DBMS
ASSIGNMENT

AIRPORT MANAGEMENT SYSTEM

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INTRODUCTION

- The airport management system primarily focuses on overseeing the operations of airports, airlines, and passengers, offering a comprehensive view of the factors influencing airport management.
- Each airline is uniquely identified by an airline code, consisting of two letters, and a three-digit code.
- Flights are uniquely identified by a flight code, which comprises an airline code and a four-digit number.
- Flights have specific details such as arrival time, departure time, duration, and are categorized into business, economy, and first-class.
- Two types of flights exist: non-stop flights and connecting flights. Connecting flights include intermediate stops where passengers may change flights, but it's assumed that passengers continue on the same flight after the layover period.
- Passengers are identified by a passenger ID and passport number, and their details include name, address, age, sex, and phone number.
- Air tickets contain passenger information, issuing airline details, ticket number, source, destination, journey date, seat number, class, and fare.
- Ticket numbers are composed of the airline's three-digit code, a four-digit form number, and a six-digit serial number.
- Employees are identified by their SSN and have personal information such as name, address, phone number, age, sex, and salary.

TABLES

CITY

```
mysql> desc city;
+---------+-------------+------+-----+---------+-------+
| Field   | Type        | Null | Key | Default | Extra |
+---------+-------------+------+-----+---------+-------+
| CNAME   | varchar(15) | NO   | PRI | NULL    |       |
| STATE   | varchar(15) | YES  |     | NULL    |       |
| COUNTRY | varchar(30) | YES  |     | NULL    |       |
+---------+-------------+------+-----+---------+-------+
3 rows in set (0.01 sec)

mysql> select * from city;
+---------------+-------------+---------------+
| CNAME         | STATE       | COUNTRY       |
+---------------+-------------+---------------+
| Chandigarh    | Chandigarh  | India         |
| Delhi         | Delhi       | India         |
| Houston       | Texas       | United  States |
| Mumbai        | Maharashtra | India         |
| New   York    City | New      York    | United        States |
| San   Francisco | California  | United        States |
+---------------+-------------+---------------+
6 rows in set (0.00 sec)
```

AIRPORT

```
mysql> desc airline;
+------------------+-------------+------+-----+---------+-------+
| Field            | Type        | Null | Key | Default | Extra |
+------------------+-------------+------+-----+---------+-------+
| AIRLINEID        | varchar(3)  | NO   | PRI | NULL    |       |
| AL_NAME          | varchar(50) | YES  |     | NULL    |       |
| THREE_DIGIT_CODE | varchar(3)  | YES  |     | NULL    |       |
+------------------+-------------+------+-----+---------+-------+
3 rows in set (0.01 sec)

mysql> select * from airline;
+---------------------------------------+-------------+---------------+-------------+
|               AP_NAME                 |    STATE    |    COUNTRY    |     CNAME   |
+---------------------------------------+-------------+---------------+-------------+
| Chandigarh International Airport      | Chandigarh  | India         | Chandigarh
| Chhatrapati Shivaji International Airport| Maharashtra| India         | Mumbai
| George Bush Intercontinental Airport  | Texas       | United States | Houston
| Indira Gandhi International Airport   | Delhi       | India         | Delhi
| John F. Kennedy International Airport | New York    | United States | New York City
| San Francisco International Airport   | California  | United States | San Francisco
+---------------------------------------+-------------+---------------+-------------
```

FLIGHTS

```
mysql> desc flight;
+--------------+-------------+------+-----+---------+-------+
| Field        | Type        | Null | Key | Default | Extra |
+--------------+-------------+------+-----+---------+-------+
| FLIGHT_CODE  | varchar(10) | NO   | PRI | NULL    |       |
| SOURCE       | varchar(3)  | YES  |     | NULL    |       |
| DESTINATION  | varchar(3)  | YES  |     | NULL    |       |
| ARRIVAL      | varchar(10) | YES  |     | NULL    |       |
| DEPARTURE    | varchar(10) | YES  |     | NULL    |       |
| STATUS       | varchar(10) | YES  |     | NULL    |       |
| DURATION     | varchar(30) | YES  |     | NULL    |       |
| FLIGHTTYPE   | varchar(10) | YES  |     | NULL    |       |
| LAYOVER_TIME | varchar(30) | YES  |     | NULL    |       |
| NO_OF_STOPS  | int         | YES  |     | NULL    |       |
| AIRLINEID    | varchar(3)  | YES  | MUL | NULL    |       |
+--------------+-------------+------+-----+---------+-------+
11 rows in set (0.00 sec)

mysql> select * from flight;
+-------------+--------+-------------+---------+-----------+---------+----------+------------+--------------+-------------+-----------+
| FLIGHT_CODE | SOURCE | DESTINATION | ARRIVAL | DEPARTURE | STATUS  | DURATION | FLIGHTTYPE | LAYOVER_TIME | NO_OF_STOPS | AIRLINEID |
+-------------+--------+-------------+---------+-----------+---------+----------+------------+--------------+-------------+-----------+
| 9W2334      | IAH    | DEL         | 23:00   | 13:45     | On-time | 23hrs    | Direct     | 0            |           0 | 9W        |
| AA4367      | SFO    | FRA         | 18:10   | 18:55     | On-time | 21hrs    | Non-stop   | 0            |           0 | AA        |
| BA1689      | FRA    | DEL         | 10:20   | 10:55     | On-time | 14hrs    | Non-stop   | 0            |           0 | BA        |
| EK3456      | BOM    | SFO         | 18:50   | 19:40     | On-time | 30hrs    | Non-stop   | 0            |           0 | EK        |
+-------------+--------+-------------+---------+-----------+---------+----------+------------+--------------+-------------+-----------+
4 rows in set (0.00 sec)
```

PASSENGER

```
mysql> desc passenger;
+-------------+--------------+------+-----+---------+-------+
| Field       | Type         | Null | Key | Default | Extra |
+-------------+--------------+------+-----+---------+-------+
| PID         | int          | NO   | PRI | NULL    |       |
| PASSPORTNO  | varchar(10)  | NO   | PRI | NULL    |       |
| FNAME       | varchar(20)  | YES  |     | NULL    |       |
| M           | varchar(1)   | YES  |     | NULL    |       |
| LNAME       | varchar(20)  | YES  |     | NULL    |       |
| ADDRESS     | varchar(100) | YES  |     | NULL    |       |
| PHONE       | varchar(15)  | YES  |     | NULL    |       |
| AGE         | int          | YES  |     | NULL    |       |
| SEX         | varchar(1)   | YES  |     | NULL    |       |
| FLIGHT_CODE | varchar(10)  | YES  | MUL | NULL    |       |
+-------------+--------------+------+-----+---------+-------+
10 rows in set (0.00 sec)

mysql> select * from passenger;
+-----+------------+--------+------+---------+-----------------------------------------+------------+------+------+-------------+
| PID | PASSPORTNO | FNAME  | M    | LNAME   | ADDRESS                                 | PHONE      | AGE  | SEX  | FLIGHT_CODE |
+-----+------------+--------+------+---------+-----------------------------------------+------------+------+------+-------------+
|   1 | A1234568   | ALEN   | M    | SMITH   | 2230 NORTHSIDE, APT 11, ALBANY, NY      | 8080367290 |   30 | M    | 9W2334      |
|   2 | B9876541   | ANKITA | V    | AHIR    | 3456 VIKAS APTS, APT 102, DOMBIVLI, INDIA | 8080367280 |   26 | F    | EK3456      |
|   3 | C2345698   | KHYATI | A    | MISHRA  | 7820 MCCALLUM COURTS, APT 234, AKRON, OH | 8082267280 |   30 | F    | AA4367      |
|   4 | D1002004   | SAM    | S    | JOE     | 7720 MCCALLUM BLVD, APT 1082, DALLAS, TX | 9080367266 |   23 | F    | BA1689      |
+-----+------------+--------+------+---------+-----------------------------------------+------------+------+------+-------------+
4 rows in set (0.00 sec)
```

TICKET

```
mysql> desc ticket;
+----------------------+-------------+------+-----+---------+-------+
| Field                | Type        | Null | Key | Default | Extra |
+----------------------+-------------+------+-----+---------+-------+
| TICKET_NUMBER        | varchar(13) | NO   | PRI | NULL    |       |
| SOURCE               | varchar(3)  | YES  |     | NULL    |       |
| DESTINATION          | varchar(3)  | YES  |     | NULL    |       |
| DATE_OF_BOOKING      | date        | YES  |     | NULL    |       |
| DATE_OF_TRAVEL       | date        | YES  |     | NULL    |       |
| SEATNO               | varchar(5)  | YES  |     | NULL    |       |
| CLASS                | varchar(15) | YES  |     | NULL    |       |
| DATE_OF_CANCELLATION | date        | YES  |     | NULL    |       |
| PID                  | int         | YES  | MUL | NULL    |       |
| PASSPORTNO           | varchar(10) | YES  |     | NULL    |       |
| PRICE                | int         | YES  |     | NULL    |       |
| SURCHARGE            | int         | YES  |     | NULL    |       |
+----------------------+-------------+------+-----+---------+-------+
12 rows in set (0.00 sec)

mysql> select * from ticket;
+---------------+--------+-------------+-----------------+----------------+--------+-------------+----------------------+------+------------+-------+-----------+
| TICKET_NUMBER | SOURCE | DESTINATION | DATE_OF_BOOKING | DATE_OF_TRAVEL | SEATNO | CLASS       | DATE_OF_CANCELLATION | PID  | PASSPORTNO | PRICE | SURCHARGE |
+---------------+--------+-------------+-----------------+----------------+--------+-------------+----------------------+------+------------+-------+-----------+
| 1571357215116 | SFO    | FRA         | 2016-10-15      | 2016-12-18     | 34E    | ECONOMY     | 2016-09-23           |    4 | D1002004   |  8000 |      NULL |
| 1768901333273 | IAH    | DEL         | 2016-08-21      | 2016-12-25     | 1A     | BUSINESS    | NULL                 |    2 | B9876541   | 10000 |      NULL |
| 7064321779737 | FRA    | DEL         | 2016-11-15      | 2016-12-25     | 27B    | FIRST-CLASS | NULL                 |    3 | C2345698   | 18300 |     10000 |
| 984567222299  | JFK    | BOM         | 2016-06-11      | 2016-12-20     | 45D    | ECONOMY     | 2016-12-10           |    1 | A1234568   | 95000 |      7500 |
+---------------+--------+-------------+-----------------+----------------+--------+-------------+----------------------+------+------------+-------+-----------+
4 rows in set (0.00 sec)
```

EMPLOYEE

```
mysql> desc employee;
+-----------+---------------+------+-----+---------+-------+
| Field     | Type          | Null | Key | Default | Extra |
+-----------+---------------+------+-----+---------+-------+
| SSN       | int           | NO   | PRI | NULL    |       |
| FNAME     | varchar(20)   | YES  |     | NULL    |       |
| M         | varchar(1)    | YES  |     | NULL    |       |
| LNAME     | varchar(20)   | YES  |     | NULL    |       |
| ADDRESS   | varchar(100)  | YES  |     | NULL    |       |
| PHONE     | varchar(15)   | YES  |     | NULL    |       |
| AGE       | int           | YES  |     | NULL    |       |
| SEX       | varchar(1)    | YES  |     | NULL    |       |
| JOBTYPE   | varchar(30)   | YES  |     | NULL    |       |
| ASTYPE    | varchar(30)   | YES  |     | NULL    |       |
| ETYPE     | varchar(30)   | YES  |     | NULL    |       |
| SHIFT     | varchar(20)   | YES  |     | NULL    |       |
| POSITION  | varchar(30)   | YES  |     | NULL    |       |
| AP_NAME   | varchar(100)  | YES  |     | NULL    |       |
| SALARY    | int           | YES  |     | NULL    |       |
+-----------+---------------+------+-----+---------+-------+
15 rows in set (0.00 sec)
```

```
mysql> select * from employee;
+-----------+-----------+------+----------+-----------------------------------+------------+------+------+----------------------+--------------------+-----------------------+-------+----------+-----------------------------------+--------+
| SSN       | FNAME     | M    | LNAME    | ADDRESS                           | PHONE      | AGE  | SEX  | JOBTYPE              | ASTYPE             | ETYPE                 | SHIFT | POSITION | AP_NAME                           | SALARY |
+-----------+-----------+------+----------+-----------------------------------+------------+------+------+----------------------+--------------------+-----------------------+-------+----------+-----------------------------------+--------+
| 123456789 | LINDA     | M    | GOODMAN  | 731 Fondren, Houston, TX          | 4356789345 |   35 | F    | ADMINISTRATIVE SUPPORT | RECEPTIONIST       |                       |       |          | Louisville International Airport  |  50000 |
| 125478909 | PRATIK    | T    | GOMES    | 334 VITRUVIAN PARK, ALBANY, NY    | 4444678903 |   56 | M    | TRAFFIC MONITOR      |                    | DAY                   |       |          | John F. Kennedy International Airport |  80000 |
| 324567897 | ADIT      | P    | DESAI    | 987 SOMNATH, CHANDIGARH, INDIA    | 2244658909 |   36 | M    | TRAFFIC MONITOR      |                    | DAY                   |       |          | Chandigarh International Airport  |  80000 |
| 453453453 | RAJ       | B    | SHARMA   | 345 FLOYDS, MUMBAI, INDIA         | 4326789031 |   35 | M    | AIRPORT AUTHORITY    |                    |                       |       | MANAGER  | Chhatrapati Shivaji International Airport |  90000 |
| 888665555 | SHUBHAM   | R    | GUPTA    | 567 CHANDANI CHOWK, DELHI, INDIA  | 8566778890 |   39 | M    | ADMINISTRATIVE SUPPORT | DATA ENTRY WORKER  |                       |       |          | Indira Gandhi International Airport |  50000 |
| 987654321 | SHERLOCK  | A    | HOLMES   | 123 TOP HILL, SAN Francisco, CA   | 8089654321 |   47 | M    | TRAFFIC MONITOR      |                    |                       | DAY   |          | San Francisco International Airport |  80000 |
| 987987987 | NIKITA    | C    | PAUL     | 110 SYNERGY PARK, DALLAS, TX      | 5678904325 |   33 | F    | ENGINEER             |                    | AIRPORT CIVIL ENGINEER |       |          | San Francisco International Airport |  70000 |
+-----------+-----------+------+----------+-----------------------------------+------------+------+------+----------------------+--------------------+-----------------------+-------+----------+-----------------------------------+--------+
7 rows in set (0.00 sec)
```

SQL QUERIES

1. Retrieve passenger details sorted by age in descending order

```
mysql> SELECT * FROM passenger ORDER BY AGE DESC;
+-----+------------+--------+------+--------+-----------------------------------------+------------+------+------+-------------+
| PID | PASSPORTNO | FNAME  | M    | LNAME  | ADDRESS                                 | PHONE      | AGE  | SEX  | FLIGHT_CODE |
+-----+------------+--------+------+--------+-----------------------------------------+------------+------+------+-------------+
|   1 | A1234568   | ALEN   | M    | SMITH  | 2230 NORTHSIDE, APT 11, ALBANY, NY      | 8080367290 |   30 | M    | 9W2334      |
|   3 | C2345698   | KHYATI | A    | MISHRA | 7820 MCCALLUM COURTS, APT 234, AKRON, OH | 8082267280 |   30 | F    | AA4367      |
|   2 | B9876541   | ANKITA | V    | AHIR   | 3456 VIKAS APTS, APT 102, DOMBIVLI, INDIA | 8080367280 |   26 | F    | EK3456      |
|   4 | D1002004   | SAM    | S    | JOE    | 7720 MCCALLUM BLVD, APT 1082, DALLAS, TX | 9080367266 |   23 | F    | BA1689      |
+-----+------------+--------+------+--------+-----------------------------------------+------------+------+------+-------------+
4 rows in set (0.02 sec)
```

2. Retrieve tickets with non-null cancellation dates

```
mysql> SELECT * FROM ticket WHERE DATE_OF_CANCELLATION IS NOT NULL;
+---------------+--------+-------------+----------------+----------------+--------+---------+---------------------+------+------------+-------+-----------+
| TICKET_NUMBER | SOURCE | DESTINATION | DATE_OF_BOOKING | DATE_OF_TRAVEL | SEATNO | CLASS   | DATE_OF_CANCELLATION | PID  | PASSPORTNO | PRICE | SURCHARGE |
+---------------+--------+-------------+----------------+----------------+--------+---------+---------------------+------+------------+-------+-----------+
| 1571357215116 | SFO    | FRA         | 2016-10-15     | 2016-12-18     | 34E    | ECONOMY | 2016-09-23          |    4 | D1002004   |  8000 |      NULL |
| 984567222299  | JFK    | BOM         | 2016-06-11     | 2016-12-20     | 45D    | ECONOMY | 2016-12-10          |    1 |  A1234568  | 95000 |      7500 |
+---------------+--------+-------------+----------------+----------------+--------+---------+---------------------+------+------------+-------+-----------+
2 rows in set (0.00 sec)
```

3. Retrieve passengers whose last name starts with 'S'

```
mysql> SELECT * FROM passenger WHERE LNAME LIKE 'S%';
+-----+------------+-------+------+-------+-----------------------------------+------------+------+------+-------------+
| PID | PASSPORTNO | FNAME | M    | LNAME | ADDRESS                           | PHONE      | AGE  | SEX  | FLIGHT_CODE |
+-----+------------+-------+------+-------+-----------------------------------+------------+------+------+-------------+
|   1 | A1234568   | ALEN  | M    | SMITH | 2230 NORTHSIDE, APT 11, ALBANY, NY | 8080367290 |   30 | M    | 9W2334      |
+-----+------------+-------+------+-------+-----------------------------------+------------+------+------+-------------+
1 row in set (0.00 sec)
```

4. Retrieve passengers who booked a ticket but haven't traveled yet

```
mysql> SELECT * FROM passenger WHERE PID IN (SELECT PID FROM ticket WHERE DATE_OF_TRAVEL > CURDATE());
+-----+------------+--------+------+-------+-----------------------------------------+------------+------+------+-------------+
| PID | PASSPORTNO | FNAME  | M    | LNAME | ADDRESS                                 | PHONE      | AGE  | SEX  | FLIGHT_CODE |
+-----+------------+--------+------+-------+-----------------------------------------+------------+------+------+-------------+
|   2 | B9876541   | ANKITA | V    | AHIR  | 3456 VIKAS APTS, APT 102, DOMBIVLI, INDIA | 8080367280 |   26 | F    | EK3456      |
+-----+------------+--------+------+-------+-----------------------------------------+------------+------+------+-------------+
1 row in set (0.00 sec)
```

5. Find the total price of tickets booked by passengers aged 30 or younger

```
mysql> SELECT SUM(t.PRICE + COALESCE(t.SURCHARGE, 0)) AS TOTAL_PRICE
    -> FROM ticket t
    -> INNER JOIN passenger p ON t.PID = p.PID
    -> WHERE p.AGE <= 30;
+-------------+
| TOTAL_PRICE |
+-------------+
|      148800 |
+-------------+
1 row in set (0.02 sec)
```

6. Retrieve the top 3 destinations with the highest number of booked tickets

```
mysql> SELECT t.DESTINATION, COUNT(*) AS TOTAL_TICKETS
    -> FROM ticket t
    -> GROUP BY t.DESTINATION
    -> ORDER BY TOTAL_TICKETS DESC
    -> LIMIT 5;
+-------------+---------------+
| DESTINATION | TOTAL_TICKETS |
+-------------+---------------+
| DEL         |             2 |
| FRA         |             1 |
| BOM         |             1 |
+-------------+---------------+
3 rows in set (0.01 sec)
```

7. Retrieve employees along with their job type and the number of employees in the same job type

```
mysql> SELECT e.*, j.JOBTYPE, j.NUM_EMPLOYEES
    -> FROM employee e
    -> JOIN (
    ->     SELECT JOBTYPE, COUNT(*) AS NUM_EMPLOYEES
    ->     FROM employee
    ->     GROUP BY JOBTYPE
    -> ) j ON e.JOBTYPE = j.JOBTYPE;
```

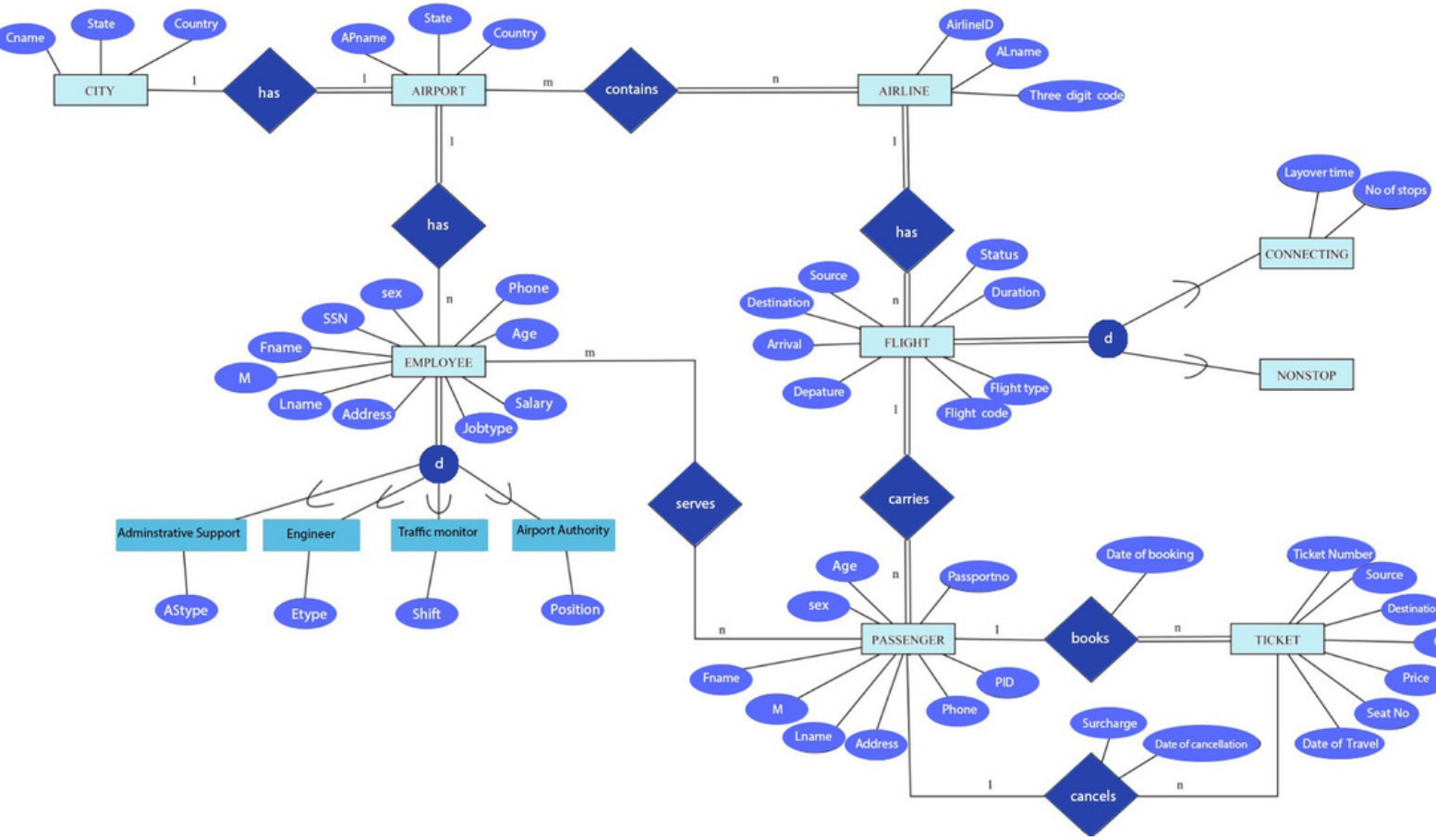
SSN	FNAME	M	LNAME	ADDRESS	PHONE	AGE	SEX	JOBTYPE	ASTYPE	ETYPE	SHIFT	POSITION	AP_NAME	SALARY	JOBTYPE	NUM_EMPLOYEES
123456789	LINDA	M	GOODMAN	731 Fondren, Houston, TX	4356789345	35	F	ADMINISTRATIVE SUPPORT	RECEPTIONIST				Louisville International Airport	50000	ADMINISTRATIVE SUPPORT	2
125478909	PRATIK	T	GOMES	334 VITRUVIAN PARK, ALBANY, NY	4444678903	56	M	TRAFFIC MONITOR		DAY			John F. Kennedy International Airport	80000	TRAFFIC MONITOR	3
324567897	ADIT	P	DESAI	987 SOMNATH, CHANDIGARH, INDIA	2244658909	36	M	TRAFFIC MONITOR		DAY			Chandigarh International Airport	80000	TRAFFIC MONITOR	3
453453453	RAJ	B	SHARMA	345 FLOYDS, MUMBAI, INDIA	4326789031	35	M	AIRPORT AUTHORITY				MANAGER	Chhatrapati Shivaji International Airport	90000	AIRPORT AUTHORITY	1
888665555	SHUBHAM	R	GUPTA	567 CHANDANI CHOWK, DELHI, INDIA	8566778890	39	M	ADMINISTRATIVE SUPPORT	DATA ENTRY WORKER				Indira Gandhi International Airport	50000	ADMINISTRATIVE SUPPORT	2
987654321	SHERLOCK	A	HOLMES	123 TOP HILL, SAN Francisco, CA	8089654321	47	M	TRAFFIC MONITOR			DAY		San Francisco International Airport	80000	TRAFFIC MONITOR	3
987987987	NIKITA	C	PAUL	110 SYNERGY PARK, DALLAS, TX	5678904325	33	F	ENGINEER		AIRPORT CIVIL ENGINEER			San Francisco International Airport	70000	ENGINEER	1

7 rows in set (0.01 sec)

DATA DICTIONARY

Table Name	Column name	Data Type	References	Default	Not Null	List of Values	Description
City	CNAME	varchar			Yes		Name of the city
	STATE	varchar					State where the city is located
	COUNTRY	varchar					Country where the city is located
Airport	AP_NAME	varchar			Yes		Name of the airport
	STATE	varchar					State where the airport is located
	COUNTRY	varchar					Country where the airport is located
	CNAME	varchar	City(CNAME)				Name of the city associated
Airline	AIRLINEID	varchar			Yes		Unique identifier for the airline
	AL_NAME	varchar					Name of the airline
	THREE_DIGIT_CODE	varchar					Three-digit code for the airline
Flight	FLIGHT_CODE	varchar			Yes		Unique identifier for the flight
	SOURCE	varchar	Airport(CNAME)		Yes		Source airport code
	DESTINATION	varchar	Airport(CNAME)		Yes		Destination airport code
	ARRIVAL	varchar					Arrival time
	DEPARTURE	varchar					Departure time
	STATUS	varchar					Flight status (e.g., On-time)
	DURATION	varchar					Duration of the flight
	FLIGHTTYPE	varchar				Direct,Non-stop	Type of flight (e.g., Direct)
	LAYOVER_TIME	varchar					Layover time (if any)
	NO_OF_STOPS	int					Number of stops in the flight
	AIRLINEID	varchar	Airline(AIRLINEID)		Yes		Identifier for the operating airline
Passenger	PID	int			Yes		Passenger ID
	PASSPORTNO	varchar			Yes		Passport number of the passenger
	FNAME	varchar					First name of the passenger
	M	varchar					Middle name initial of the passenger
	LNAME	varchar					Last name of the passenger
	ADDRESS	varchar					Address of the passenger
	PHONE	varchar					Phone number of the passenger
	AGE	int					Age of the passenger
	SEX	varchar				M, F	Gender of the passenger
	FLIGHT_CODE	varchar	Flight(FLIGHT_CODE)				Flightcode associated with passenger
Ticket	TICKET_NUMBER	varchar			Yes		Unique identifier for the ticket
	SOURCE	varchar	Airport(CNAME)		Yes		Source airport code
	DESTINATION	varchar	Airport(CNAME)		Yes		Destination airport code
	DATE_OF_BOOKING	date					Date of booking the ticket
	DATE_OF_TRAVEL	date					Date of travel of the ticket
	SEATNO	varchar					Seat number of the ticket
	CLASS	varchar				Eco,Busi,First	Class of the ticket
	DATE_OF_CANCELLATION	date					Date of ticket cancellation
	PID	int	Passenger(PID)				Passenger ID associated with ticket
	PASSPORTNO	varchar	Passenger(PASSPORTNO)				Passport no associated with ticket
	PRICE	int					Price of the ticket
	SURCHARGE	int					Surcharge of the ticket
Employee	SSN	int			Yes		Social Security Number of employee
	FNAME	varchar					First name of the employee
	M	varchar					Middle name initial of the employee
	LNAME	varchar					Last name of the employee
	ADDRESS	varchar					Address of the employee
	PHONE	varchar					Phone number of the employee
	AGE	int					Age of the employee
	SEX	varchar				M, F	Gender of the employee
	JOBTYPE	varchar					Type of job (e.g., Receptionist)
	ASTYPE	varchar					Administrative support type
	ETYPE	varchar					Engineer type
	SHIFT	varchar					Shift timing of the employee
	POSITION	varchar					Position of the employee
	AP_NAME	varchar	Airport(AP_NAME)				Airport associated with employee
	SALARY	int					Salary of the employee

ER DIAGRAM


Cname
State
Country
CITY
has
APname
State
Country
AIRPORT
contains
AirlineID
ALname
Three digit code
AIRLINE
has
has
sex
SSN
Fname
M
Lname
Address
Phone
Age
Salary
Jobtype
EMPLOYEE
d
Adminstrative Support
Engineer
Traffic monitor
Airport Authority
AStype
Etype
Shift
Position
serves
Source
Destination
Arrival
Depature
Status
Duration
Flight type
Flight code
FLIGHT
carries
Layover time
No of stops
CONNECTING
d
NONSTOP
Age
sex
Passportno
Fname
M
Lname
Address
PID
Phone
PASSENGER
books
Date of booking
Ticket Number
Source
Destination
Class
Price
Seat No
Date of Travel
TICKET
Surcharge
Date of cancellation
cancels

ER diagram contains following relationships

ENTITY 1	RELATION	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

NORMALIZATION OF DATABASE

First Normal Form (1NF)

- Data is stored in tables with rows that can be uniquely identified by a Primary Key.
- Data within each table is stored in individual columns in its most reduced form.
- There are no repeating groups.

Second Normal Form (2NF)

- All the rules from 1NF must be satisfied.
- Only those data that relates to a table's primary key is stored in each table.

Third Normal Form (3NF)

- All the rules from 2NF must be satisfied.
- There should be no intra-table dependencies between the columns in each table.

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 :-

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)