

**SIX WEEKS SUMMER TRAINING REPORT**

On

**Airline management System**

**(Database systems concepts and designs)**

Submitted by

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**Program Name:B-tech CSE lateral entry**

Under the Guidance of

**Georgia Tech (Udacity**)

School of Computer Science & Engineering

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**DECLARATION**

I hereby declare that I have completed my six weeks summer training at UDACITY from 26 Jul 2021 to 14 Aug 2021 under the guidance of Georgia tech. I have declare that I have worked with full dedication during these six weeks of training and my learning outcomes fulfill the requirements of training for the award of degree of B.tech CSE , Lovely Professional University, Phagwara.

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**ACKNOWLEDGEMENT**

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Moreover I would like to thank my Instructor who explained in such a way that, whenever I got stuck in some problem related to my course. I am really thankfull to have such a good Course.

Also,I would like to mention the support and consideration of my parents who have always been there in my life to make me choose right thing and oppose the wrong. Without them I could never had learned and became a person who I am now.

I have taken efforts in this project. However, it would not have been possible without the kind support and help of many individuals and organizations. I would like to extend my sincere thanks to all of them.

**Summer Training Certificate**

**Graphical user interface, application

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1. **Introduction**

Database system is a tool that simplifies the above tasks of managing the data and extracting useful information in a timely fashion. It analyses and guides the activities or business purposes of an organisation. It is the central repository of the data in the organisation's information system and is essential for supporting the organisation's functions, maintaining the data for these functions and helping users interpret the data in decision-making. Managers are seeking to use knowledge derived from databases for competitive advantages, for example, to determine customer buying pattern, tracking sales, support customer relationship management (CRM), on-line shopping, employee relationship management, implement decision support system (DSS). managing inventories and so on. To meet the changing organisational needs, database structures must be flexible to accept new data and accommodate new relationships to support the new decisions

With the rapid growth in computing technology and its application in all spheres of modern society. databases have become an integral component of our everyday life. We encounter several activities in our day-to-day life that involve interaction with a database, for example, bank database to withdraw and deposit money, air or railway reservation databases for booking of tickets, library database for searching of a particular book, supermarket goods databases to keep the inventory, to check for sufficient credit balance while purchasing goods using credit cards and so on.

In fact, databases and database management systems (DBMS) have become essential for managing our business, governments, banks, universities and every other kind of human endeavour. Thus, they are a critical element of today's software industry to support these requirements and a daunting task to solve the problems of managing huge amounts of data that are increasingly being stored

**Project Name and Description**

**The Airline management**



The Airline management System was one of the earliest changes to improve efficiency. ARS eventually evolved into the Computer Reservations System (CRS). A Computer Reservation System is used for the reservations of a particular airline and interfaces with a Global Distribution System (GDS) which supports travel agencies and other distribution channels in making reservations for most major airlines in a single system.

Airline management System contain airline schedules, fare tariffs, passenger reservations and ticket records. An airline's direct distribution works within their own reservation system, as well as pushing out information to the GDS. A second type of direct distribution channel are consumers who use the internet or mobile applications to make their own reservations.

1. **Technology Learnt**

It had 15 units which was further divided into topics so during my whole 6 week course I learned the following :

**Fundamental of Database:**

In this chapter I learnt

* The introduction of database,
* use of database,
* Data Modeling ,
* Process Modeling ,
* Data Models-Architecture ,
* Relational Model ,
* Introduction to Keys and Identifiers ,
* Introduction to Integrity and Consistency,
* ANSI-SPARC
* Intro to Conceptual Schema, Ecternal Schema, Internal Schema
* Physical, logical Data Independence
* Metadata.

**Entity Relationship Diagram**

**Draw the ER diagram here. An example is shown:**

ER diagrams help to explain the logical structure of databases. ER diagrams are created based on three basic concepts: entities, attributes and relationships.

ER Diagrams contain different symbols, here’s how they are represented.

Diagram

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**Normalization**

**First Normal Form (1NF) :**

For a table to be in the First Normal Form, it should follow the following 4 rules:

1. It should only have single(atomic) valued attributes/columns.

2. Values stored in a column should be of the same domain

3. All the columns in a table should have unique names.

4. And the order in which data is stored, does not matter.

**Second Normal Form (2NF) :**

For a table to be in the Second Normal Form,

1. It should be in the First Normal form.

2. And, it should not have Partial Dependency.

**Third Normal Form (3NF) :**

A table is said to be in the Third Normal Form when,

1. It is in the Second Normal form.

2. And, it doesn't have Transitive Dependency

**Boyce and Codd Normal Form (BCNF) :**

Boyce and Codd Normal Form is a higher version of the Third Normal form. This form deals with certain type of anomaly that is not handled by 3NF. A 3NF table which does not have multiple overlapping candidate keys is said to be in BCNF. For a table to be in BCNF, following conditions must be satisfied:

R must be in 3rd Normal Form

and, for each functional dependency ( X → Y ), X should be a super Key.

1. **Reason of choosing this technology**

I choosed this technology because Database is concept which is everywhere in every websites and every companies also use this technology

And, In order to ensure data accuracy, you must design a database that only store relevant and valuable information. A well-designed database is essential to guarantee information consistency, eliminate redundant data, efficiently execute queries, and improve the database's performance.

* Database management system helps making data more efficient and effective. This system stores, organises and manages a large amount of information within a single software application.
* Our Project on airline database system holds flight details, flight schedule, passenger details, ticket records, etc.
* We have used SQL as an language for applying queries. (Queries for insertion, deletion, updating, etc.)
* Benefits –
  + Control redundancy in data storage and in development of effort.
  + It Provides a structured approach to managing risks.
  + It Reduces risk by streamlining continuous improvement to operations.
  + Improve maintenance through data independence also backup and recovery services.

1. **Profile of the Problem**

The web based “Airline management System” project is an attempt to stimulate the basic concepts of airline reservation system. The system enables the customer to do the things such as search for airline flights for two travel cities on a specified date, choose a flight based on the details, reservation of flight and cancellation of reservation.

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, 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.

1. **Existing System**

In the existing system all the data are stored manually to an excel sheet and filed accordingly in a filing cabinet.

**Disadvantages in existing system:**

* Time consuming
* Possibly of loosing data
* Lack of security
* Difficulties in maintaining records
* Human error will be frequent
* searching the records manually leads time consuming

**HARDWARE: PROCESSOR :**

* PENTUIUM IV 2.6 GHz
* RAM : 512MB DD RAM
* MONITOR : 15” COLOR
* HARD DISK :250 GB
* CDDRIVE : LG52X
* KEYBOARD : STANDARD 102 KEYS
* MOUSE :OPTICAL MOUSE

**SOFTWARE:**

* FORNT END :JAVA,HTML,SERVLETS
* BACKEND : ORACLE 10i
* OPERATING SYSTEM : WINDOWS XP

1. **Problem Analysis**

* **Product definition**

1. **Airplane\_type :** This defines the physical type of the plane. It dictates the capacity of first, executive, business and economy seats that a flight can have.
2. **Route :** A route is simply a tuple of airports: (StartAirport,EndAirport), and every route has a unique route id. A flight runs over a route only
3. **Flight :** A flight is identified by its flightid. A flight denotes an unique “plane”, i.e. one which is scheduled to run at a certain time, from one place to another. A flight runs over a set of routes.
4. **AirFare :** Air fare is Price of ticket which is decided by the airline company and the government
5. **Passengers :** Passengers are the people who book the flight and travel
6. **Employees :** An Employees is a person who can book tickets for others, and can find retrieve the complete list of passengers boarding a flight. An official works at an airport.
7. **Transactions :** Transactions are the process of booking the ticket made by Passengers in which all their details are present , Each transaction is unique.
8. **Countries :** Countries are basically the Country in which flight are going and from flight are going
9. **Airport :** An airport consists of a name, the city it is in, and its airport id.

* **Feasibility Analysis**

**FlightRouteScheme:** This is a ternary relation that says that a flight runs over a route using a particular scheme. The scheme can be null, but not the flight id and route id. The attributes in this include:

1. Fare for the flight between the two stops given by the route specified.
2. Any scheme valid on this flight, for this route
3. Number of booked seats on this flight, route. d. A flag value indicating whether this is an elementary or complex route for this flight.
4. **Software Requirement Analysis**

**Introduction :**

Requirements analysis is critical to the success of a development project. Requirements must be documented, actionable, measurable, testable, related to identified business needs or opportunities, and defined to a level of detail sufficient for system design. Requirements can be architectural, structural, behavioral, functional, and non-functional.

**Specific Requirements**

* **Software**
* Windows 10
* M.S Word
* SQL Live
* **Hardware**
* Lenovo Ideapad 320
* Intel i3 7th generation
* Recommended: 2.2 GHz or higher CPU, 1024 MB or more RAM, 1280×1024 display, 7200 RPM or higher hard disk

**APPLICABILITY**

This project solve the problem of the traditional reservation system.

With certain changes it can be applicable on any online reservation field.

One of the most benefits in today’s life is that reservation can be made from any place of the world.

The user need not to be present the physically to draw a reservation slip. It will automatically do by the system

**ADVANTAGES**

1. It easy to learn and adjust to the system

2. this system does not require the staff to be highly educated

3. the requirements to tackle this job may be limited to

4. Willing to work long hours

5. data is not easily lost

6. it easy to manage the system due to the high number of staff working

1. **Design**

* **Tables and their relationships**

Here we represent the database management system for an Airline. The entities and their respective attributes required are as follows:

1. Airplane\_type
   * A\_ID ( Number )
   * Capacity ( Number )
   * A\_weight ( Number )
   * Company ( Varchar )
2. Route

* Route\_ID ( Number )
* Destination ( Varchar )
* Take\_Off\_point ( Varchar )
* R\_type

1. Flight

* Flight\_ID ( Number )
* Departure
* Arrival
* Flight\_date ( Date )

1. AirFare

* Fare\_ID ( Number )
* Charge\_Amount ( Number )
* Description ( Varchar )

1. Passengers

* Ps\_ID ( Number )
* Name ( Varchar )
* Address ( Varchar )
* Age ( Number )
* Sex ( Varchar )
* Contacts ( Number )

1. Employees

* Emp\_ID ( Number )
* Name ( Varchar )
* Address ( Varchar )
* Age ( Varchar )
* Email\_ID ( Varchar )
* Contacts ( Number )

1. Transactions

* TS\_ID ( Number )
* Booking\_Date ( Date )
* Departure\_Date ( Date )
* Type ( Varchar )
* Emp\_ID\* ( Number )
* Ps\_ID\* ( Number )
* Flight\_ID\* ( Number )
* Charge\_Amount\* ( Number )

1. Countries
   * Country\_code ( Number )
   * Country\_Name ( Varchar )
2. Airport

* Air\_Code ( Number )
* Air\_Name ( Varchar )
* City ( Varchar )
* State ( Varchar )
* **Relationships and Cardinality**
* Relationship is nothing but an association among two or more entities. Entities take part in relationships. We can often identify relationships with verbs or verb phrases.
* Cardinality defines the numerical attributes of the relationship between two entities or entity sets. These are most useful in describing binary relation sets.

Different types of cardinal relationships are:

* One-to-One Relationships ( 1 : 1 )

One entity from entity set X can be associated with at most one entity of entity set Y and vice versa.

* One-to-Many Relationships ( 1 : M )

One entity from entity set X can be associated with multiple entities of entity set Y, but an entity from entity set Y can be associated with at least one entity.

* Many to One Relationships ( M : 1 )

More than one entity from entity set X can be associated with at most one entity of entity set Y. However, an entity from entity set Y may or may not be associated with more than one entity from entity set X.

* Many-to-Many Relationships ( M : N )

One entity from X can be associated with more than one entity from Y and vice versa

1. The entities Airplane\_type and Flight are connected by a relation called Type. It is a One To Many Relationship.

And they Both Have Total Participation.

1. The entities Passengers and Transactions are connected by a relation called Payment. It is a One To Many Relationship.

And they Both Have Total Participation.

1. The entities Flight and Airport are connected by a relation called Can land. It is a Many To Many Relationship.

And they Both Have Total Participation.

1. The entities Flight and Route are connected by a relation called Travels on. It is a Many To Many Relationship.

And here Flight has Total Participation and the Route has Partial Participation.

1. The entities Air-Fare and Flight are connected by a relation called Assigned. It is a Many To One Relationship.

And they Both Have Total Participation.

1. The entities Airport and Countries are connected by a relation called Part of. It is a Many To One Relationship.

And they Both Have Total Participation.

1. The entities Employee and Airport are connected by a relation called Works for. It is a Many To One Relationship.

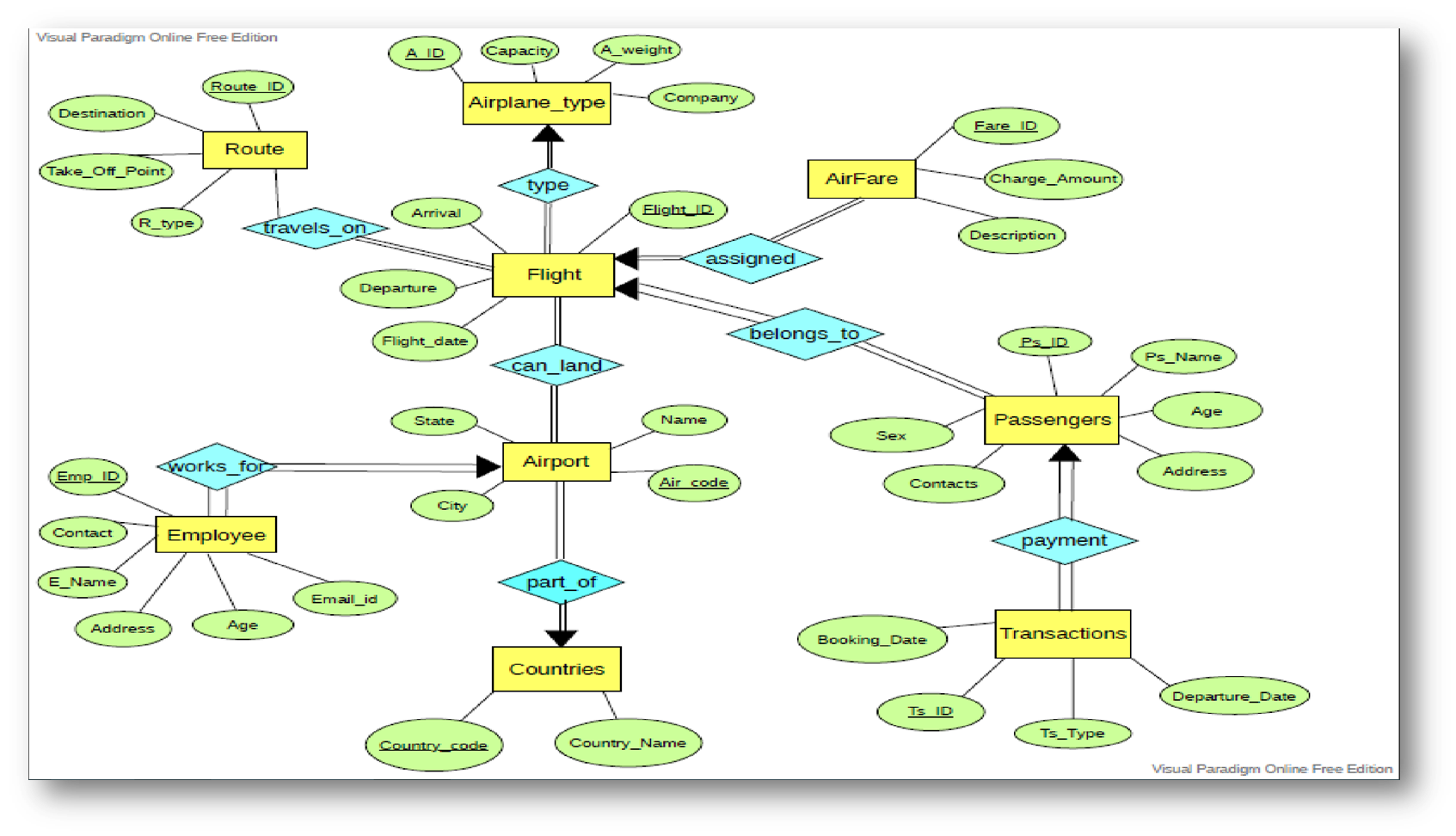
And they Both Have Total Participation.

1. The entities Passenger and Flight are connected by a relation called Belongs to. It is a Many To One Relationship.

And they Both Have Total Participation

* **Flowcharts and Pseudo code**

**Entity Relationship Diagram**



* **SQL Queries:( Pseudo code)**

1. **Airplane type**

CREATE TABLE Airplane\_type( A\_ID INT,

Capacity INT, A\_weight INT,

Company VARCHAR(15),

PRIMARY KEY(A\_ID));

INSERT INTO Airplane\_type VALUES (738,853,394,'Indigo');

INSERT INTO Airplane\_type VALUES (777,800,380,'Vistara');

INSERT INTO Airplane\_type VALUES (750,790,364,'AirIndia');

INSERT INTO Airplane\_type VALUES (790,850,390,'SpiceJet');

INSERT INTO Airplane\_type VALUES (745,770,405,'GoAir');

INSERT INTO Airplane\_type VALUES (768,867,387,'AirAsia');

INSERT INTO Airplane\_type VALUES (821,790,355,'TruJet');

INSERT INTO Airplane\_type VALUES (785,835, 410,'Alliance Air');

SELECT \* FROM Airplane\_type;

Table

Description automatically generated

1. **Route**

CREATE TABLE Route( Route\_ID INT, Take\_Off\_point VARCHAR(15),

Destination VARCHAR(15) R\_type VARCHAR(15),

PRIMARY KEY(Route\_ID));

INSERT INTO Route VALUES(168806,'London','Delhi','Direct');

INSERT INTO Route VALUES(157306,'NewJersey','Mumbai','2Hr Break');

INSERT INTO Route VALUES(178916,'Washington','Jodhpur','3Hr Break');

INSERT INTO Route VALUES(324567,'Chennai','Denmark','Direct');

INSERT INTO Route VALUES(452368,'Chandigard','NewYork','3Hr Break');

INSERT INTO Route VALUES(894521,'Daman','Delhi','Direct');

INSERT INTO Route VALUES(578425,'Beijing','Punjab','Direct');

INSERT INTO Route VALUES(421523,'Hyderabad','Jammu & Kashmir','Direct')

SELECT \* FROM Route;

Table

Description automatically generated

1. **FLIGHT**

CREATE TABLE Flight( Flight\_ID VARCHAR(15),Departure VARCHAR(30), Arrival VARCHAR(30),A\_ID INT,PRIMARY KEY(Flight\_ID),FOREIGN KEY (A\_ID) REFERENCES Airplane\_type(A\_ID));

INSERT INTO Flight VALUES('AI2014','2021-01-12 08:45am','2021-01-12 10:25pm',738);

INSERT INTO Flight VALUES('QR2305','2020-12-26 12:05pm','2020-12-27 12:25pm',777);

INSERT INTO Flight VALUES('EY1234','2021-02-10 05:00am','2021-02-10 10;30pm',750);

INSERT INTO Flight VALUES('LH9876','2021-02-25 10:15am','2021-02-25 11:00pm',790);

INSERT INTO Flight VALUES('BA1689','2021-03-02 2:15am','2021-03-02 10:00pm',745);

INSERT INTO Flight VALUES('AA4367','2021-03-25 12:05am','2021-03-25 02:15am',768);

INSERT INTO Flight VALUES('CT7812','2021-04-04 2:15pm','2021-04-04 8:00pm',821);

INSERT INTO Flight VALUES('PF4521','2020-12-25 5:00pm','2020-12-25 10:30pm',785);

SELECT \* FROM Flight;

Table

Description automatically generated

1. **AIRFARE**

CREATE TABLE AirFare( Fare\_ID INT, Charge\_Amount INT, Description VARCHAR(25), Flight\_ID VARCHAR(15), PRIMARY KEY(Fare\_ID), FOREIGN KEY (Flight\_ID) REFERENCES Flight(Flight\_ID));

INSERT INTO AirFare VALUES(1,27341,'Standard Single','AI2014');

INSERT INTO AirFare VALUES(4,34837,'Standard Return','QR2305');

INSERT INTO AirFare VALUES(2,42176,'Key Fare Single','EY1234');

INSERT INTO AirFare VALUES(3,27373,'Business Return','LH9876');

INSERT INTO AirFare VALUES(6,44592,'Advanced Purchase','BA1689');

INSERT INTO AirFare VALUES(5,8777,'Superpex Return','AA4367');

INSERT INTO AirFare VALUES(7,9578,'Standard Return','CT7812');

INSERT INTO AirFare VALUES(8,4459,'Superpex Return','PF4521');

SELECT \* FROM AirFare;

Table

Description automatically generated

1. **Passengers**

CREATE TABLE Passengers( Ps\_ID INT, Ps\_Name VARCHAR(20), Address VARCHAR(50), Age INT, Sex VARCHAR(1), Contacts VARCHAR(10), Flight\_ID VARCHAR(15), PRIMARY KEY(Ps\_ID), FOREIGN KEY (Flight\_ID) REFERENCES Flight(Flight\_ID));

INSERT INTO Passengers VALUES(1,'Steve Smith','2230Northside,Apt11,London',30,'M','8080367290','AI2014');

INSERT INTO Passengers VALUES(2,'Ankita Ahir','3456 VikasApts,Apt102,NewJersey',26,'F','8080367280','QR2305');

INSERT INTO Passengers VALUES(4,'Akhilesh Joshi','345 Chatam courts,Apt678,Chennai',29,'M','9080369290','EY1234');

INSERT INTO Passengers VALUES(3,'Khyati Mishra','7820 Mccallum courts,Apt234,Washington',30,'F','8082267280','LH9876');

INSERT INTO Passengers VALUES(5,'Rom Solanki','1234 Baker Apts,Apt208,Chandigard',60,'M','9004568903','EY1234');

INSERT INTO Passengers VALUES(6,'Lakshmi Sharma','1110 Fir hills,Apt 90,Daman',30,'F','7666190505','AA4367');

INSERT INTO Passengers VALUES(8,'Manan Lakhani','7720 Mccallum

Blvd,Apt77,Beijing',45,'M','8124579635','CT7812');

INSERT INTO Passengers VALUES(7,'Ria Gupta','B402,Aditya Apt,Hyderabad', 34,'F','9819414036','EY1234');

SELECT \* FROM Passengers;

Graphical user interface, table

Description automatically generated

1. **Countries**

CREATE TABLE Countries( Country\_code INT, Country\_Name VARCHAR(20), PRIMARY KEY(Country\_code));

INSERT INTO Countries VALUES (+44,'England');

INSERT INTO Countries VALUES (+1,'USA');

INSERT INTO Countries VALUES (+91,'India');

INSERT INTO Countries VALUES (+45,'Kingdom of Denmark');

INSERT INTO Countries VALUES (+64,'New Zealand');

INSERT INTO Countries VALUES (+971,'UAE');

INSERT INTO Countries VALUES (+213,'Algeria');

INSERT INTO Countries VALUES (+55,'Brazil');

SELECT \* FROM Countries;

Table

Description automatically generated with medium confidence

1. **Airport**

CREATE TABLE Airport( Air\_code VARCHAR(10), Air\_Name VARCHAR(52), City VARCHAR(20), State VARCHAR(20), Country\_code INT, PRIMARY KEY(Air\_code),FOREIGN KEY (Country\_code) REFERENCES Countries(Country\_code));

INSERT INTO Airport VALUES('DEL','Indira Gandhi International Airport','Delhi','UP',+91);

INSERT INTO Airport VALUES('BOM','Chhatrapati Shivaji Maharaj International Airport','Mumbai','Maharashtra',+91);

INSERT INTO Airport VALUES('LCY','London City Airport','Newham','London',+44);

INSERT INTO Airport VALUES('EWR','Newark Liberty International Airport','Newark','New Jersey',+1);

INSERT INTO Airport VALUES('JFK','John F.Kennnedy International Airport','New York City','New York',+1);

INSERT INTO Airport VALUES('CPH','Copenhagen Airport','Copenhagen','Denmark',+45);

INSERT INTO Airport VALUES('AIP','Adampur Airport','Jalandhar','Punjab',+91);

INSERT INTO Airport VALUES('IXJ','Satwari Airport','Jammu','Jammu & Kashmir',+91);

SELECT \* FROM Airport;

Graphical user interface, text, application, email

Description automatically generated

1. **Employees**

CREATE TABLE Employees( Emp\_ID INT, E\_Name VARCHAR(20),

Address VARCHAR(50), Age INT, Email\_ID VARCHAR(20),

Contact VARCHAR(20), Air\_code VARCHAR(10),

PRIMARY KEY(Emp\_ID),

FOREIGN KEY (Air\_code)

REFERENCES Airport(Air\_code));

INSERT INTO Employees VALUES(1234,'Rekha Tiwary','202-Meeta Apt,Yogi Nagar,Mumbai',30,'rekha1234@gmail.com','+918530324018','DEL');

INSERT INTO Employees VALUES(3246,'John Dsouza','302-Fountain Apt,ElizaBeth Street,Newham',26,'john2346@gmail.com','+447911123456','BOM');

INSERT INTO Employees VALUES(9321,'Sanjay Rathod','62-Patwa Apt,Pradeep Nagar,Delhi',36,'sanjay78@gmail.com','+917504681201','LCY');

INSERT INTO Employees VALUES(8512,'Hafsa Iqmar','1023-Prajwal Apt,Newark',41,'hafsa964@gmail.com','6465554468','EWR');

INSERT INTO Employees VALUES(7512,'Akshay Sharma','Akshay Villa,Queens Street,Copenhagen',20,'akshay27@gmail.com','+45886443210','JFK');

INSERT INTO Employees VALUES(5123,'Lara Jen','28-Mark road,Victoria street,New YorkCity',31,'jenlara4@gmail.com','+448000751234','CPH');

INSERT INTO Employees VALUES(2458,'Johny Paul','45-Balaji Apt,Ajit Nagar,Jalandar',32,'johnypaul8@gmail.com','+919785425154','AIP');

INSERT INTO Employees VALUES(4521,'Nidhi Maroliya','6-Matruchaya Apt,Park Road,Jammu',31,'nidhi785@gmail.com','+918211954901','IXJ');

SELECT \* FROM Employees;

Graphical user interface, text, application

Description automatically generated

1. **Can\_Land**

CREATE TABLE Can\_Land( Air\_code VARCHAR(10), Flight\_ID VARCHAR(15),

PRIMARY KEY(Air\_code,Flight\_ID), FOREIGN KEY(Air\_code) REFERENCES Airport(Air\_code), FOREIGN KEY(Flight\_ID) REFERENCES Flight(Flight\_ID));

INSERT INTO Can\_Land VALUES('DEL','AI2014');

INSERT INTO Can\_Land VALUES('BOM','QR2305');

INSERT INTO Can\_Land VALUES('LCY','EY1234');

INSERT INTO Can\_Land VALUES('EWR','LH9876');

INSERT INTO Can\_Land VALUES('JFK','BA1689');

INSERT INTO Can\_Land VALUES('CPH','AA4367');

INSERT INTO Can\_Land VALUES('AIP','CT7812');

INSERT INTO Can\_Land VALUES('IXJ','PF4521');

SELECT \* FROM Can\_Land;

Table

Description automatically generated

1. **Transactions**

CREATE TABLE Transactions( TS\_ID INT, Booking\_Date DATE NOT NULL, Departure\_Date DATE NOT NULL, TS\_Type VARCHAR(20), Emp\_ID INT, Ps\_ID INT, Flight\_ID VARCHAR(15), Charge\_Amount INT, PRIMARY KEY(TS\_ID), FOREIGN KEY (Emp\_ID) REFERENCES Employees(Emp\_ID) , FOREIGN KEY (Ps\_ID) REFERENCES Passengers(Ps\_ID), FOREIGN KEY (Flight\_ID) REFERENCES Flight(Flight\_ID),FOREIGN KEY (Charge\_Amount) REFERENCES AirFare(Fare\_ID));

INSERT INTO Transactions VALUES(12345678,DATE '2021-02-21',DATE '2021-02-22','Google Pay',1234,1,'AI2014',27341);

INSERT INTO Transactions VALUES(45612789,DATE '2021-01-12',DATE '2021-01-14','Credit Card',3246,2,'QR2305',34837);

INSERT INTO Transactions VALUES(56987123,DATE '2020-12-05',DATE '2020-12-02','Paytm',9321,4,'EY1234',42176);

INSERT INTO Transactions VALUES(45321879,DATE '2021-03-15',DATE '2021-03-16','PhonePe',8512,3,'LH9876',27373);

INSERT INTO Transactions VALUES(75145863,DATE '2021-04-22',DATE '2021-04-25','Paytm',7512,5,'EY1234',44592);

INSERT INTO Transactions VALUES(17892455,DATE '2021-02-05',DATE '2021-02-08','Paytm',5123,6,'AA4367',8777);

INSERT INTO Transactions VALUES(24517852,DATE '2021-03-06',DATE '2021-03-08','PhonePe',2458,8,'CT7812',9578);

INSERT INTO Transactions VALUES(32548525,DATE '2021-01-20',DATE '2021-01-25','Credit Card',4521,7,'EY1234',4459);

SELECT \* FROM Transactions;

**11.Travels\_on**

CREATE TABLE Travels\_on( Route\_ID INT, Flight\_ID VARCHAR(15),

PRIMARY KEY(Route\_ID,Flight\_ID), FOREIGN KEY(Route\_ID) REFERENCES Route(Route\_ID), FOREIGN KEY(Flight\_ID) REFERENCES Flight(Flight\_ID));

INSERT INTO Travels\_on VALUES(168806,'AI2014');

INSERT INTO Travels\_on VALUES(157306,'QR2305');

INSERT INTO Travels\_on VALUES(178916,'EY1234');

INSERT INTO Travels\_on VALUES(324567,'LH9876');

INSERT INTO Travels\_on VALUES(452368,'BA1689');

INSERT INTO Travels\_on VALUES(894521,'AA4367');

INSERT INTO Travels\_on VALUES(578425,'CT7812');

INSERT INTO Travels\_on VALUES(421523,'PF4521');

SELECT \* FROM Travels\_on;

Table

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1. **Implementation**
2. **Find the Employee-id of all employees whose name includes the substring John.**

SELECT Emp\_ID, E\_Name

FROM Employees

WHERE E\_Name LIKE '%John%';

Table

Description automatically generated

1. **Display the companyname whose flight will be landed in mumbai Airport.**

SELECT Company, A\_ID

FROM Airplane\_type

WHERE A\_ID in (SELECT A\_ID

FROM Flight

WHERE Flight\_ID in (SELECT Flight\_ID

FROM Can\_Land

WHERE Air\_code in (SELECT Air\_code

FROM Airport

WHERE City = 'Mumbai')))

**Table

Description automatically generated with medium confidence**

1. **Find the Fare-id of those with Chargeamount between 20000 and 35000.**

SELECT Fare\_ID, Charge\_Amount

FROM AirFare

WHERE Charge\_Amount BETWEEN 20000 AND 35000

**Table

Description automatically generated**

1. **Increase the charge-amount by 5% whose class is Superex Return.**

UPDATE AirFare

SET Charge\_Amount = Charge\_Amount \* 1.05

WHERE Description = 'Superpex Return'

**Table

Description automatically generated**

1. **Display the country-name that does not have an airport**

SELECT Country\_code, Country\_Name

FROM Countries

WHERE Country\_code NOT IN (SELECT Country\_code

FROM Airport)

**Table

Description automatically generated**

1. **Display All the counties that may have or may not have the Airport.**

SELECT \*

FROM Countries NATURAL LEFT OUTER JOIN Airport

**Graphical user interface

Description automatically generated with medium confidence**

1. **Learning Outcome from training/technology learnt**

Airline Management System is a large scale project which includes database of more than a single Airport. This airline management system contains the details about: Airplane\_Type, Route, Flight, Airfare, Passengers, Employees, Transactions, Countries and Airport.

1. The Airline database Management System keeps a record of its passengers:

* Every passenger has a unique ID, name, address, age, sex and contacts.
* The database keeps track of transactions made by the passengers.
* It keeps track of the booking date, and charge amount of bookings.
* The transaction details are also noted with transaction id and payment details.
* Each passenger can make the payment with many transactions.

1. The Airline database Management System keeps a track of the employees and stores their information in the database.

* The name, employee id, address, age, email id and contact are stored in the database.
* Each employee has a unique id.
* Since this is a rapidly growing establishment, the airline database continually keeps employing more employees to keep up with the workload.
* An airport can employ various employees.

1. It also stores the information of airfare with unique fare if to book a ticket, modify or cancel a reservation also the details of the charge amount.

* Depending on the travel time each airline assigns different airfare

1. Each country has an airport with a unique air code and a name.

* This database systems contains details about all the passenger travelling and it also contains details of all employees associated to respective airports.
* Each country may have more than one airport.

1. Each airport has various airplanes belonging to various airlines.

* Each airport has a unique airplane id.
* It also shows the passenger capacity and airplane weight.

1. The route of the each airplane has been provided by each airlines:

* Each flight has a unique route ID and a distinct path to follow.
* It also shows the information of take off and destination point of respective flights.
* More than one flight can travel on the same path simultaneously.

1. 7. Many flight can land on a particular airport and more than one passenger belongs to particular flight.

* This system provides options for viewing different flights available with different timings for a particular date and also shows information of arrival and departure schedule of flights.
* The project has been planned to be having the view of distributed architecture, with centralized storage of the database.
* The entire project has been developed keeping in view of the distributed client server computing technology, in mind. The specification has been normalized up to 2NF to eliminate all the anomalies that may arise due to the database transaction that are executed by the general users and the organizational administration. The user interfaces are browser specific to give distributed accessibility for the overall system.

**THANK YOU**