



THAPAR INSTITUTE
OF ENGINEERING & TECHNOLOGY
(Deemed to be University)

Airport Management System

Submitted by:

Nimish Medatwal (102103579)

Ananya Sharma (102103587)

Rijul Bhatt (102103571)

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PROBLEM STATEMENT

The system is based on airport Management. The airport management system primarily deals with the management of airports, airlines, and passengers. The system provides a broad overview of underlying operational factors that influence airport management.

ENTITIES

CITY

CNAME	STATE	COUNTRY
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AIPORT

AP_NAME	STATE	COUNTRY
---------	-------	---------

AIRLINE

AIRLINEID	AL_NAME	THREE_DIGIT_CODE
-----------	---------	------------------

FLIGHT

FLIGHT_CODE	SOURCE	DESTINATION	ARRIVAL	DEPARTURE	STATUS	DURATION	FLIGHTTYPE
LAYOVER_TIME	NO_OF_STOPS						

PASSENGER

PID	PASSPORTNO	FNAME	M	LNAME	ADDRESS	PHONE	AGE	SEX
-----	------------	-------	---	-------	---------	-------	-----	-----

TICKET

TICKET_NUMBER	SOURCE	DESTINATION	DATE_OF_TRAVEL	SEATNO	CLASS	PRICE
---------------	--------	-------------	----------------	--------	-------	-------

EMPLOYEE

SSN	FNAME	M	LNAME	ADDRESS	PHONE	AGE	SEX	JOBTYPE	SALARY
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MAPPING ER DIAGRAM TO RELATIONAL SCHEMA

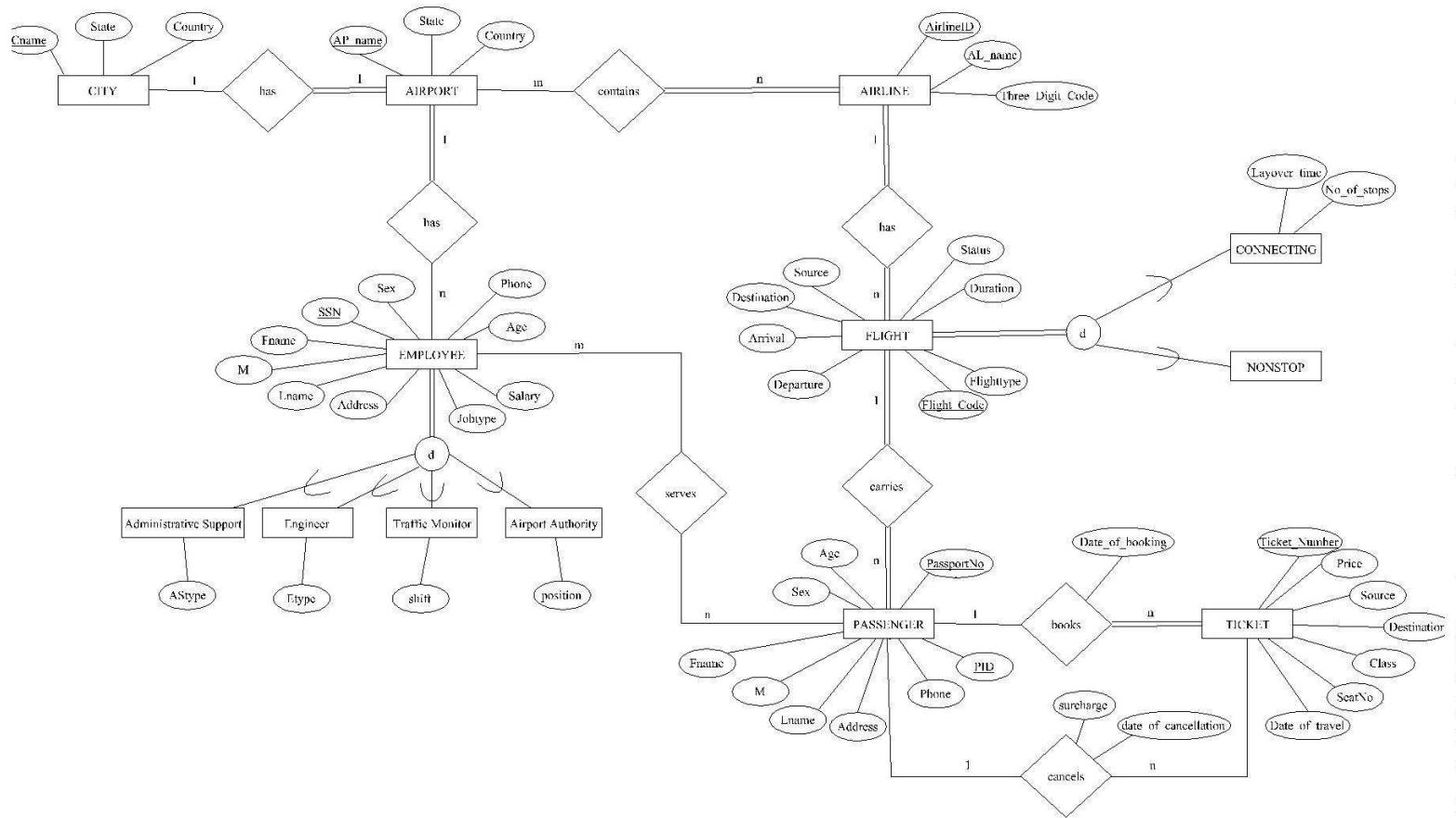


Figure 1: Airport Management System ER Diagram

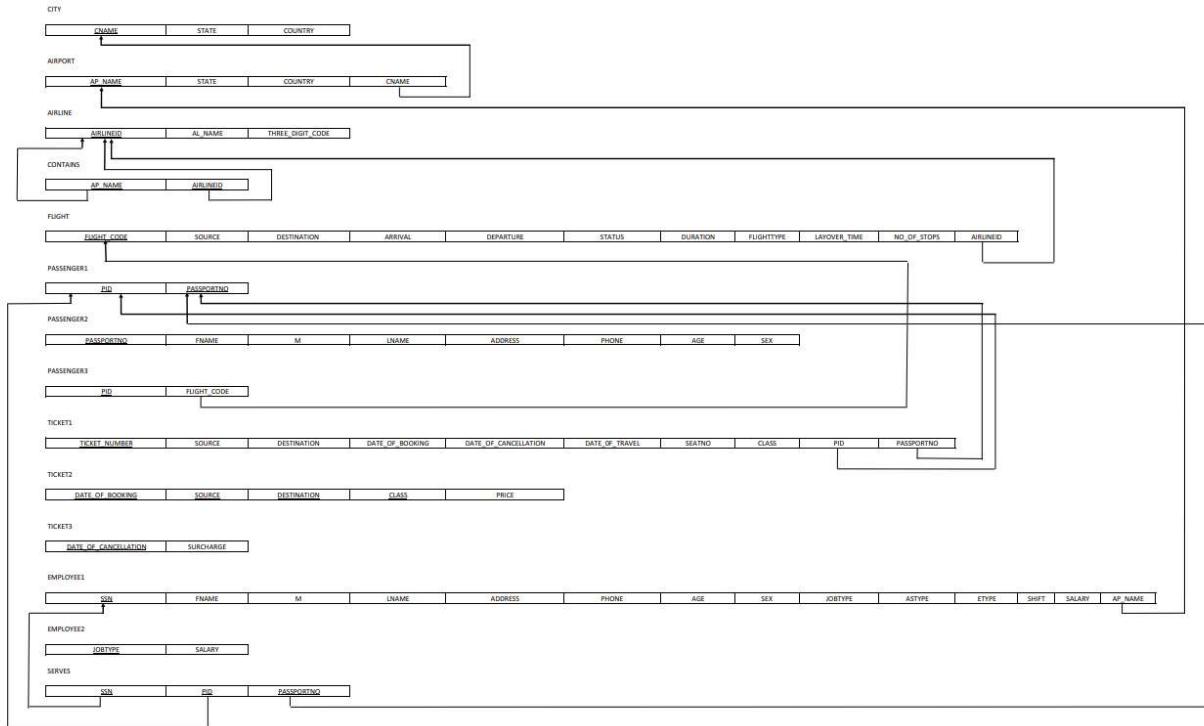
ER/EER DIAGRAM

ER diagram contains following relationships

Entity 1	Name of the Relationship	Entity 2	Cardinality
City	has	Airport	1:1
Airport	contains	Airline	m : n
Airport	has	Employee	1 : n
Airline	has	Flight	1 : n
Flight	carries	Passengers	1 : n
Employee	serves	Passengers	m : n
Passenger	books	Ticket	1 : n
Passenger	cancels	Ticket	1 : n

Type of the binary relationship	Relationships in the system
one-to-one	(1) A city has only one airport.
one-to-many	(1) An airline has multiple flights, that is many flights belong to the same airline company. (2) A flight carries many passengers. (3) A passenger can book one or more tickets. (4) A passenger can cancel one or more tickets.
many-to-many	All International airlines operating through various countries across the world have their offices located in all major cities and airports they cover. Hence, an airport may have many airline offices.

RELATIONAL SCHEMA



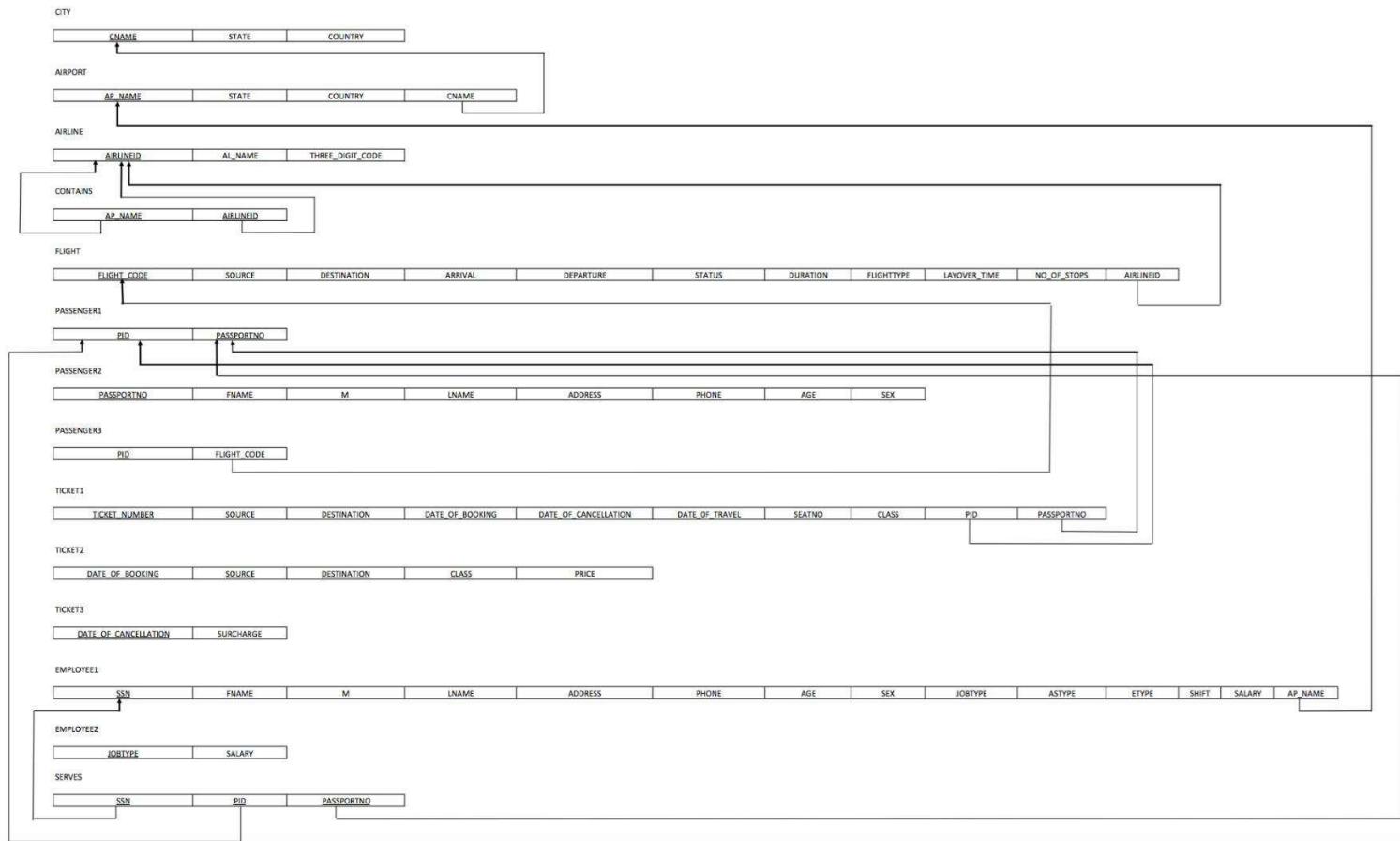
NORMALIZATION RULES ON DATABASE

FUNCTIONAL DEPENDENCIES	
PASSPORTNO -> FNAME, M, LNAME, ADDRESS, PHONE, AGE, SEX	Violates 2NF
PID -> FLIGHT_CODE	Violates 2NF
DATE_OF_BOOKING, SOURCE, DESTINATION, CLASS -> PRICE	Violates 3NF
DATE_OF_CANCELLATION -> SURCHARGE	Violates 3NF
JOBTYPE -> SALARY	Violates 3NF

Normalizing tables into 3NF

TABLES AFTER NORMALIZATION	
CITY (CNAME, STATE, COUNTRY)	
AIRPORT (AP_NAME, STATE, COUNTRY, CNAME)	
AIRLINE (AIRLINEID, AL_NAME, THREE_DIGIT_CODE)	
CONTAINS (AIRLINEID, AP_NAME)	
FLIGHT (FLIGHT_CODE, SOURCE, DESTINATION, ARRIVAL, DEPARTURE, STATUS, DURATION, FLIGHTTYPE, LAYOVER_TIME, NO_OF_STOPS, AIRLINEID)	
PASSENGER1 (PID, PASSPORTNO)	
PASSENGER2(PASSPORTNO, FNAME, M, LNAME, ADDRESS, PHONE, AGE, SEX)	
PASSENGER3 (PID, FLIGHT_CODE)	
TICKET1 (TICKET_NUMBER, SOURCE, DESTINATION, DATE_OF_BOOKING, DATE_OF_TRAVEL, SEATNO, CLASS, DATE_OF_CANCELLATION, PID, PASSPORTNO)	
TICKET2 (DATE_OF_BOOKING, SOURCE, DESTINATION, CLASS, PRICE)	
TICKET3 (DATE_OF_CANCELLATION, SURCHARGE)	
EMPLOYEE1 (SSN, FNAME, M, LNAME, ADDRESS, PHONE, AGE, SEX, JOBTYPE, ASTYPE, ETYPE, SHIFT, POSITION, AP_NAME)	
EMPLOYEE2(JOBTYPE, SALARY)	
SERVES (SSN, PID, PASSPORTNO)	

NORMALISED RELATIONAL SCHEMA



[SQL](#)

-- Inserting Table: CITY--

```
CREATE TABLE CITY
(CNAME VARCHAR2(15) NOT NULL,
STATE VARCHAR2(15),
COUNTRY VARCHAR(30),
PRIMARY KEY(CNAME));
```

-- Inserting values of Table: CITY--

```
INSERT INTO CITY (CNAME, STATE, COUNTRY) VALUES('Louisville','Kentucky','United States');
INSERT INTO CITY (CNAME, STATE, COUNTRY) VALUES ('Chandigarh','Chandigarh','India');
INSERT INTO CITY (CNAME, STATE, COUNTRY) VALUES ('Fort Worth','Texas','United States');
INSERT INTO CITY (CNAME, STATE, COUNTRY) VALUES('Delhi','Delhi','India');
INSERT INTO CITY (CNAME, STATE, COUNTRY) VALUES('Mumbai','Maharashtra','India');
INSERT INTO CITY (CNAME, STATE, COUNTRY) VALUES('San Francisco', 'California', 'United States');
INSERT INTO CITY (CNAME, STATE, COUNTRY) VALUES('Frankfurt','Hesse','Germany');
INSERT INTO CITY (CNAME, STATE, COUNTRY) VALUES('Houston','Texas','United States');
INSERT INTO CITY (CNAME, STATE, COUNTRY) VALUES('New York City','New York','United States');
INSERT INTO CITY (CNAME, STATE, COUNTRY) VALUES('Tampa', 'Florida', 'United States');
```

-- Inserting Table: AIRPORT--

```
CREATE TABLE AIRPORT
(AP_NAME VARCHAR2(100) NOT NULL,
STATE VARCHAR2(15),
COUNTRY VARCHAR(30),
CNAME VARCHAR2(15),
PRIMARY KEY(AP_NAME),
FOREIGN KEY(CNAME) REFERENCES CITY(CNAME) ON DELETE CASCADE);
```

--Inserting values for Table: AIRPORT--

```
INSERT INTO AIRPORT (AP_NAME, STATE, COUNTRY, CNAME) VALUES('Louisville International
Airport','Kentucky','United States','Louisville');
```

```
INSERT INTO AIRPORT (AP_NAME, STATE, COUNTRY, CNAME) VALUES('Chandigarh International
Airport','Chandigarh','India','Chandigarh');
```

```
INSERT INTO AIRPORT (AP_NAME, STATE, COUNTRY, CNAME) VALUES('Dallas/Fort Worth International
Airport','Texas','United States','Fort Worth');
```

```
INSERT INTO AIRPORT (AP_NAME, STATE, COUNTRY, CNAME) VALUES('Indira Gandhi International  
Airport','Delhi','India','Delhi');
```

```
INSERT INTO AIRPORT (AP_NAME, STATE, COUNTRY, CNAME) VALUES('Chhatrapati Shivaji International  
Airport','Maharashtra','India','Mumbai');
```

```
INSERT INTO AIRPORT (AP_NAME, STATE, COUNTRY, CNAME) VALUES('San Francisco International  
Airport','California', 'United States','San Francisco');
```

```
INSERT INTO AIRPORT (AP_NAME, STATE, COUNTRY, CNAME) VALUES('Frankfurt  
Airport', 'Hesse', 'Germany', 'Frankfurt');
```

```
INSERT INTO AIRPORT (AP_NAME, STATE, COUNTRY, CNAME) VALUES('George Bush Intercontinental  
Airport','Texas','United States','Houston');
```

```
INSERT INTO AIRPORT (AP_NAME, STATE, COUNTRY, CNAME) VALUES('John F. Kennedy International  
Airport','New York','United States','New York City');
```

```
INSERT INTO AIRPORT (AP_NAME, STATE, COUNTRY, CNAME) VALUES('Tampa International  
Airport','Florida', 'United States','Tampa');
```

-- Inserting Table: AIRLINE--

```
CREATE TABLE AIRLINE  
(AIRLINEID VARCHAR(3) NOT NULL,  
AL_NAME VARCHAR2(50),  
THREE_DIGIT_CODE VARCHAR(3),  
PRIMARY KEY(AIRLINEID));
```

-- Inserting values for Table: AIRLINE --

```
INSERT INTO AIRLINE (AIRLINEID, AL_NAME, THREE_DIGIT_CODE) VALUES('AA','American Airlines','001');  
INSERT INTO AIRLINE (AIRLINEID, AL_NAME, THREE_DIGIT_CODE) VALUES('AI','Air India Limited','098');  
INSERT INTO AIRLINE (AIRLINEID, AL_NAME, THREE_DIGIT_CODE) VALUES('LH','Lufthansa', '220');  
INSERT INTO AIRLINE (AIRLINEID, AL_NAME, THREE_DIGIT_CODE) VALUES('BA','British Airways','125');  
INSERT INTO AIRLINE (AIRLINEID, AL_NAME, THREE_DIGIT_CODE) VALUES('QR','Qatar Airways','157');  
INSERT INTO AIRLINE (AIRLINEID, AL_NAME, THREE_DIGIT_CODE) VALUES('9W','Jet Airways','589');  
INSERT INTO AIRLINE (AIRLINEID, AL_NAME, THREE_DIGIT_CODE) VALUES('EK','Emirates','176');  
INSERT INTO AIRLINE (AIRLINEID, AL_NAME, THREE_DIGIT_CODE) VALUES('EY','Etihad Airways','607');
```

-- Inserting Table: CONTAINS--

```
CREATE TABLE CONTAINS
(AIRLINEID VARCHAR(3) NOT NULL,
AP_NAME VARCHAR2(100) NOT NULL,
PRIMARY KEY(AIRLINEID, AP_NAME),
FOREIGN KEY(AIRLINEID) REFERENCES AIRLINE(AIRLINEID) ON DELETE CASCADE,
FOREIGN KEY(AP_NAME) REFERENCES AIRPORT(AP_NAME) ON DELETE CASCADE);
```

-- Inserting values into Table: CONTAINS--

```
INSERT INTO CONTAINS (AIRLINEID, AP_NAME) VALUES('AA','Louisville International Airport');
INSERT INTO CONTAINS (AIRLINEID, AP_NAME) VALUES('AA','John F. Kennedy International Airport');
INSERT INTO CONTAINS (AIRLINEID, AP_NAME) VALUES('AA','George Bush Intercontinental Airport');
INSERT INTO CONTAINS (AIRLINEID, AP_NAME) VALUES('AA','San Francisco International Airport');
INSERT INTO CONTAINS (AIRLINEID, AP_NAME) VALUES('AA','Tampa International Airport');
```

```
INSERT INTO CONTAINS (AIRLINEID, AP_NAME) VALUES('AI','Chandigarh International Airport');
INSERT INTO CONTAINS (AIRLINEID, AP_NAME) VALUES('AI','Dallas/Fort Worth International Airport');
INSERT INTO CONTAINS (AIRLINEID, AP_NAME) VALUES('AI','Indira Gandhi International Airport');
INSERT INTO CONTAINS (AIRLINEID, AP_NAME) VALUES('AI','Chhatrapati Shivaji International Airport');
INSERT INTO CONTAINS (AIRLINEID, AP_NAME) VALUES('AI','George Bush Intercontinental Airport');
```

```
INSERT INTO CONTAINS (AIRLINEID, AP_NAME) VALUES('LH','Chhatrapati Shivaji International Airport');
INSERT INTO CONTAINS (AIRLINEID, AP_NAME) VALUES('LH','Frankfurt Airport');
INSERT INTO CONTAINS (AIRLINEID, AP_NAME) VALUES('LH','John F. Kennedy International Airport');
INSERT INTO CONTAINS (AIRLINEID, AP_NAME) VALUES('LH','San Francisco International Airport');
INSERT INTO CONTAINS (AIRLINEID, AP_NAME) VALUES('LH','Dallas/Fort Worth International Airport');
```

```
INSERT INTO CONTAINS (AIRLINEID, AP_NAME) VALUES('BA','John F. Kennedy International Airport');
INSERT INTO CONTAINS (AIRLINEID, AP_NAME) VALUES('BA','Chhatrapati Shivaji International Airport');
INSERT INTO CONTAINS (AIRLINEID, AP_NAME) VALUES('BA','Chandigarh International Airport');
INSERT INTO CONTAINS (AIRLINEID, AP_NAME) VALUES('BA','Frankfurt Airport');
INSERT INTO CONTAINS (AIRLINEID, AP_NAME) VALUES('BA','San Francisco International Airport');
```

```
INSERT INTO CONTAINS (AIRLINEID, AP_NAME) VALUES('QR','Chhatrapati Shivaji International Airport');
INSERT INTO CONTAINS (AIRLINEID, AP_NAME) VALUES('QR','Dallas/Fort Worth International Airport');
INSERT INTO CONTAINS (AIRLINEID, AP_NAME) VALUES('QR','John F. Kennedy International Airport');
INSERT INTO CONTAINS (AIRLINEID, AP_NAME) VALUES('QR','Tampa International Airport');
INSERT INTO CONTAINS (AIRLINEID, AP_NAME) VALUES('QR','Louisville International Airport');
```

-- Inserting Table: FLIGHT--

```
CREATE TABLE FLIGHT
(FLIGHT_CODE VARCHAR(10) NOT NULL,
SOURCE VARCHAR(3),
DESTINATION VARCHAR(3),
ARRIVAL VARCHAR2(10),
DEPARTURE VARCHAR2(10),
```

```

STATUS VARCHAR(10),
DURATION VARCHAR2(30),
FLIGHTTYPE VARCHAR(10),
LAYOVER_TIME VARCHAR2(30),
NO_OF_STOPS INT,
AIRLINEID VARCHAR(3),
PRIMARY KEY(FLIGHT_CODE),
FOREIGN KEY(AIRLINEID) REFERENCES AIRLINE(AIRLINEID) ON DELETE CASCADE);

```

-- Inserting values into Table: FLIGHT --

```

INSERT INTO FLIGHT(FLIGHT_CODE, SOURCE, DESTINATION, ARRIVAL, DEPARTURE, STATUS, DURATION,
FLIGHTTYPE, LAYOVER_TIME, NO_OF_STOPS, AIRLINEID)
VALUES('AI2014' 'BOM' 'DFW' '02:10' '03:15' 'On-time' '24hr' 'Connecting' ,3,1,'AI');


```

```

INSERT INTO FLIGHT(FLIGHT_CODE, SOURCE, DESTINATION, ARRIVAL, DEPARTURE, STATUS, DURATION,
FLIGHTTYPE, LAYOVER_TIME, NO_OF_STOPS, AIRLINEID)
VALUES('QR2305' 'BOM' 'DFW' '13:00' '13:55' 'Delayed' '21hr' 'Non-stop' ,0,0,'QR');


```

```

INSERT INTO FLIGHT(FLIGHT_CODE, SOURCE, DESTINATION, ARRIVAL, DEPARTURE, STATUS, DURATION,
FLIGHTTYPE, LAYOVER_TIME, NO_OF_STOPS, AIRLINEID)
VALUES('EY1234' 'JFK' 'TPA' '19:20' '20:05' 'On-time' '16hrs' 'Connecting' ,5,2,'EY');


```

```

INSERT INTO FLIGHT(FLIGHT_CODE, SOURCE, DESTINATION, ARRIVAL, DEPARTURE, STATUS, DURATION,
FLIGHTTYPE, LAYOVER_TIME, NO_OF_STOPS, AIRLINEID)
VALUES('LH9876' 'JFK' 'BOM' '05:50' '06:35' 'On-time' '18hrs' 'Non-stop' ,0,0,'LH');


```

```

INSERT INTO FLIGHT(FLIGHT_CODE, SOURCE, DESTINATION, ARRIVAL, DEPARTURE, STATUS, DURATION,
FLIGHTTYPE, LAYOVER_TIME, NO_OF_STOPS, AIRLINEID)
VALUES('BA1689' 'FRA' 'DEL' '10:20' '10:55' 'On-time' '14hrs' 'Non-stop' ,0,0,'BA');


```

```

INSERT INTO FLIGHT(FLIGHT_CODE, SOURCE, DESTINATION, ARRIVAL, DEPARTURE, STATUS, DURATION,
FLIGHTTYPE, LAYOVER_TIME, NO_OF_STOPS, AIRLINEID)
VALUES('AA4367' 'SFO' 'FRA' '18:10' '18:55' 'On-time' '21hrs' 'Non-stop' ,0,0,'AA');


```

```

INSERT INTO FLIGHT(FLIGHT_CODE, SOURCE, DESTINATION, ARRIVAL, DEPARTURE, STATUS, DURATION,
FLIGHTTYPE, LAYOVER_TIME, NO_OF_STOPS, AIRLINEID)
VALUES('QR1902' 'IXC' 'IAH' '22:00' '22:50' 'Delayed' '28hrs' 'Non-stop' ,5,1,'QR');


```

```

INSERT INTO FLIGHT(FLIGHT_CODE, SOURCE, DESTINATION, ARRIVAL, DEPARTURE, STATUS, DURATION,
FLIGHTTYPE, LAYOVER_TIME, NO_OF_STOPS, AIRLINEID)


```

```
VALUES('BA3056','BOM','DFW','02:15','02:55','On-time','29hrs','Connecting',3,1,'BA');
```

```
INSERT INTO FLIGHT(FLIGHT_CODE, SOURCE, DESTINATION, ARRIVAL, DEPARTURE, STATUS, DURATION,  
FLIGHTTYPE, LAYOVER_TIME, NO_OF_STOPS, AIRLINEID)  
VALUES('EK3456','BOM','SFO','18:50','19:40','On-time','30hrs','Non-stop',0,0,'EK');
```

```
INSERT INTO FLIGHT(FLIGHT_CODE, SOURCE, DESTINATION, ARRIVAL, DEPARTURE, STATUS, DURATION,  
FLIGHTTYPE, LAYOVER_TIME, NO_OF_STOPS, AIRLINEID)  
VALUES('9W2334','IAH','DEL','23:00','13:45','On-time','23hrs','Direct',0,0,'9W');
```

-- Inserting Table: PASSENGER1--

```
CREATE TABLE PASSENGER1  
(PID INT NOT NULL,  
PASSPORTNO VARCHAR(10) NOT NULL,  
PRIMARY KEY(PID, PASSPORTNO));
```

-- Inserting values in table: PASSENGER1--

```
INSERT INTO PASSENGER1(PID, PASSPORTNO) VALUES(1,'A1234568');  
INSERT INTO PASSENGER1(PID, PASSPORTNO) VALUES(2,'B9876541');  
INSERT INTO PASSENGER1(PID, PASSPORTNO) VALUES(3,'C2345698');  
INSERT INTO PASSENGER1(PID, PASSPORTNO) VALUES(4,'D1002004');  
INSERT INTO PASSENGER1(PID, PASSPORTNO) VALUES(5,'X9324666');  
INSERT INTO PASSENGER1(PID, PASSPORTNO) VALUES(6,'B8765430');  
INSERT INTO PASSENGER1(PID, PASSPORTNO) VALUES(7,'J9801235');  
INSERT INTO PASSENGER1(PID, PASSPORTNO) VALUES(8,'A1122334');  
INSERT INTO PASSENGER1(PID, PASSPORTNO) VALUES(9,'Q1243567');  
INSERT INTO PASSENGER1(PID, PASSPORTNO) VALUES(10,'S1243269');  
INSERT INTO PASSENGER1(PID, PASSPORTNO) VALUES(11,'E3277889');  
INSERT INTO PASSENGER1(PID, PASSPORTNO) VALUES(12,'K3212322');  
INSERT INTO PASSENGER1(PID, PASSPORTNO) VALUES(13,'P3452390');  
INSERT INTO PASSENGER1(PID, PASSPORTNO) VALUES(14,'W7543336');  
INSERT INTO PASSENGER1(PID, PASSPORTNO) VALUES(15,'R8990566');
```

-- Inserting Table: PASSENGER2--

```
CREATE TABLE PASSENGER2  
(PASSPORTNO VARCHAR(10) NOT NULL,  
FNAME VARCHAR2(20),  
M VARCHAR(1),  
LNAME VARCHAR2(20),  
ADDRESS VARCHAR2(100),  
PHONE INT,
```

```
AGE INT,  
SEX VARCHAR(1),  
PRIMARY KEY(PASSPORTNO));
```

--Inserting VALUES IN TABLE: PASSENGER2--

```
INSERT INTO PASSENGER2(PASSPORTNO,FNAME,M,LNAME,ADDRESS,PHONE,AGE,SEX)  
VALUES('A1234568','ALEN','M','SMITH','2230 NORTHSIDE, APT 11, ALBANY, NY',8080367290,30,'M');
```

```
INSERT INTO PASSENGER2(PASSPORTNO,FNAME,M,LNAME,ADDRESS,PHONE,AGE,SEX)  
VALUES('B9876541','ANKITA','V','AHIR','3456 VIKAS APTS, APT 102,DOMBIVLI,  
INDIA',8080367280,26,'F');
```

```
INSERT INTO PASSENGER2(PASSPORTNO,FNAME,M,LNAME,ADDRESS,PHONE,AGE,SEX)  
VALUES('C2345698','KHYATI','A','MISHRA','7820 MCCALLUM COURTS, APT 234, AKRON,  
OH',8082267280,30,'F');
```

```
INSERT INTO PASSENGER2(PASSPORTNO,FNAME,M,LNAME,ADDRESS,PHONE,AGE,SEX)  
VALUES('D1002004','ANKITA','S','PATIL','7720 MCCALLUM BLVD, APT 1082, DALLAS,  
TX',9080367266,23,'F');
```

```
INSERT INTO PASSENGER2(PASSPORTNO,FNAME,M,LNAME,ADDRESS,PHONE,AGE,SEX)  
VALUES('X9324666','TEJASHREE','B','PANDIT','9082 ESTAES OF RICHARDSON, RICHARDSON,  
TX',9004360125,28,'F');
```

```
INSERT INTO PASSENGER2(PASSPORTNO,FNAME,M,LNAME,ADDRESS,PHONE,AGE,SEX)  
VALUES('B8765430','LAKSHMI','P','SHARMA','1110 FIR HILLS, APT 903, AKRON, OH',7666190505,30,'F');
```

```
INSERT INTO PASSENGER2(PASSPORTNO,FNAME,M,LNAME,ADDRESS,PHONE,AGE,SEX)  
VALUES('J9801235','AKHILESH','D','JOSHI','345 CHATHAM COURTS, APT 678, MUMBAI,  
INDIA',9080369290,29,'M');
```

```
INSERT INTO PASSENGER2(PASSPORTNO,FNAME,M,LNAME,ADDRESS,PHONE,AGE,SEX)  
VALUES('A1122334','MANAN','S','LAKHANI','5589 CHTHAM REFLECTIONS, APT 349 HOUSTON,  
TX',9004335126,25,'F');
```

```
INSERT INTO PASSENGER2(PASSPORTNO,FNAME,M,LNAME,ADDRESS,PHONE,AGE,SEX)  
VALUES('Q1243567','KARAN','M','MOTANI','4444 FRANKFORD VILLA, APT 77, GUILDERLAND,  
NY',9727626643,22,'M');
```

```
INSERT INTO PASSENGER2(PASSPORTNO,FNAME,M,LNAME,ADDRESS,PHONE,AGE,SEX)  
VALUES('S1243269','ROM','A','SOLANKI','7720 MCCALLUM BLVD, APT 2087, DALLAS,  
TX',9004568903,60,'M');
```

```
INSERT INTO PASSENGER2(PASSPORTNO,FNAME,M,LNAME,ADDRESS,PHONE,AGE,SEX)  
VALUES('E3277889','John','A','GATES','1234 BAKER APTS, APT 59, HESSE,  
GERMANY',9724569986,10,'M');
```

```
INSERT INTO PASSENGER2(PASSPORTNO,FNAME,M,LNAME,ADDRESS,PHONE,AGE,SEX)
VALUES('K3212322','SARA','B','GOMES','6785 SPLITSVILLA, APT 34, MIAMI, FL',9024569226,15,'F');
```

```
INSERT INTO PASSENGER2(PASSPORTNO,FNAME,M,LNAME,ADDRESS,PHONE,AGE,SEX)
VALUES('P3452390','ALIA','V','BHAT','548 MARKET PLACE, SAN Francisco, CA',9734567800,10,'F');
```

```
INSERT INTO PASSENGER2(PASSPORTNO,FNAME,M,LNAME,ADDRESS,PHONE,AGE,SEX)
VALUES('W7543336','JOHN','P','SMITH','6666 ROCK HILL, APT 2902, TAMPA, FL',4624569986,55,'M');
```

```
INSERT INTO PASSENGER2(PASSPORTNO,FNAME,M,LNAME,ADDRESS,PHONE,AGE,SEX)
VALUES('R8990566','RIA','T','GUPTA','3355 PALENCIA, APT 2065, MUMBAI, INDIA',4724512343,10,'M');
```

-- Inserting Table: PASSENGER3--

```
CREATE TABLE PASSENGER3
(PID INT NOT NULL,
FLIGHT_CODE VARCHAR(10),
PRIMARY KEY(PID),
FOREIGN KEY(FLIGHT_CODE) REFERENCES FLIGHT(FLIGHT_CODE) ON DELETE CASCADE);
```

-- Inserting values into Table: PASSENGER3--

```
INSERT INTO PASSENGER3(PID, FLIGHT_CODE) VALUES(1,'AI2014');
INSERT INTO PASSENGER3(PID, FLIGHT_CODE) VALUES(2,'LH9876');
INSERT INTO PASSENGER3(PID, FLIGHT_CODE) VALUES(3,'9W2334');
INSERT INTO PASSENGER3(PID, FLIGHT_CODE) VALUES(4,'QR1902');
INSERT INTO PASSENGER3(PID, FLIGHT_CODE) VALUES(5,'EY1234');
INSERT INTO PASSENGER3(PID, FLIGHT_CODE) VALUES(6,'BA3056');
INSERT INTO PASSENGER3(PID, FLIGHT_CODE) VALUES(7,'9W2334');
INSERT INTO PASSENGER3(PID, FLIGHT_CODE) VALUES(8,'AA4367');
INSERT INTO PASSENGER3(PID, FLIGHT_CODE) VALUES(9,'QR1902');
INSERT INTO PASSENGER3(PID, FLIGHT_CODE) VALUES(10,'EK3456');
INSERT INTO PASSENGER3(PID, FLIGHT_CODE) VALUES(11,'BA1689');
INSERT INTO PASSENGER3(PID, FLIGHT_CODE) VALUES(12,'QR1902');
INSERT INTO PASSENGER3(PID, FLIGHT_CODE) VALUES(13,'AI2014');
INSERT INTO PASSENGER3(PID, FLIGHT_CODE) VALUES(14,'BA1689');
INSERT INTO PASSENGER3(PID, FLIGHT_CODE) VALUES(15,'QR2305');
```

-- Inserting Table: EMPLOYEE1—

```
CREATE TABLE EMPLOYEE1
(SSN INT NOT NULL,
FNAME VARCHAR2(20),
M VARCHAR(1),
LNAME VARCHAR2(20),
```

```
ADDRESS VARCHAR2(100),
PHONE INT,
AGE INT,
SEX VARCHAR(1),
JOBTYPE VARCHAR2(30),
ASTYPE VARCHAR2(30),
ETYPE VARCHAR2(30),
SHIFT VARCHAR2(20),
POSITION VARCHAR2(30),
AP_NAME VARCHAR2(100),
PRIMARY KEY(SSN),
FOREIGN KEY(AP_NAME) REFERENCES AIRPORT(AP_NAME) ON DELETE CASCADE);
```

-- Implementing Business Rule Using Check Constraint--

```
AGE OF AN EMPLOYEE WORKING FOR AN AIRPORT SHOULD NOT BE GREATER THAN 65--
```

```
ALTER TABLE EMPLOYEE1
ADD CONSTRAINT AGE_LIMIT CHECK(AGE < 65);
```

-- Example Of Violation Of Check Constraint--

```
INSERT INTO EMPLOYEE1(SSN, FNAME, M, LNAME, ADDRESS, PHONE, AGE, SEX, JOBTYPE, ASTYPE,
ETYPE, SHIFT, POSITION, AP_NAME)
VALUES(123456799,'RAM','M','SHARMA','731 HILL TOWN, ARLINGTON, TX',4356789365, 66,
'M','ADMINISTRATIVE SUPPORT','RECEPTIONIST','','','Louisville International Airport');
```

-- Inserting values in table: EMPLOYEE1 --

```
INSERT INTO EMPLOYEE1(SSN, FNAME, M, LNAME, ADDRESS, PHONE, AGE, SEX, JOBTYPE, ASTYPE,
ETYPE, SHIFT, POSITION, AP_NAME)
VALUES(123456789,'LINDA','M','GOODMAN','731 Fondren, Houston, TX',4356789345, 35,
'F','ADMINISTRATIVE SUPPORT','RECEPTIONIST','','','Louisville International Airport');
```

```
INSERT INTO EMPLOYEE1(SSN, FNAME, M, LNAME, ADDRESS, PHONE, AGE, SEX, JOBTYPE, ASTYPE,
ETYPE, SHIFT, POSITION, AP_NAME)
VALUES(333445555,'JOHNY','N','PAUL','638 Voss, Houston, TX',9834561995, 40, 'M','ADMINISTRATIVE
SUPPORT','SECRETARY','','','Louisville International Airport');
```

```
INSERT INTO EMPLOYEE1(SSN, FNAME, M, LNAME, ADDRESS, PHONE, AGE, SEX, JOBTYPE, ASTYPE,
ETYPE, SHIFT, POSITION, AP_NAME)
VALUES(999887777,'JAMES','P','BOND','3321 Castle, Spring, TX',9834666995, 50,
'M','ENGINEER','','RADIO ENGINEER','','Louisville International Airport');
```

```
INSERT INTO EMPLOYEE1(SSN, FNAME, M, LNAME, ADDRESS, PHONE, AGE, SEX, JOBTYPE, ASTYPE,
ETYPE, SHIFT, POSITION, AP_NAME)
VALUES(987654321,'SHERLOCK','A','HOLMES','123 TOP HILL, SAN Francisco,CA',8089654321, 47,
'M','TRAFFIC MONITOR','','DAY','','San Francisco International Airport');
```

```
INSERT INTO EMPLOYEE1(SSN, FNAME, M, LNAME, ADDRESS, PHONE, AGE, SEX, JOBTYPE, ASTYPE, ETYPE, SHIFT, POSITION, AP_NAME)
VALUES(666884444,'SHELDON','A','COOPER','345 CHERRY PARK, HESSE,GERMANY',1254678903, 55, 'M','TRAFFIC MONITOR','','NIGHT','','Frankfurt Airport');
```

```
INSERT INTO EMPLOYEE1(SSN, FNAME, M, LNAME, ADDRESS, PHONE, AGE, SEX, JOBTYPE, ASTYPE, ETYPE, SHIFT, POSITION, AP_NAME)
VALUES(453453453,'RAJ','B','SHARMA','345 FLOYDS, MUMBAI,INDIA',4326789031, 35, 'M','AIRPORT AUTHORITY','','','MANAGER','Chhatrapati Shivaji International Airport');
```

```
INSERT INTO EMPLOYEE1(SSN, FNAME, M, LNAME, ADDRESS, PHONE, AGE, SEX, JOBTYPE, ASTYPE, ETYPE, SHIFT, POSITION, AP_NAME)
VALUES(987987987,'NIKITA','C','PAUL','110 SYNERGY PARK, DALLAS,TX',5678904325, 33, 'F','ENGINEER','','AIRPORT CIVIL ENGINEER','','Dallas/Fort Worth International Airport');
```

```
INSERT INTO EMPLOYEE1(SSN, FNAME, M, LNAME, ADDRESS, PHONE, AGE, SEX, JOBTYPE, ASTYPE, ETYPE, SHIFT, POSITION, AP_NAME)
VALUES(888665555,'SHUBHAM','R','GUPTA','567 CHANDANI CHOWK, DELHI, INDIA',8566778890, 39, 'M','ADMINISTRATIVE SUPPORT','DATA ENTRY WORKER','','','Indira Gandhi International Airport');
```

```
INSERT INTO EMPLOYEE1(SSN, FNAME, M, LNAME, ADDRESS, PHONE, AGE, SEX, JOBTYPE, ASTYPE, ETYPE, SHIFT, POSITION, AP_NAME)
VALUES(125478909,'PRATIK','T','GOMES','334 VITRUVIAN PARK, ALBANY, NY',4444678903, 56, 'M','TRAFFIC MONITOR','','DAY','','John F. Kennedy International Airport');
```

```
INSERT INTO EMPLOYEE1(SSN, FNAME, M, LNAME, ADDRESS, PHONE, AGE, SEX, JOBTYPE, ASTYPE, ETYPE, SHIFT, POSITION, AP_NAME)
VALUES(324567897,'ADIT','P','DESAI','987 SOMNATH, CHANDIGARH, INDIA',2244658909, 36, 'M','TRAFFIC MONITOR','','DAY','','Chandigarh International Airport');
```

-- Inserting Table: EMPLOYEE2 --

```
CREATE TABLE EMPLOYEE2
(JOBTYPE VARCHAR2(30) NOT NULL,
SALARY INT,
PRIMARY KEY(JOBTYPE));
```

--INSERTING VALUES INTO TABLE: EMPLOYEE2 --

```
INSERT INTO EMPLOYEE2(JOBTYPE, SALARY)VALUES('ADMINISTRATIVE SUPPORT',50000);
INSERT INTO EMPLOYEE2(JOBTYPE, SALARY)VALUES('ENGINEER',70000);
INSERT INTO EMPLOYEE2(JOBTYPE, SALARY)VALUES('TRAFFIC MONITOR',80000);
INSERT INTO EMPLOYEE2(JOBTYPE, SALARY)VALUES('AIRPORT AUTHORITY',90000);
```

-- Inserting Table: SERVES --

```
CREATE TABLE SERVES
(SSN INT NOT NULL,
PID INT NOT NULL,
PASSPORTNO VARCHAR(10) NOT NULL,
PRIMARY KEY(SSN, PID, PASSPORTNO),
FOREIGN KEY(SSN) REFERENCES EMPLOYEE1(SSN) ON DELETE CASCADE,
FOREIGN KEY(PID, PASSPORTNO) REFERENCES PASSENGER1(PID, PASSPORTNO) ON DELETE CASCADE);
```

-- INSERTING VALUES INTO TABLE: SERVES --

```
INSERT INTO SERVES(SSN, PID, PASSPORTNO) VALUES(123456789,1,'A1234568');
INSERT INTO SERVES(SSN, PID, PASSPORTNO) VALUES(123456789,15,'R8990566');
INSERT INTO SERVES(SSN, PID, PASSPORTNO) VALUES(123456789,9,'Q1243567');
INSERT INTO SERVES(SSN, PID, PASSPORTNO) VALUES(888665555,4,'D1002004');
INSERT INTO SERVES(SSN, PID, PASSPORTNO) VALUES(888665555,13,'P3452390');
INSERT INTO SERVES(SSN, PID, PASSPORTNO) VALUES(333445555,10,'S1243269');
INSERT INTO SERVES(SSN, PID, PASSPORTNO) VALUES(333445555,12,'K3212322');
INSERT INTO SERVES(SSN, PID, PASSPORTNO) VALUES(888665555,12,'K3212322');
INSERT INTO SERVES(SSN, PID, PASSPORTNO) VALUES(123456789,7,'J9801235');
INSERT INTO SERVES(SSN, PID, PASSPORTNO) VALUES(888665555,7,'J9801235');
```

-- Inserting Table: TICKET1 --

```
CREATE TABLE TICKET1
(TICKET_NUMBER VARCHAR(13) NOT NULL,
SOURCE VARCHAR(3),
DESTINATION VARCHAR(3),
DATE_OF_BOOKING DATE,
DATE_OF_TRAVEL DATE,
SEATNO VARCHAR(5),
CLASS VARCHAR2(15),
DATE_OF_CANCELLATION DATE,
PID INT,
PASSPORTNO VARCHAR(10),
FOREIGN KEY(PID, PASSPORTNO) REFERENCES PASSENGER1(PID, PASSPORTNO) ON DELETE CASCADE);
```

-- Adding CHECK constraint on an attribute TICKET_NUMBER --

```
ALTER TABLE TICKET1
ADD CONSTRAINT TICKET_NO_LENGTH CHECK(LENGTH(TICKET_NUMBER)=13);
```

-- Checking Violation Of A Constraint--

```
INSERT INTO TICKET1(TICKET_NUMBER, SOURCE, DESTINATION, DATE_OF_BOOKING,
DATE_OF_CANCELLATION, DATE_OF_TRAVEL, SEATNO, CLASS, PID, PASSPORTNO)
VALUES('00112341111221','BOM','DFW','11-MAY-16','','15-DEC-16','32A','ECONOMY',1,'A1234568');
```

-- Inserting values into Table: TICKET--

--INSERTING INTO TABLE: TICKET1--

```
INSERT INTO TICKET1(TICKET_NUMBER, SOURCE, DESTINATION, DATE_OF_BOOKING,
DATE_OF_CANCELLATION, DATE_OF_TRAVEL, SEATNO, CLASS, PID, PASSPORTNO)
VALUES(001123411122,'BOM','DFW','11-MAY-16','','15-DEC-16','32A','ECONOMY',1,'A1234568');
```

```
INSERT INTO TICKET1(TICKET_NUMBER, SOURCE, DESTINATION, DATE_OF_BOOKING,
DATE_OF_CANCELLATION, DATE_OF_TRAVEL, SEATNO, CLASS, PID, PASSPORTNO)
VALUES(098456722299,'JFK','BOM','11-JUN-16','10-DEC-16','20-DEC-
16','45D','ECONOMY',2,'B9876541');
```

```
INSERT INTO TICKET1(TICKET_NUMBER, SOURCE, DESTINATION, DATE_OF_BOOKING,
DATE_OF_CANCELLATION, DATE_OF_TRAVEL, SEATNO, CLASS, PID, PASSPORTNO)
VALUES(1768901333273,'IAH','DEL','21-AUG-16','','25-DEC-16','1A','BUSINESS',3,'C2345698');
```

```
INSERT INTO TICKET1(TICKET_NUMBER, SOURCE, DESTINATION, DATE_OF_BOOKING,
DATE_OF_CANCELLATION, DATE_OF_TRAVEL, SEATNO, CLASS, PID, PASSPORTNO)
VALUES(5890987441464,'IXC','IAH','10-AUG-16','','12-JAN-17','20C','FIRST-CLASS',4,'D1002004');
```

```
INSERT INTO TICKET1(TICKET_NUMBER, SOURCE, DESTINATION, DATE_OF_BOOKING,
DATE_OF_CANCELLATION, DATE_OF_TRAVEL, SEATNO, CLASS, PID, PASSPORTNO)
VALUES(1577654664266,'JFK','TPA','13-JUN-16','','10-DEC-16','54E','ECONOMY',5,'X9324666');
```

```
INSERT INTO TICKET1(TICKET_NUMBER, SOURCE, DESTINATION, DATE_OF_BOOKING,
DATE_OF_CANCELLATION, DATE_OF_TRAVEL, SEATNO, CLASS, PID, PASSPORTNO)
VALUES(2206543545545,'BOM','DFW','11-NOV-16','','12-FEB-17','43B','ECONOMY',6,'B8765430');
```

```
INSERT INTO TICKET1(TICKET_NUMBER, SOURCE, DESTINATION, DATE_OF_BOOKING,
DATE_OF_CANCELLATION, DATE_OF_TRAVEL, SEATNO, CLASS, PID, PASSPORTNO)
VALUES(7064321779737,'IAH','DEL','15-NOV-16','','25-DEC-16','27B','FIRST-CLASS',7,'J9801235');
```

```
INSERT INTO TICKET1(TICKET_NUMBER, SOURCE, DESTINATION, DATE_OF_BOOKING,
DATE_OF_CANCELLATION, DATE_OF_TRAVEL, SEATNO, CLASS, PID, PASSPORTNO)
VALUES(1571357215116,'SFO','FRA','15-OCT-16','','18-DEC-16','34E','ECONOMY',8,'A1122334');
```

```
INSERT INTO TICKET1(TICKET_NUMBER, SOURCE, DESTINATION, DATE_OF_BOOKING,
DATE_OF_CANCELLATION, DATE_OF_TRAVEL, SEATNO, CLASS, PID, PASSPORTNO)
VALUES(1570864987655,'IXC','IAH','12-NOV-16','','30-DEC-16','54C','ECONOMY',9,'Q1243567');
```

```
INSERT INTO TICKET1(TICKET_NUMBER, SOURCE, DESTINATION, DATE_OF_BOOKING,
DATE_OF_CANCELLATION, DATE_OF_TRAVEL, SEATNO, CLASS, PID, PASSPORTNO)
VALUES(1579283997799,'BOM','SFO','22-JAN-16','','15-DEC-16','38A','ECONOMY',10,'S1243269');
```

```
INSERT INTO TICKET1(TICKET_NUMBER, SOURCE, DESTINATION, DATE_OF_BOOKING,
DATE_OF_CANCELLATION, DATE_OF_TRAVEL, SEATNO, CLASS, PID, PASSPORTNO)
VALUES(1255701876107,'FRA','DEL','19-OCT-16','','31-DEC-16','57F','ECONOMY',11,'E3277889');
```

```
INSERT INTO TICKET1(TICKET_NUMBER, SOURCE, DESTINATION, DATE_OF_BOOKING,
DATE_OF_CANCELLATION, DATE_OF_TRAVEL, SEATNO, CLASS, PID, PASSPORTNO)
VALUES(1251334499699,'IXC','IAH','20-NOV-16','','12-JAN-17','45D','ECONOMY',12,'K3212322');
```

```
INSERT INTO TICKET1(TICKET_NUMBER, SOURCE, DESTINATION, DATE_OF_BOOKING,
DATE_OF_CANCELLATION, DATE_OF_TRAVEL, SEATNO, CLASS, PID, PASSPORTNO)
VALUES(1258776199490,'BOM','DFW','13-MAY-16','25-MAY-16','15-DEC-
16','37C','ECONOMY',13,'P3452390');
```

```
INSERT INTO TICKET1(TICKET_NUMBER, SOURCE, DESTINATION, DATE_OF_BOOKING,
DATE_OF_CANCELLATION, DATE_OF_TRAVEL, SEATNO, CLASS, PID, PASSPORTNO)
VALUES(5891155114477,'FRA','DEL','26-JUN-16','','23-DEC-16','55C','ECONOMY',14,'W7543336');
```

```
INSERT INTO TICKET1(TICKET_NUMBER, SOURCE, DESTINATION, DATE_OF_BOOKING,
DATE_OF_CANCELLATION, DATE_OF_TRAVEL, SEATNO, CLASS, PID, PASSPORTNO)
VALUES(5893069766787,'BOM','DFW','11-AUG-16','','22-DEC-16','33F','ECONOMY',15,'R8990566');
```

-- Inserting Table: TICKET2--

```
CREATE TABLE TICKET2
(DATE_OF_BOOKING DATE NOT NULL,
SOURCE VARCHAR(3) NOT NULL,
DESTINATION VARCHAR(3) NOT NULL,
CLASS VARCHAR2(15) NOT NULL,
PRICE INT,
PRIMARY KEY(DATE_OF_BOOKING, SOURCE, DESTINATION, CLASS));
```

-- Inserting Values into: TICKET2 --

```
INSERT INTO TICKET2(DATE_OF_BOOKING, SOURCE, DESTINATION, CLASS, PRICE)
VALUES('11-MAY-16','BOM','DFW','ECONOMY',95000);
```

```
INSERT INTO TICKET2(DATE_OF_BOOKING, SOURCE, DESTINATION, CLASS, PRICE)
VALUES('11-JUN-16','JFK','BOM','ECONOMY',100000);
```

```
INSERT INTO TICKET2(DATE_OF_BOOKING, SOURCE, DESTINATION, CLASS, PRICE)
VALUES('21-AUG-16','IAH','DEL','BUSINESS',200000);
```

```
INSERT INTO TICKET2(DATE_OF_BOOKING, SOURCE, DESTINATION, CLASS, PRICE)
VALUES('10-AUG-16','IXC','IAH','FIRST-CLASS',150000);
```

```
INSERT INTO TICKET2(DATE_OF_BOOKING, SOURCE, DESTINATION, CLASS, PRICE)
VALUES('13-JUN-16','JFK','TPA','ECONOMY',98000);
```

```
INSERT INTO TICKET2(DATE_OF_BOOKING, SOURCE, DESTINATION, CLASS, PRICE)
VALUES('11-NOV-16','BOM','DFW','ECONOMY',125000);
```

```
INSERT INTO TICKET2(DATE_OF_BOOKING, SOURCE, DESTINATION, CLASS, PRICE)
VALUES('15-NOV-16','IAH','DEL','FIRST-CLASS',195000);
```

```
INSERT INTO TICKET2(DATE_OF_BOOKING, SOURCE, DESTINATION, CLASS, PRICE)
VALUES('15-OCT-16','SFO','FRA','ECONOMY',170000);
```

```
INSERT INTO TICKET2(DATE_OF_BOOKING, SOURCE, DESTINATION, CLASS, PRICE)
VALUES('12-NOV-16','IXC','IAH','ECONOMY',140000);
```

```
INSERT INTO TICKET2(DATE_OF_BOOKING, SOURCE, DESTINATION, CLASS, PRICE)
VALUES('22-JAN-16','BOM','SFO','ECONOMY',45000);
```

```
INSERT INTO TICKET2(DATE_OF_BOOKING, SOURCE, DESTINATION, CLASS, PRICE)
VALUES('19-OCT-16','FRA','DEL','ECONOMY',100000);
```

```
INSERT INTO TICKET2(DATE_OF_BOOKING, SOURCE, DESTINATION, CLASS, PRICE)
VALUES('20-NOV-16','IXC','IAH','ECONOMY',120000);
```

```
INSERT INTO TICKET2(DATE_OF_BOOKING, SOURCE, DESTINATION, CLASS, PRICE)
VALUES('13-MAY-16','BOM','DFW','ECONOMY',65000);
```

```
INSERT INTO TICKET2(DATE_OF_BOOKING, SOURCE, DESTINATION, CLASS, PRICE)
VALUES('26-JUN-16','FRA','DEL','ECONOMY',80000);
```

```
INSERT INTO TICKET2(DATE_OF_BOOKING, SOURCE, DESTINATION, CLASS, PRICE)
VALUES('11-AUG-16','BOM','DFW','ECONOMY',98000);
```

-- Inserting Table: TICKET3 --

```
CREATE TABLE TICKET3
(DATE_OF_CANCELLATION DATE NOT NULL,
SURCHARGE INT,
PRIMARY KEY(DATE_OF_CANCELLATION));
```

-- INSERTING VALUES INTO TABLE: TICKET3 --

```
INSERT INTO TICKET3(DATE_OF_CANCELLATION, SURCHARGE) VALUES('10-DEC-16',75000);
INSERT INTO TICKET3(DATE_OF_CANCELLATION, SURCHARGE) VALUES('25-MAY-16',25000);
```

PL/SQI

Stored Procedure for Details of economy class passengers with destination DFW

```
CREATE OR REPLACE PROCEDURE DFECONOMYPASSENGERS AS
CURSOR ECOPASSDETAILS IS
select
al.AL_NAME,f1.FLIGHT_CODE,p2.FNAME,p2.LNAME,p2.PASSPORTNO,t.CLASS,t.DATE_OF_TRAVEL,t.DESTINATION,t.SOURCE,t.SEATNO,t.TICKET_NUMBER from Airline al,Flight f1,PASSENGER1 p1,PASSENGER2 p2 ,PASSENGER3 p3,TICKET1 t
where al.AIRLINEID = f1.AIRLINEID
and p1.PID= p3.PID
and p1.PASSPORTNO =p2.PASSPORTNO
and f1.FLIGHT_CODE = p3.FLIGHT_CODE
and t.PASSPORTNO = p2.PASSPORTNO
and t.CLASS='ECONOMY' and t.DESTINATION='DFW';

PASSDETAILS ECOPASSDETAILS%rowtype;

BEGIN

Open ECOPASSDETAILS ;
LOOP
  fetch ECOPASSDETAILS into PASSDETAILS;
  EXIT WHEN ECOPASSDETAILS%NOTFOUND;
  dbms_output.put_line (PASSDETAILS.AL_NAME || ' ' || 
PASSDETAILS.FLIGHT_CODE || ' ' || PASSDETAILS.FNAME || ' ' ||
PASSDETAILS.LNAME|| ' ' ||PASSDETAILS.PASSPORTNO || ' ' || PASSDETAILS.CLASS
|| ' ' || PASSDETAILS.SOURCE || ' ' || PASSDETAILS.SEATNO || ' ' || 
PASSDETAILS.TICKET_NUMBER);

END LOOP;
  close ECOPASSDETAILS;
END;
```

```
SQL> @@StoredProcedure1.sql
26 /
Procedure created.

SQL> SET SERVEROUTPUT ON
SQL> exec DFWECONOMYPASSENGERS()
Air India Limited AI2014 ALEN SMITH A1234568 ECONOMY BOM 32A 11234111122
British Airways BA3056 LAKSHMI SHARMA B8765430 ECONOMY BOM 43B
2206543545545
Air India Limited AI2014 ALIA BHAT P3452390 ECONOMY BOM 37C
1258776199490
Qatar Airways QR2305 RIA GUPTA R8990566 ECONOMY BOM 33F 5893069766787
Air India Limited AI2014 ALEN SMITH A1234568 ECONOMY BOM 32A 11234111122
British Airways BA3056 LAKSHMI SHARMA B8765430 ECONOMY BOM 43B
2206543545545
Air India Limited AI2014 ALIA BHAT P3452390 ECONOMY BOM 37C
1258776199490
Qatar Airways QR2305 RIA GUPTA R8990566 ECONOMY BOM 33F 5893069766787
Air India Limited AI2014 ALEN SMITH A1234568 ECONOMY BOM 32A 11234111122
British Airways BA3056 LAKSHMI SHARMA B8765430 ECONOMY BOM 43B
2206543545545
Air India Limited AI2014 ALIA BHAT P3452390 ECONOMY BOM 37C
1258776199490
Qatar Airways QR2305 RIA GUPTA R8990566 ECONOMY BOM 33F 5893069766787
Air India Limited AI2014 ALEN SMITH A1234568 ECONOMY BOM 32A 11234111122
British Airways BA3056 LAKSHMI SHARMA B8765430 ECONOMY BOM 43B
2206543545545
Air India Limited AI2014 ALIA BHAT P3452390 ECONOMY BOM 37C
1258776199490
Qatar Airways QR2305 RIA GUPTA R8990566 ECONOMY BOM 33F 5893069766787
Air India Limited AI2014 ALEN SMITH A1234568 ECONOMY BOM 32A 11234111122
British Airways BA3056 LAKSHMI SHARMA B8765430 ECONOMY BOM 43B
2206543545545
Air India Limited AI2014 ALIA BHAT P3452390 ECONOMY BOM 37C
```

Stored Procedure for finding out whether the flight is delayed or not

```
CREATE OR REPLACE PROCEDURE FLIGHTSBYSTATUS
(
    IN_STATUS IN VARCHAR2
) AS

CURSOR fSTATUS is
select distinct f.FLIGHT_CODE ,al.AL_NAME
,f.ARRIVAL,f.departure,f.SOURCE,f.DESTINATION,f.STATUS,f.FLIGHATYPE from
Airline al ,Airport ap,flight f
where al.AIRLINEID=f.AIRLINEID
and f.STATUS =IN_STATUS;

FlightStatus fSTATUS%rowtype;

BEGIN
    Open fSTATUS ;
    LOOP
        fetch fSTATUS into FlightStatus;
        EXIT WHEN fSTATUS%NOTFOUND;
        dbms_output.put_line (FlightStatus.FLIGHT_CODE || ' ' || 
FlightStatus.AL_NAME || ' ' || FlightStatus.ARRIVAL || ' ' ||
FlightStatus.departure|| ' ' ||FlightStatus.Source || ' ' ||
FlightStatus.DESTINATION || ' ' || FlightStatus.STATUS || ' ' ||
FlightStatus.FLIGHATYPE);
    END LOOP;
    close fSTATUS;
END FLIGHTSBYSTATUS;

-- SET SERVEROUTPUT ON
-- exec FLIGHTSBYSTATUS('Delayed');
-- or--
-- SET SERVEROUTPUT ON
-- exec FLIGHTSBYSTATUS('On-time');
```

```

SQL> @@StoredProcedure2.sql
29  /

Procedure created.

SQL> exec FLIGHTSBYSTATUS('Delayed');
QR2305  Qatar Airways  13:00  13:55  BOM  DFW  Delayed  Non-stop
QR1902  Qatar Airways  22:00  22:50  IXC  IAH  Delayed  Non-stop

PL/SQL procedure successfully completed.

SQL> exec FLIGHTSBYSTATUS('On-time');
AI2014  Air India Limited  02:10  03:15  BOM  DFW  On-time  Connecting
EY1234  Etihad Airways  19:20  20:05  JFK  TPA  On-time  Connecting
LH9876  Lufthansa  05:50  06:35  JFK  BOM  On-time  Non-stop
BA1689  British Airways  10:20  10:55  FRA  DEL  On-time  Non-stop
AA4367  American Airlines  18:10  18:55  SFO  FRA  On-time  Non-stop
BA3056  British Airways  02:15  02:55  BOM  DFW  On-time  Connecting
EK3456  Emirates  18:50  19:40  BOM  SFO  On-time  Non-stop
9W2334  Jet Airways  23:00  13:45  IAH  DEL  On-time  Direct

PL/SQL procedure successfully completed.

SQL> |

```

Procedure to add a new Airport

```

CREATE OR REPLACE PROCEDURE ADD_AIRPORT(
    ap_name_in AIRPORT.AP_NAME%TYPE,
    state_in AIRPORT.STATE%TYPE,
    country_in AIRPORT.COUNTRY%TYPE,
    cname_in CITY.CNAME%TYPE
)
AS
    cname_exists NUMBER;
BEGIN
    -- check if the city already exists
    SELECT COUNT(*) INTO cname_exists FROM CITY WHERE CNAME=cname_in;

    -- if city does not exist, insert it first
    IF cname_exists = 0 THEN
        INSERT INTO CITY (CNAME, STATE, COUNTRY) VALUES (cname_in, state_in,
country_in);
    END IF;

```

```

-- insert the airport
INSERT INTO AIRPORT (AP_NAME, STATE, COUNTRY, CNAME) VALUES (ap_name_in,
state_in, country_in, cname_in);

DBMS_OUTPUT.PUT_LINE('Airport ' || ap_name_in || ' added successfully.');
EXCEPTION
WHEN OTHERS THEN
DBMS_OUTPUT.PUT_LINE('Error while adding airport: ' || SQLERRM);
END ADD_AIRPORT;

```

The screenshot shows a Windows Command Prompt window titled 'C:\windows\system32\cmd.exe'. Inside the window, the following SQL session is displayed:

```

SQL> @@AddAirport.sql
26  /
Procedure created.

SQL> exec AddAirport('Cochin International Airport','Kerela','India','Cochin');
BEGIN AddAirport('Cochin International Airport','Kerela','India','Cochin'); END;

*
ERROR at line 1:
ORA-06550: line 1, column 7:
PLS-00201: identifier 'ADDAIRPORT' must be declared
ORA-06550: line 1, column 7:
PL/SQL: Statement ignored

SQL> exec Add_Airport('Cochin International Airport','Kerela','India','Cochin');
PL/SQL procedure successfully completed.

SQL> select * from airport
2  ;

```

AP_NAME

STATE	COUNTRY	CNAME
Louisville	International Airport Kentucky	Louisville
Chandigarh	International Airport Chandigarh	Chandigarh
Dallas/Fort Worth	International Airport Texas	Fort Worth

```
C:\windows\system32\cmd.exe x + ^

-----  
Indira Gandhi International Airport  
Delhi           India          Delhi  
  
Chhatrapati Shivaji International Airport  
Maharashtra     India          Mumbai  
  
San Francisco International Airport  
California      United States  San Francisco  
  
AP_NAME  
-----  
STATE      COUNTRY          CNAME  
-----  
Frankfurt Airport  
Hesse       Germany         Frankfurt  
  
George Bush Intercontinental Airport  
Texas        United States   Houston  
  
John F. Kennedy International Airport  
New York     United States   New York City  
  
AP_NAME  
-----  
STATE      COUNTRY          CNAME  
-----  
Tampa International Airport  
Florida     United States   Tampa  
  
Shaheed Bhagat Singh International Airport  
Punjab      India          Chandigarh  
  
Patiala Airport  
Punjab      India          Patiala  
  
AP_NAME  
-----  
STATE      COUNTRY          CNAME
```

```
C:\windows\system32\cmd.exe x + ^

-----  
John F. Kennedy International Airport  
New York     United States   New York City  
  
AP_NAME  
-----  
STATE      COUNTRY          CNAME  
-----  
Tampa International Airport  
Florida     United States   Tampa  
  
Shaheed Bhagat Singh International Airport  
Punjab      India          Chandigarh  
  
Patiala Airport  
Punjab      India          Patiala  
  
AP_NAME  
-----  
STATE      COUNTRY          CNAME  
-----  
Cochin International Airport  
Kerala     India          Cochin  
  
13 rows selected.  
SQL> |
```

Triggers

Trigger for, when a flight is delayed, it is logged into different tables.

```
CREATE OR REPLACE TRIGGER DELAYEDFLIGHTS
AFTER INSERT ON FLIGHT
FOR EACH ROW
BEGIN
IF UPDATING('STATUS')
THEN
INSERT INTO DELAYED_FLIGHTS (FLIGHT_CODE, SOURCE, DESTINATION , AIRLINEID
,REPORT_TIME)
VALUES(:NEW.FLIGHT_CODE,:NEW.SOURCE,:NEW.DESTINATION,:NEW.AIRLINEID,sysdate);
END IF;
END;
-- This is audit table for this trigger--
CREATE TABLE DELAYED_FLIGHTS
(FLIGHT_CODE VARCHAR2(20),
DESTINATION VARCHAR2(20),
SOURCE VARCHAR2(20),
AIRLINEID VARCHAR2(20),
REPORT_TIME DATE);
INSERT INTO FLIGHT(FLIGHT_CODE, SOURCE, DESTINATION, ARRIVAL, DEPARTURE,
STATUS, DURATION,
FLIGHTTYPE, LAYOVER_TIME, NO_OF_STOPS, AIRLINEID)
VALUES('QR129','BOM','DFW','02:10','03:15','Delayed','24hr','Connecting',3,1,
'AI');
```

Trigger to update TICKET_PRICE_HISTORY table when the price of the air ticket is updated in TICKET2 table.

```
-- CREATING TABLE TICKET_PRICE_HISTORY--  
CREATE TABLE TICKET_PRICE_HISTORY  
(DATE_OF_BOOKING DATE NOT NULL,  
SOURCE VARCHAR(3) NOT NULL,  
DESTINATION VARCHAR(3) NOT NULL,  
CLASS VARCHAR2(15) NOT NULL,  
PRICE INT,  
PRIMARY KEY(DATE_OF_BOOKING, SOURCE, DESTINATION, CLASS));  
-- CREATE A TRIGGER TICKET_PRICE_HISTORY --  
CREATE OR REPLACE TRIGGER TRIGG_TICKET_PRICE_HISTORY  
BEFORE UPDATE OF PRICE  
ON TICKET2  
FOR EACH ROW  
BEGIN  
INSERT INTO TICKET_PRICE_HISTORY  
VALUES(:OLD.DATE_OF_BOOKING, :OLD.SOURCE, :OLD.DESTINATION, :OLD.CLASS,  
:OLD.PRICE);  
END;  
--LET'S UPDATE A PRICE OR FARE OF AN AIR TICKET --  
UPDATE TICKET2  
SET PRICE=150000  
WHERE DATE_OF_BOOKING ='11-NOV-16'  
AND SOURCE='BOM'  
AND DESTINATION='DFW'  
AND CLASS='ECONOMY'
```