

Project  
For Database Management Systems

**AIRLINE RESERVATION  
MANAGEMENT SYSTEM**

By

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**INDIA**

**January-May 2019**

## 1. Background of the Area:

Airline reservation system is one of the most used database system in the world. It is an example of Transaction processing systems. **Transaction processing systems** are systems with large databases and hundreds of concurrent users executing database transactions. These systems require high availability and fast response time for hundreds of concurrent users.

We define the concept of a transaction, which is used to represent a logical unit of database processing, that must be completed in its entirety to ensure correctness. A transaction is typically implemented by a computer program, which includes database commands such as retrievals, insertions, deletions, and updates.

In this project, we deal with the database part of the whole system with insertions, deletions and updates as the primary task of our system along with maintenance of the integrity of the system at all stages of a transaction.

The system that is being described in this report handles everything that the most practical systems would do. The complexity of the database system has been handled by trying to make most basic entities resembling the real world objects. Our database handles the most basic functions of an airline reservation system, including reservation, cancellation and updating of a flight trip transaction.

## **2. Need of the Project:**

### **Existing Systems:**

The existing online airline booking systems come with many banners of advertisements and pop-ups on the sides of the website that it hinders with the entire booking process. It is known that a booking is not finalized till the transaction of payment is authorized and confirmed. Such have been instances where the user books their ticket provisionally but fails to go through with the transaction. Such tickets are not booked however the reversal of their bookings is not reflected instantly instead take an average of 20 minutes.

Existing system allows only those bookings that are confirmed 5 hours before the departure of the flight. These happenings invite many customer care calls towards the company. To attend these queries, man hours are put on the line.

Many systems crash during the peak hour of their local time. The servers are not enough to handle the load then. Too many users make the page navigations slow, hindering the overall number of bookings that go through till the end.

### **3. Objectives of the Project:**

#### **Overview**

#### **Purpose**

The purpose of this document is to describe the requirements that are necessary for developing the Airline Reservation System. It also helps to gather and analyse the new ideas incorporated to the existing reservation system. The intended audience is any person who wants to view, book or cancel air tickets.

#### **Scope**

The system provides an online interface where users can search for specific flights from any source to destination. The user can view flight timings and book tickets. There are several features offered in this system that sets it apart from the many existing systems, such as allowing booking till the last minute as emergency services.

#### **Objective**

##### **General Objective:**

The main goal of the proposed system is to make the process of airline reservation online.

##### **Specific Objectives:**

- To create a system that makes booking and cancellation easy and user friendly.
- Make the entire process of itinerary decisions On-The-Go.
- To provide the customer more options like last minute emergency booking, low-cost chartered flights etc.
- Reduce the work load of ticket officers and counters.
- To enable bulk amount of booking and cancellations in a very short time.

## **4. Project Outcomes:**

### **Proposed System:**

- The proposed system towards online airline reservation is faster. Unlike many existing systems, there are multiple servers installed to run the website. This reduces almost all possibilities for a website to hang as a result of server crash.
- When transactions do not get authorized, the reversals of the reservations appear on the system without much delay so that they are open for the next user. Such a feature is helpful when multiple users do bulk booking.
- For travel security reasons, the bookings are expected to be done a few hours prior to the flight departure. This system allows last minute booking for emergencies, if the flight is not fully booked, as long as it does not challenge the airlines' security.

Overall, the proposed system is robust as it caters to all the needs of present day users expect from an online booking.

## **TECHNOLOGIES USED**

### **FRONT END:**

JavaFX is a software platform for creating and delivering desktop applications, as well as rich Internet applications (RIAs) that can run across a wide variety of devices. JavaFX is intended to replace Swing as the standard GUI library for Java SE, but both will be included for the foreseeable future. JavaFX has support for desktop computers and web browsers on Microsoft Windows, Linux, and macOS. JavaFX is no longer bundled with the latest Java, nor will be supported by Oracle, while it still is supported for the current long-term version Java SE 8 through March 2022. We have used Netbeans 8.1 with JDK 8 to execute the front end.

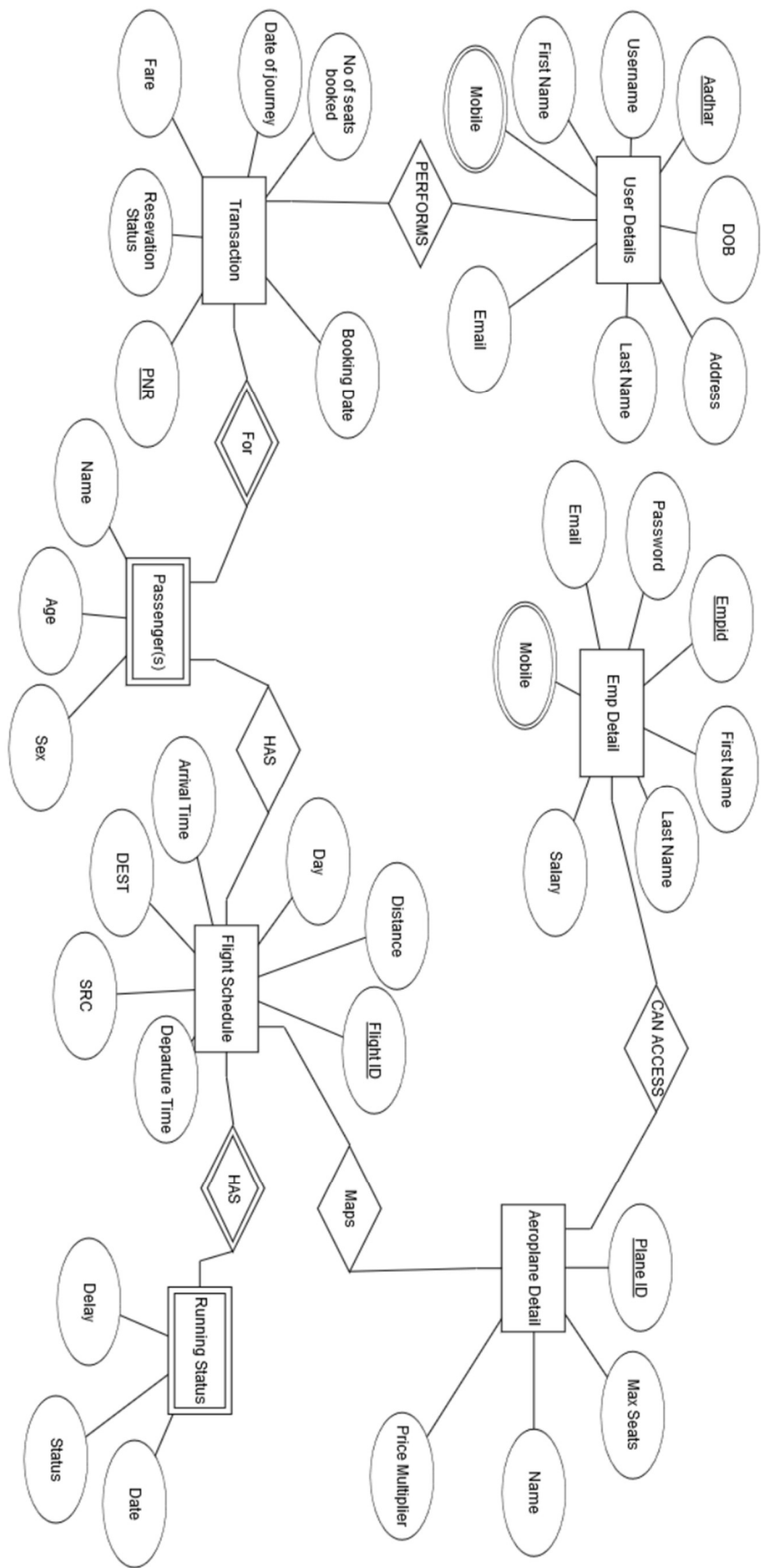


### **BACK END:**

The Oracle Database 12c is a high-performance, enterprise-class database. Oracle released Oracle Database 12c into general availability July 1, 2013. According to Oracle, this is "the first database designed for the cloud." Oracle Database 12c also introduces 500 new features to the database, most notably pluggable databases and multitenant architecture. The Oracle Database 12c release 12.0.1.2 also features the Oracle Database 12c In-Memory, an optional add-on that provides in-memory capabilities. The in-memory option makes Oracle Database 12c the first Oracle database to offer real-time analytics.



### ER DIAGRAM



## ER TO TABLES

user_details			
aadhar	username	first name	last name
dob	mobile	email	Address
password			

emp_detail			
empid	first name	last name	salary
mobile		e-mail	
password			

aeroplane_detail			
plane_id	max seat	name of airplane	price multiplier

flight_schedule			
flight_id	day	arrival time	departure time
src		dest	
distance			

flight_map	
plane_id	flight_id

cities	
city code	city name

current running status			
flight id	date	status	delayduration

transaction			
pnr	booking date	username	flight id
fare	no of seats booked	reservation status	date of journey

details of person booked			
pnr	name_pass1	age_pass1	sex_pass1
name_pass2	age_pass2		sex_pass2
name_pass3	age_pass3		sex_pass3
name_pass4	age_pass4		sex_pass4
name_pass5	age_pass5		sex_pass5



## **NORMALISED TABLES (UPTO 3NF)**

login_record	
username	password

user details			
aadhar	username	first name	last name
dob	mobile	email	address

emplogin_record	
empid	password

emp_detail			
empid	first name	last name	salary
mobile		e-mail	

aeroplane_detail			
plane_id	max seat	name of airplane	price multiplier

flight_schedule			
flight_id	day	arrival time	departure time
src		dest	

flight_map	
plane_id	flight_id

cities	
city code	city name

distances		
src	dest	distance

current running status			
flight id	date	status	delayduration

transaction			
pnr	booking date	username	flight id
fare	no of seats booked	reservation status	date of journey

details of person booked			
pnr	name_pass1	age_pass1	sex_pass1
name_pass2		age_pass2	sex_pass2
name_pass3		age_pass3	sex_pass3
name_pass4		age_pass4	sex_pass4
name_pass5		age_pass5	sex_pass5

## TABLE DESCRIPTIONS

SQL> desc emp\_detail;

Name	Null?	Type
EMP_ID	NOT NULL	VARCHAR2(50)
FIRST_NAME		VARCHAR2(50)
LAST_NAME		VARCHAR2(50)
SALARY		NUMBER(8,2)
MOBILE		NUMBER(12)
EMAIL		VARCHAR2(20)

SQL> desc emp\_login\_record;

Name	Null?	Type
EMP_ID	NOT NULL	VARCHAR2(50)
PASSWORD	NOT NULL	VARCHAR2(255)

SQL>

SQL> desc aeroplane\_detail;

Name	Null?	Type
PLANE_ID	NOT NULL	VARCHAR2(10)
MAX_SEATS	NOT NULL	NUMBER(3)
NAME_OF_AIRLINE	NOT NULL	VARCHAR2(20)
PRICE_MULTIPLIER	NOT NULL	NUMBER(7,3)

SQL> desc cities;

Name	Null?	Type
CITY_CODE	NOT NULL	VARCHAR2(5)
CITY_NAME	NOT NULL	VARCHAR2(15)

SQL> desc current\_runnning\_status;

Name	Null?	Type
FLIGHT_ID		VARCHAR2(10)
DT		DATE
STATUS		VARCHAR2(15)
DELAYDURATION		NUMBER(4)

SQL> desc distances;

Name	Null?	Type
SRC	NOT NULL	VARCHAR2(5)
DEST	NOT NULL	VARCHAR2(5)
DISTANCE	NOT NULL	NUMBER(7,2)

SQL> desc flight\_schedule;

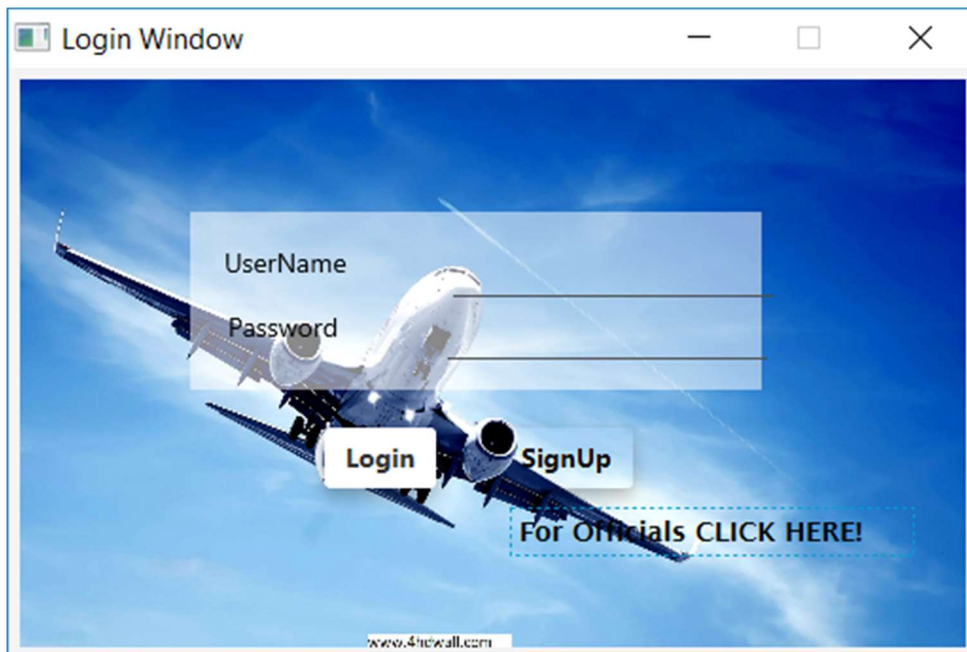
Name	Null?	Type
FLIGHT_ID	NOT NULL	VARCHAR2(10)
DAY		NUMBER
ARRIVAL	NOT NULL	VARCHAR2(10)
DEPARTURE	NOT NULL	VARCHAR2(10)
SRC		VARCHAR2(5)
DEST		VARCHAR2(5)

SQL>

SQL> desc flight_map;		
Name	Null?	Type
FLIGHT_ID	NOT NULL	VARCHAR2(10)
PLANE_ID	NOT NULL	VARCHAR2(10)
SQL> desc transactions;		
Name	Null?	Type
PNR	NOT NULL	NUMBER
BOOKING_DATE		TIMESTAMP(6)
USERNAME		VARCHAR2(50)
FLIGHT_ID		VARCHAR2(10)
FARE		NUMBER(10,3)
NO_OF_SEATS_BOOKED		NUMBER(3)
RESERVATION_STATUS		VARCHAR2(15)
DATE_OF_JOURNEY	NOT NULL	DATE
SQL> desc login_record;		
Name	Null?	Type
USERNAME	NOT NULL	VARCHAR2(50)
PASSWORD	NOT NULL	VARCHAR2(50)
SQL> desc user_details;		
Name	Null?	Type
AADHAR	NOT NULL	VARCHAR2(16)
USERNAME	NOT NULL	VARCHAR2(50)
FIRST_NAME	NOT NULL	VARCHAR2(50)
LAST_NAME		VARCHAR2(50)
DOB		DATE
MOBILE		NUMBER(12)
EMAIL		VARCHAR2(50)
ADDRESS		VARCHAR2(255)

## SNAPSHOTS

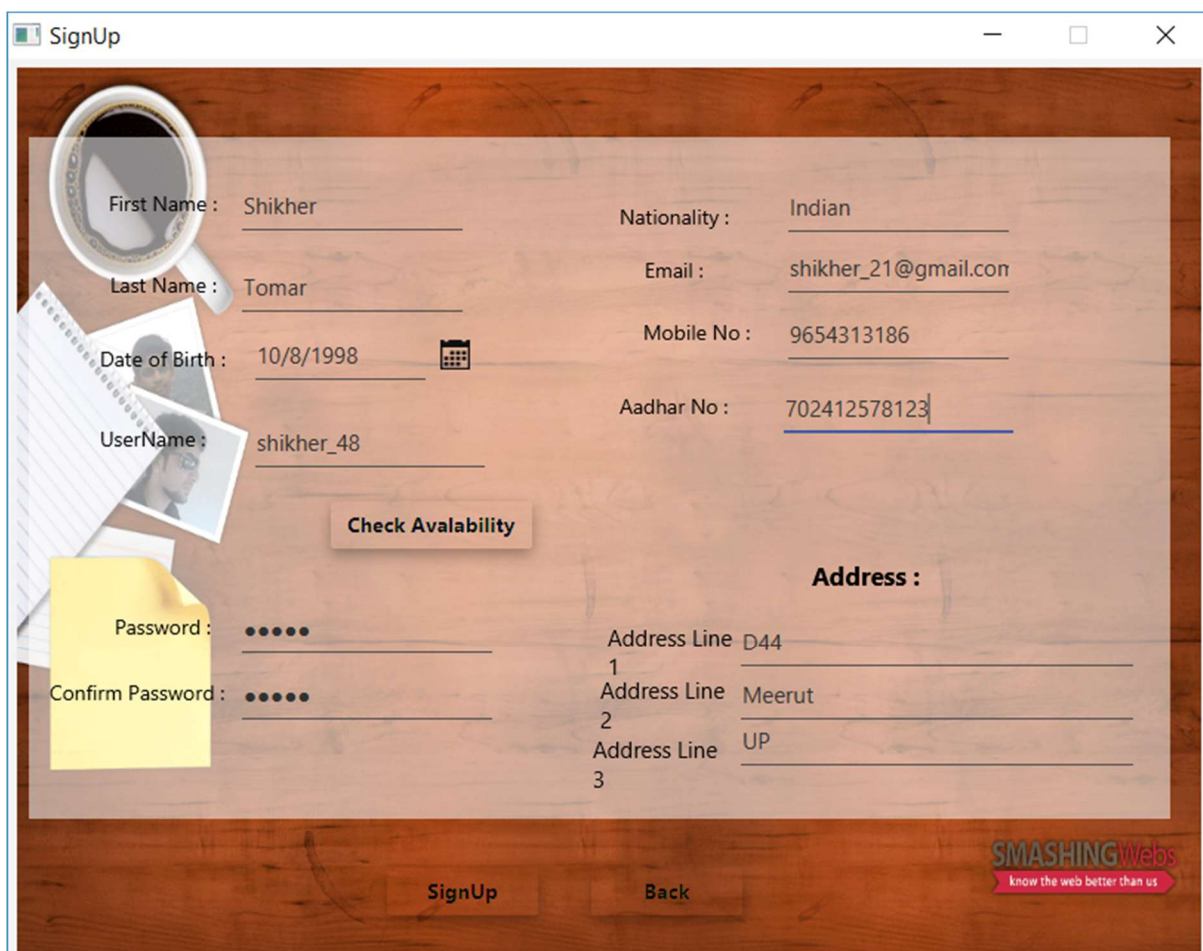
Login Page:



A screenshot of a web browser window titled "Login Window". The background is a blue sky with a white airplane flying. The login form is centered and contains the following elements:

- Two input fields: "UserName" and "Password".
- Two buttons: "Login" and "SignUp".
- A link: "For Officials CLICK HERE!" with a dashed blue border.
- A small URL "www.4newall.com" at the bottom.

Sign up:



A screenshot of a web browser window titled "SignUp". The background is a wooden texture. The sign-up form is centered and contains the following elements:

- First Name : Shikher
- Last Name : Tomar
- Date of Birth : 10/8/1998 (with a calendar icon)
- UserName : shikher\_48
- Nationality : Indian
- Email : shikher\_21@gmail.com
- Mobile No : 9654313186
- Aadhar No : 702412578123
- Address :
  - Address Line 1 : D44
  - Address Line 2 : Meerut
  - Address Line 3 : UP
- Password : (masked with dots)
- Confirm Password : (masked with dots)
- A "Check Availability" button.
- Decorative elements on the left: a coffee cup, a notepad, a photo of a man, and a yellow sticky note.
- Buttons at the bottom: "SignUp" and "Back".
- Logo at the bottom right: "SMASHING Webs" with the tagline "Know the web better than us".

## My Profile:

My Profile

User Details

**Username :**

shikher\_48

**Email :**

shikher\_21@gmail.com

**Name :**

Shikher Tomar

**Mobile :**

9654313186

**Date Of Birth :**

10/08/1998

**Nationality :**

Indian

**Address :**

Address Line 1

D44

Address Line 2

Meerut

Address Line 3

UP

**Change Password**

**Current Password :**

**New Password :**

**Confirm Password :**

Save Changes

## Available Tickets:

Available Tickets

Home

MyProfile

LogOut

From : Mumbai

To : Delhi

Date : 09/05/2019

Class : Economy

Modify

No of Passengers : 1

Airlines	Departure	Arrival	Fare	Duration
GoAir(6F-120)	0500	0700	5275	200
AirIndia(6F-121)	1200	1400	5623	200
GoAir(6F-124)	0900	1000	4684	100

Book Now



### Passenger Details:

Detail About Passengers

AirlinesAirIndia(6F-121 )

Date : 09/05/2019

Fare : 5623

No of Passengers1

From : Mumbai

To : Delhi

Departure : 1200

Arrival : 1400

Passenger Details :

Name

Age

Gender

Shubham Arora

20

Male

Book Ticket

Back

### Ticket Booked:

Final Details About your Ticket

Congratulations...

Your Ticket Has Been Booked

Pnr : 12222230

Flight Id : 6F-121

Fare (Rs): 5623

From : Mumbai

To : Delhi

Date : 09/05/2019

Number of Passengers : 1

Home

### Booking History:

[illegible]

### Employee's View:

Update Flight Details

Details About Flight

08/05/2019

HOME

Flight ID	Source	Destination	Departs	Reaches ...	Status	#Seats Rem...
6F-061	BOM	DEL	1200	1400	ON TIME	95
6F-063	BOM	BLR	1330	1505	ON TIME	110
6F-085	BLR	DEL	0820	1100	ON TIME	95
6F-107	KOL	MAA	2000	2225	ON TIME	110
6F-117	MAA	DEL	0700	0950	ON TIME	100
6E-958	DEL	PNQ	1400	1605	ON TIME	120
6F-108	MAA	BOM	0500	0700	ON TIME	130
6E-948	DEL	BOM	1000	1200	ON TIME	110
6E-959	BLR	DEL	1300	1540	ON TIME	130
6F-086	BLR	BOM	0500	0635	ON TIME	110
6F-110	MAA	BOM	1500	1650	ON TIME	80
6E-954	AMD	BOM	1400	1510	ON TIME	110
6F-060	BOM	DEL	0500	0700	ON TIME	90

Edit

Apply Changes



## **REFERENCES:**

- [https://en.wikipedia.org/wiki/Airline\\_reservations\\_system](https://en.wikipedia.org/wiki/Airline_reservations_system)
- <https://www.tutorialspoint.com/javafx/>
- [https://www.tutorialspoint.com/oracle\\_db\\_12c\\_online\\_training/index.asp](https://www.tutorialspoint.com/oracle_db_12c_online_training/index.asp)
- [https://www.tutorialspoint.com/oracle\\_db\\_12c\\_online\\_training/index.asp](https://www.tutorialspoint.com/oracle_db_12c_online_training/index.asp)