Relational Schemas

Airplane(registrationNum, model, capacity)

Destination(dName, airportCode)

Flights(flightID, passengerNum, registrationNum, departAirportCode, arrivalAirportCode, arrivalTime, arrivalDate, departTime, departDate, departGate, arrivalGate)

Passengers(fName, lName, passportID, email, address)

Travels(passortID, flightID)

Implementing the Database

create table airplane (

        registrationNum   varchar2(5) not null,

        model   varchar2(10),

        capacity   number(3),

        primary key(registrationNum));

create table destination (

        dName   varchar2(50),

        airportCode   varchar2(30) not null,

        primary key(airportCode));

create table flights (

        flightId   varchar2(10) not null,

        passengerNum   number(3),

        registrationNum   varchar2(5) not null,

        departairportCode   varchar2(30),

        arrivalairportCode   varchar2(30),

        departTime   number(4),

        departDate   number(8),

        departGate   varchar2(3),

        arrivalTime   number(4),

        arrivalDate   number(8),

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        arrivalGate            varchar2(3),

        primary key(flightId),

        foreign key(registrationNum) references airplane(registrationNum) on delete cascade)

        foreign key (departairportCode) references destination(departairportCode) on delete
cascade)

        foreign key (arrivalairportCode) references destination(arrivalairportCode) on delete
cascade);

create table passenger (

        fName                  varchar2(30),

        lName                  varchar2(30),

        passportId             number(9) not null,

        primary key(passportId));

create table travel (

        passportId             number(9) not null,

        flightId               varchar2(10) not null,

        primary key(passportId, flightId),

        foreign key(passportId) references passenger(passportId) on delete cascade,

        foreign key(flightId) references flights(flightId) on delete cascade);


insert into airplane('N328RR',  '737-8MAX', '172');

insert into airplane('N341SV', '737-8MAX', '172);

insert into airplane('N727AN', '777-323ER', '304');

insert into airplane('N17AN', '777-323ER', '304');

insert into airplane('N871AY', '787-8', '234');

insert into airplane('N872AN', '787-8', '234');

insert into destination('Dallas/Fort Worth International Airport', 'DFW');

insert into destination('O'Hare International Airport', 'ORD');

insert into destination('Charlotte Douglas International Airport', 'CLT');

insert into destination('Los Angeles International Airport', 'LAX');
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insert into destination('John F. Kennedy International Airport', 'JFK');

insert into destination('Miami International Airport', 'MIA');

insert into flights('AA 2412', '147', 'DFW', 'ORD', '1245', '040721', 'A33', '1519', '040721', 'K18');

insert into flights('AA 3044', '114', 'MSP', 'DFW', '1455', '040721', 'E13', '1633', '040721', 'G18');

insert into flights('AA 8916', '289', 'HKG', 'JFK', '0205', '040821', '126', '0600', '040821', '814');

insert into flights('AA 1151', '106', 'ATL', 'MIA', '6000', '041621', 'T12', '0750', '041621', 'D2');

insert into flights('AA 1643', '134', 'ATL', 'CLT', '0855', '041621', 'T9', '1030', '041621', 'B13');

insert into flights('AA 137', '216', 'LHR', 'LAX', '1100', '041621', 'B36', 1430', '041621', '441');

insert into passenger('James', 'Smith', '799320312');

insert into passenger('Michael', 'Jones', '517915105');

insert into passenger('Maria', 'Hernedez', '299179611');

insert into passenger('Mark', 'Anderson', '630646383');

insert into passenger('Karen', 'Anderson', '724675620');

insert into passenger('Carol', 'Evans', '506795335');

insert into travel('799320312', 'AA 2412');

insert into travel('517915105', 'AA 3044');

insert into travel('299179611', 'AA 8916');

insert into travel('630646383', 'AA 137');

insert into travel('724675620', 'AA 137');

insert into travel('506795335', 'AA 1643');

Sample Queries

1. Listing all the flights

Select *

From   flights;

2. Listing unique airplane models

Select distinct model

From   airplane;

3. Selecting a specific airplane model

Select model

From   airplane

Where model like %737%;

4. Selecting passenger names for a specific flight

Select fName, lName

From   passenger, travel

Where travel.passportId = passenger.passportId and travel.flightId = 'AA 137';

5. Selecting flights with passengers greater than 200

Select passengerNum

From   flights

Where PassengerNum > '200';

6. Selecting flights that depart after 1200

Select departTime

From   flights

Where departTime > '1200';

7. Selecting flights that originate from ATL and output their passenger numbers

Select passengerNum

From   flights

Where departairportCode = 'ATL';

8. Selecting flights that come from terminal T

Select flightId

From   flights

Where departGate like '%T' or arriveGate like '%T';