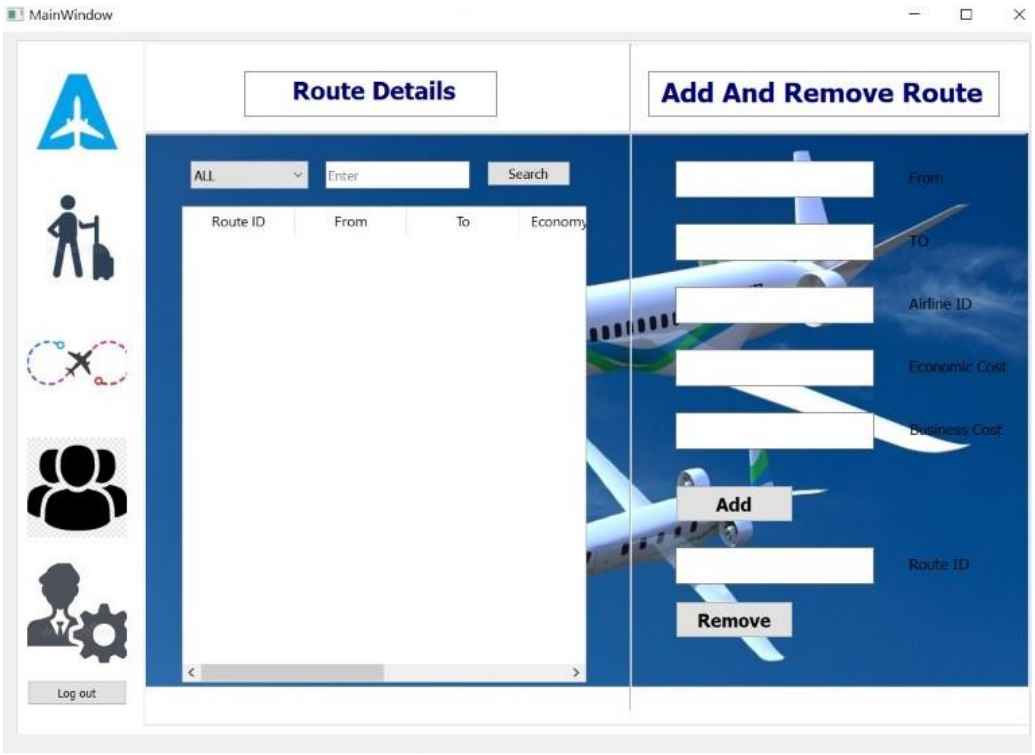

Figure 4.4: Admin Route Details page

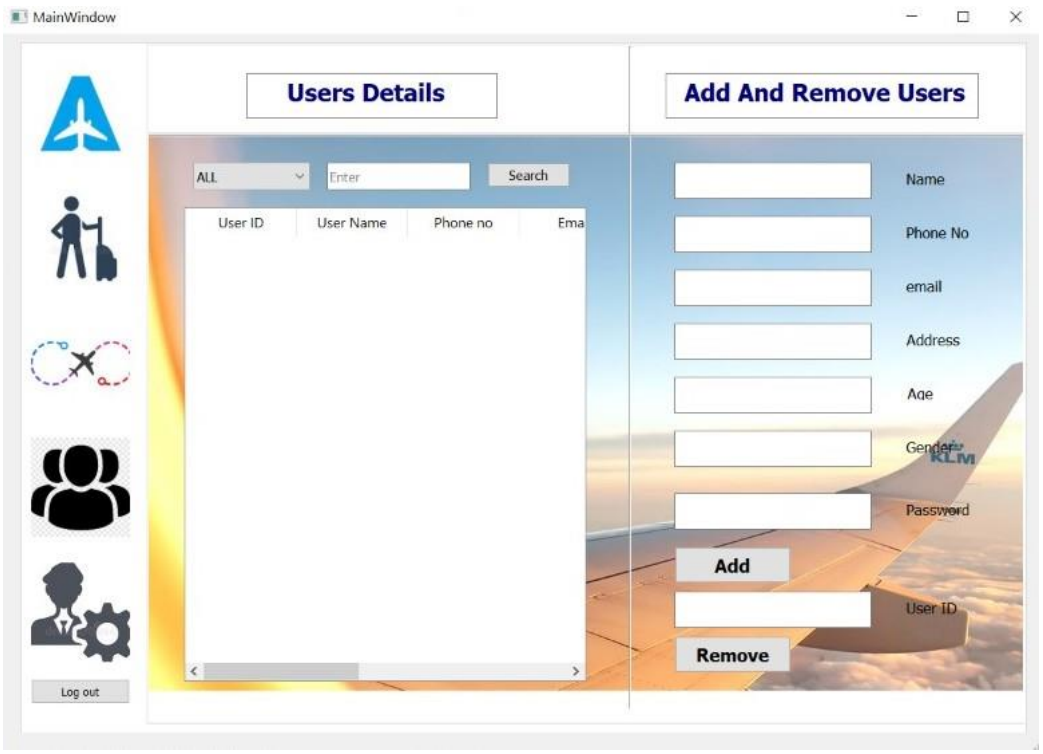

Figure 4.5: Admin Users Details page

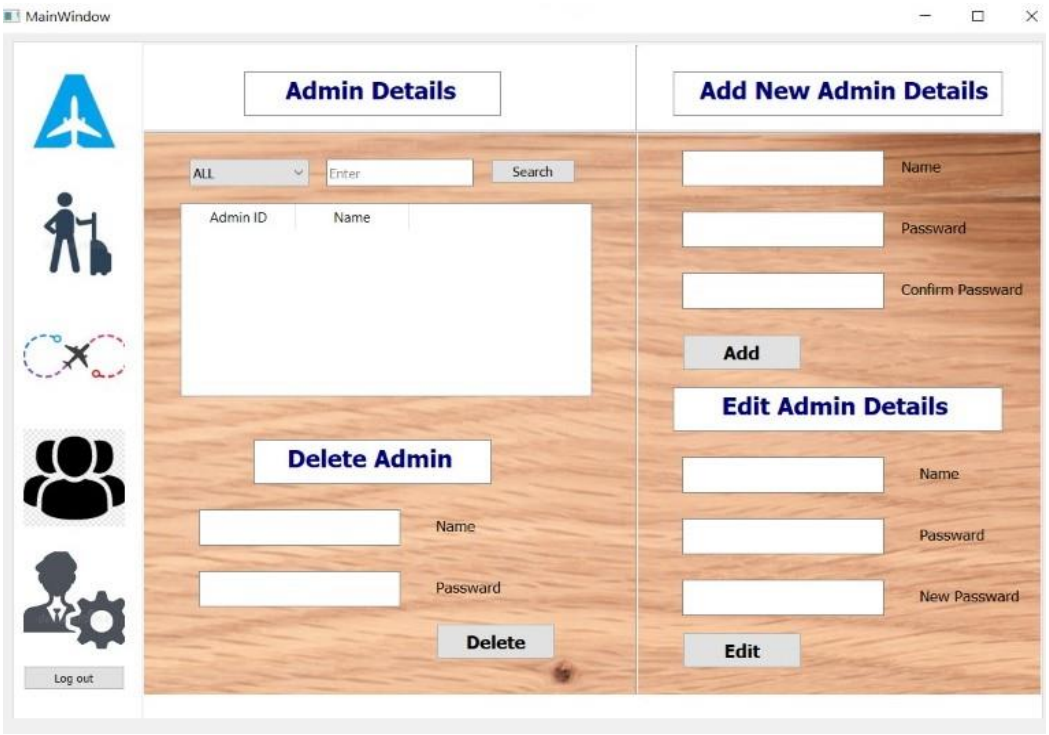

Figure 4.6: Admin admin Details page

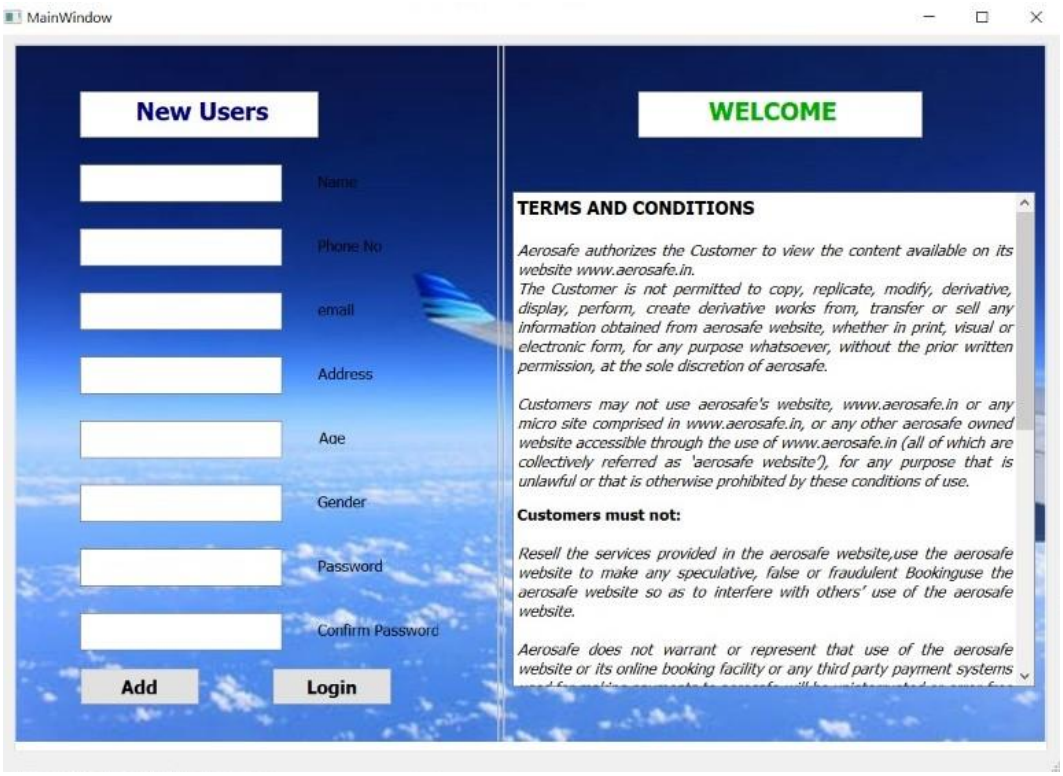

Figure 4.7: New Users Registration Tab

Figure 4.8: User route Details page

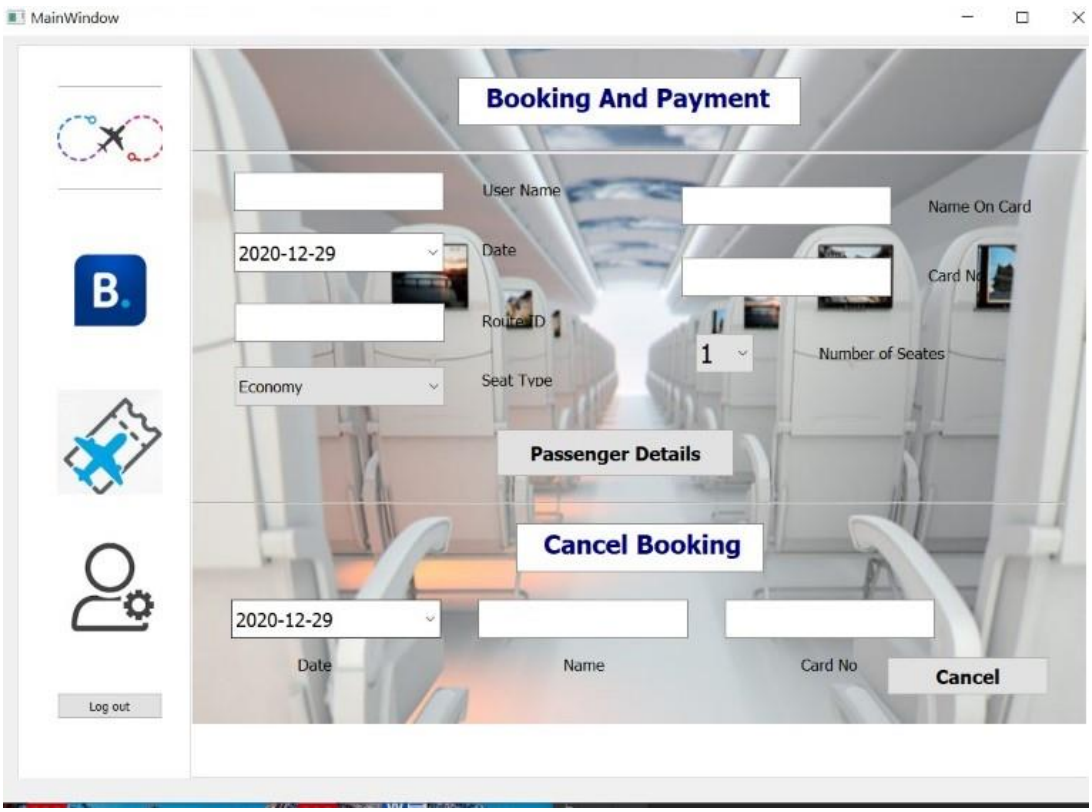

Figure 4.9a: User booking Tab

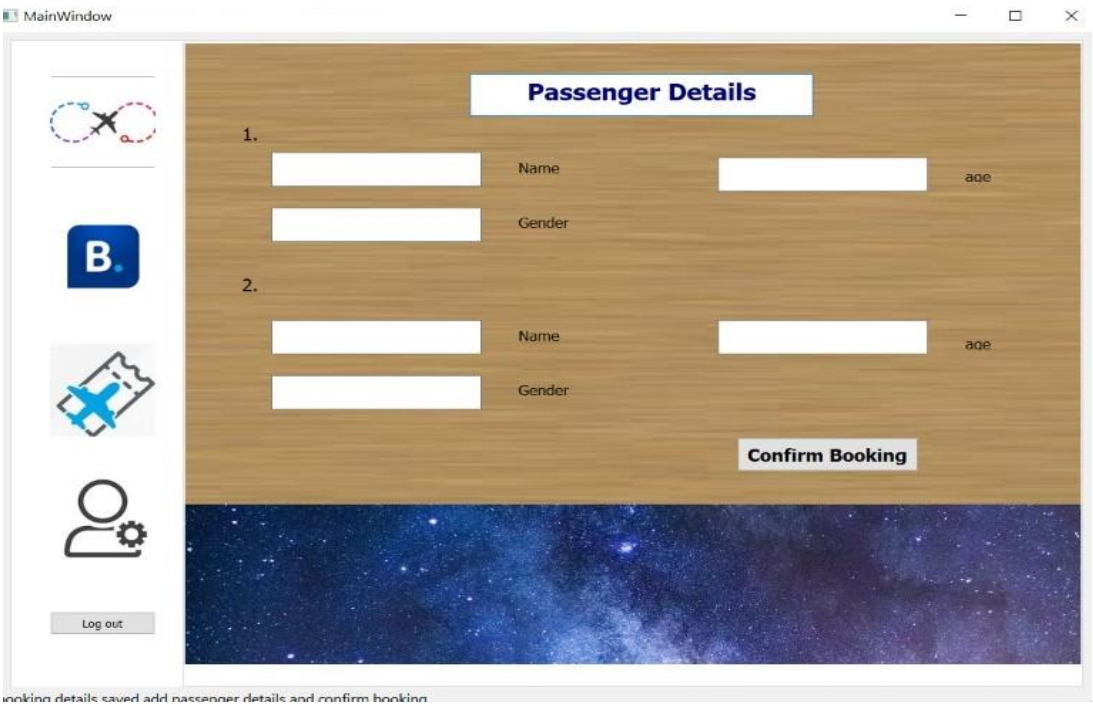

Figure 4.9b: User_Passenger Details page

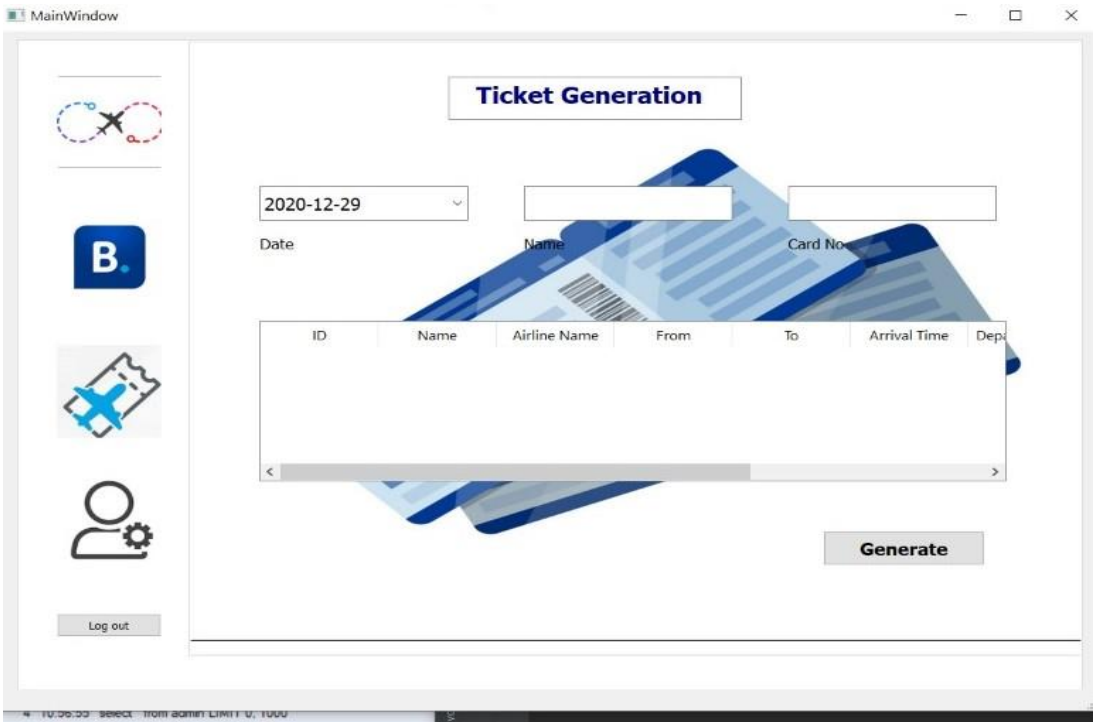

Figure 4.10: User_Ticket Details page

Figure 4.11: User_Edit Details page

Chapter 5: Conclusion and Future Enhancements

Conclusion

The “airline reservation system” was successfully designed and is tested for accuracy and quality. During this project we have accomplished all the objectives and this project meets the needs of the organization. The developed will be used in searching, retrieving and generating information for the concerned requests. The advantages that are with this proposed system are Reduced entry work, Easy retrieval of information, Reduced errors due to human intervention, User friendly screens to enter the data, Portable and flexible for further enhancement, Web enabled and Fast finding of information requested.

Future Enhancements

Future scope of the project is vast and can be used in many ways:

- Integration of a QR code module for the acceptance of UPI Payments from user .
- Providing discounts and offers to encourage airline travel.