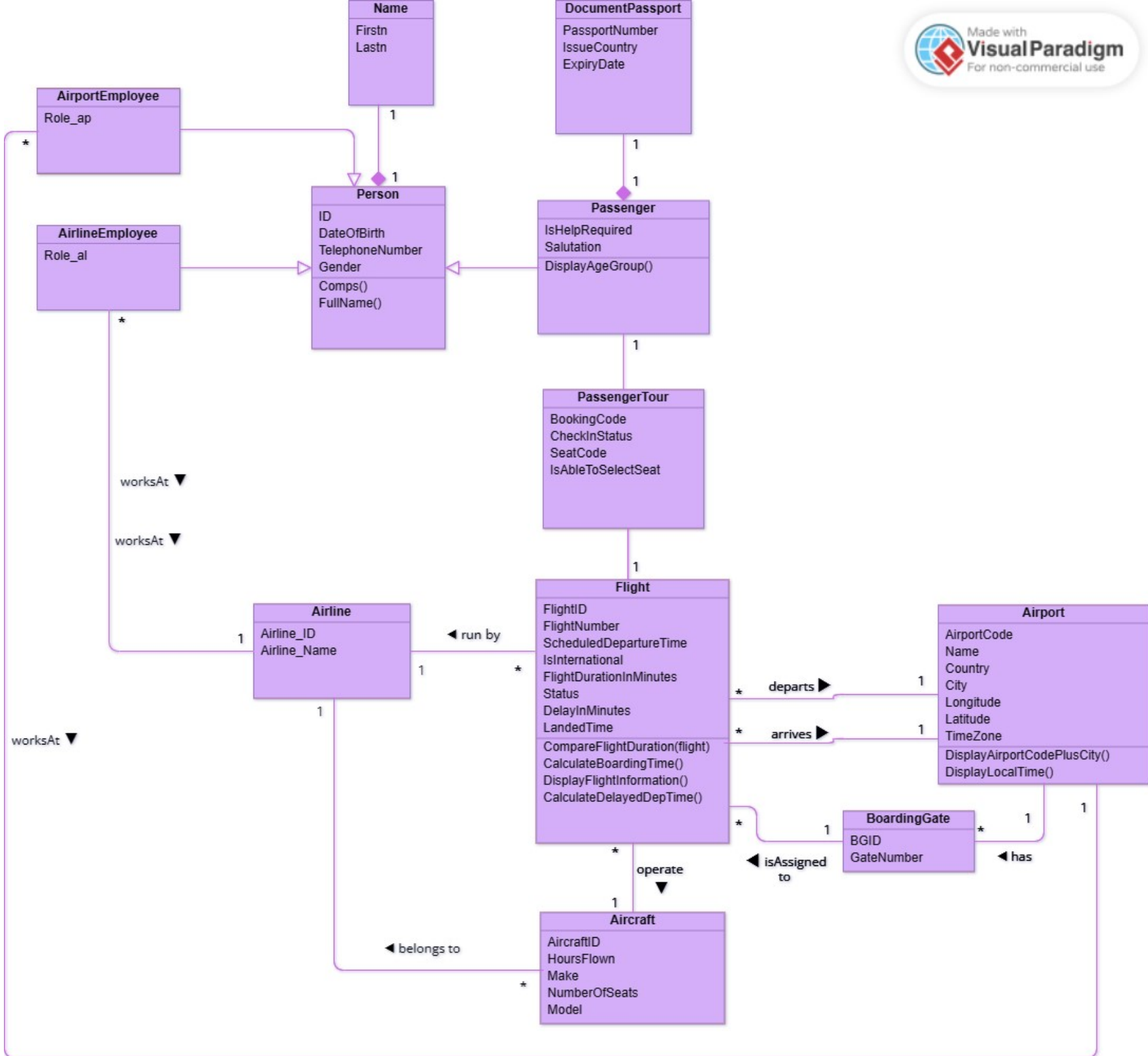


1. Modified class diagram



2. Logical schema statements (SQL)

```
set echo on
```

```
create or replace type airport_t as object (airportCode char(3), name varchar2(50),  
country varchar2(50), city varchar2(50), latitude number(8,6), longitude  
number(9,6), timezone varchar2(50), member function DisplayAirportCodePlusCity  
return  
varchar2, member function DisplayLocalTime return TIMESTAMP WITH TIME ZONE);
```

```
/
```

```
create table airport of airport_t(airportCode primary key, name NOT NULL, country  
NOT NULL, city NOT NULL, latitude NOT NULL, longitude NOT NULL, timezone NOT NULL);
```

```
create or replace type boardingGate_t as object (bgid varchar2(6), gateNumber  
varchar2(3), aoid ref airport_t);
```

```
/
```

```
create table boardingGate of boardingGate_t(bgid primary key, GateNumber NOT NULL);
```

```
create type airline_a as object( airline_id char(4), airline_name varchar2(20));
```

```
/
```

```
create table airline of airline_a(airline_id primary key);
```

```
create or replace type aircraft_t as object (aircraftID char(6), make varchar2(30),  
model varchar2(30), hoursFlown number, numberOfSeats number, airlineoid ref  
airline_a);
```

```
/
```

```
create table aircraft of aircraft_t(aircraftID primary key, make NOT NULL, model  
NOT NULL, check(numberOfSeats > 0), check(numberOfSeats < 500), check(hoursFlown >=  
0));
```

```
create or replace type flight_t as object (flightID varchar2(10), flightNumber  
varchar2(6), departureAirport ref airport_t, arrivalAirport ref airport_t, gnumber  
ref boardingGate_t, airlineoid ref airline_a, aircraftoid ref aircraft_t,  
scheduledDepartureTime TIMESTAMP WITH TIME ZONE, isInternational number(1),  
flightDurationInMinutes number, status varchar2(15), delayInMinutes number,  
landedTime TIMESTAMP WITH TIME ZONE, ORDER member function CompareFlightDuration(fl  
in  
flight_t) return integer, member function CalculateBoardingTime return TIMESTAMP  
WITH TIME ZONE, member function DisplayFlightInformation return varchar2, member  
function CalculateDelayedDepTime return TIMESTAMP WITH TIME ZONE);
```

```
/
```

```
create table flight of flight_t(flightID primary key, flightNumber NOT NULL,
```

```

scheduledDepartureTime NOT NULL, departureAirport NOT NULL, arrivalAirport NOT
NULL, airlineoid NOT NULL, check(isInternational in (0,1)),
check(flightDurationInMinutes
> 0), check(delayInMinutes >= 0), check(status in ('on time', 'delayed',
'cancelled', 'boarding', 'departed', 'arrived')));

create type name_p as object (firstn varchar2(10), lastn varchar2(10));

/

create table name of name_p;

create type person_p as object (pid char(8), pname name_p, dob date, phone
char(9),gender char(1), map member function comps return integer, member function
fullname return varchar2) not final;

/

create or replace type airport_emp under person_p(role_ap varchar2(25),oairportCode
ref airport_t);

/

create table airpEmployee of airport_emp(pid primary key, check(role_ap
in('passenger assistant','baggage handler','reservation agent','avionics
technician','airtraffic control','airport manager')));

create or replace type airline_emp under person_p(role_al varchar2(25), airlineoid
ref airline_a,overriding member function fullname return varchar2);

/

create table airlEmployee of airline_emp(pid primary key,check(role_al in('pilot',
'flight attendant','ground crew','airline manager','co-pilot')));

create or replace type documentInfo_t as object (passport_no varchar2(10),
issue_country varchar2(11), expiry_date DATE);

/

create table documentInfo of documentInfo_t(passport_no primary key);

create or replace type passenger_type under person_p (salutation varchar2(20),
ishelpRequired varchar2(10) , aoid ref documentInfo_t, member function
DisplayAgeGroup return varchar2);

/

create table passenger of passenger_type(pid primary key, salutation NOT NULL,
ishelpRequired NOT NULL);

```

```
create type passengerTour_t as object (bookingCode varchar2(10), checkinStatus  
varchar2(10), seatCode varchar2(10), isAbleToSelectSeat varchar2(10), poid ref  
passenger_type, foid ref flight_t);
```

```
/
```

```
create table passengerTour of passengerTour_t (bookingCode primary key, poid NOT  
NULL, foid NOT NULL);
```

2.1 CREATE TYPE BODY statements (SQL)

```
set echo on
```

```
create or replace type body airport_t as member function DisplayLocalTime return  
TIMESTAMP WITH TIME ZONE
```

```
is
```

```
begin
```

```
    return FROM_TZ(SYSTIMESTAMP, SESSIONTIMEZONE) AT TIME ZONE self.timezone;
```

```
end;
```

```
member function DisplayAirportCodePlusCity return varchar2
```

```
is
```

```
begin
```

```
    return self.airportCode||' '||self.city;
```

```
end;
```

```
end;
```

```
/
```

```
create or replace type body flight_t as member function CalculateDelayedDepTime  
return TIMESTAMP WITH TIME ZONE
```

```
is
```

```
begin
```

```
    return self.ScheduledDepartureTime + INTERVAL '1' minute * self.delayInMinutes;
```

```
end;
```

```
member function CalculateBoardingTime return TIMESTAMP WITH TIME ZONE
```

```
is
```

```
begin
```

```
    IF self.isInternational = 1 THEN
```

```
        return self.CalculateDelayedDepTime() - interval '90' minute;
```

```
    ELSE
```

```
        return self.CalculateDelayedDepTime() - interval '45' minute;
```

```
    END IF;
```

```
end;
```

```
member function DisplayFlightInformation return varchar2
```

```
is
```

```
begin
```

```
    return 'Flight Number: '|| self.flightNumber||' STATUS '||self.status||' UPDATED
```

```
DEPARTURE TIME: '||self.CalculateDelayedDepTime()||' BOARDING TIME:
```

```
'||self.CalculateBoardingTime();
```

```
end;
```

```
ORDER member function CompareFlightDuration(fl in flight_t) return integer
```

```
is
```

```
result integer := 0;
```

```
begin
```

```
    if self.flightDurationInMinutes > fl.flightDurationInMinutes then
```

```
        result := 1;
```

```
    else if fl.flightDurationInMinutes > self.flightDurationInMinutes then
```

```
        result := -1;
```



```
    end if;
    end if;
    return result;
end;
```

```
end;
/
```

```
create or replace type body person_p as map member function comps return integer
is
begin
    return sysdate-self.dob;
end;
member function fullname return varchar2
is
begin
    return self.pname.firstn||' '||self.pname.lastn;
end;
end;
/
```

```
create or replace type body airline_emp as overriding member function fullname
return varchar2
is
begin
    return self.pname.lastn||' '||self.pname.firstn;
end;
end;
/
```

```
create or replace type body passenger_type as member function DisplayAgeGroup
return varchar2
is
    age integer;
begin
    age := round(self.comps()/365,0);
    IF age < 2 THEN
        return 'infant';
    ELSE IF age < 12 THEN
        return 'children';
    ELSE IF age < 65 THEN
        return 'adult';
    ELSE
        return 'elder';
    END IF;
    END IF;
    END IF;
end;
end;
/
```

3. Logical schema spool file

```

SQL> @ etapa1.sql
SQL> set echo on
SQL>
SQL> create or replace type airport_t as object (airportCode char(3), name
varchar2(50), country varchar2(50), city varchar2(50), latitude number(8,6),
longitude number(9,6), timezone varchar2(50), member function
DisplayAirportCodePlusCity return
  2  varchar2, member function DisplayLocalTime return TIMESTAMP WITH TIME ZONE);
  3
  4  /

```

Type created.

```

SQL>
SQL> create table airport of airport_t(airportCode primary key, name NOT NULL,
country NOT NULL, city NOT NULL, latitude NOT NULL, longitude NOT NULL, timezone
NOT NULL);

```

Table created.

```

SQL>
SQL> create or replace type boardingGate_t as object (bgid varchar2(6), gateNumber
varchar2(3), aoid ref airport_t);
  2
  3  /

```

Type created.

```

SQL>
SQL> create table boardingGate of boardingGate_t(bgid primary key, GateNumber NOT
NULL);

```

Table created.

```

SQL>
SQL> create type airline_a as object( airline_id char(4), airline_name
varchar2(20));
  2
  3  /

```

Type created.

```

SQL>
SQL> create table airline of airline_a(airline_id primary key);

```

Table created.

```

SQL>
SQL> create or replace type aircraft_t as object (aircraftID char(6), make
varchar2(30), model varchar2(30), hoursFlown number, numberOfSeats number,

```

```
airlineoid ref airline_a);  
2  
3 /
```

Type created.

```
SQL>  
SQL> create table aircraft of aircraft_t(aircraftID primary key, make NOT NULL,  
model NOT NULL, check(numberOfSeats > 0), check(numberOfSeats < 500),  
check(hoursFlown >= 0));
```

Table created.

```
SQL>  
SQL> create or replace type flight_t as object (flightID varchar2(10), flightNumber  
varchar2(6), departureAirport ref airport_t, arrivalAirport ref airport_t, gnumber  
ref boardingGate_t, airlineoid ref airline_a, aircraftoid ref aircraft_t,  
2 scheduledDepartureTime TIMESTAMP WITH TIME ZONE, isInternational number(1),  
flightDurationInMinutes number, status varchar2(15), delayInMinutes number,  
landedTime TIMESTAMP WITH TIME ZONE, ORDER member function CompareFlightDuration(fl  
in  
3 flight_t) return integer, member function CalculateBoardingTime return  
TIMESTAMP WITH TIME ZONE, member function DisplayFlightInformation return varchar2,  
member function CalculateDelayedDepTime return TIMESTAMP WITH TIME ZONE);  
4  
5 /
```

Type created.

```
SQL>  
SQL> create table flight of flight_t(flightID primary key, flightNumber NOT NULL,  
scheduledDepartureTime NOT NULL, departureAirport NOT NULL, arrivalAirport NOT  
NULL, airlineoid NOT NULL, check(isInternational in (0,1)),  
check(flightDurationInMinutes  
2 > 0), check(delayInMinutes >= 0), check(status in ('on time', 'delayed',  
'cancelled', 'boarding', 'departed', 'arrived')));
```

Table created.

```
SQL>  
SQL> create type name_p as object (firstn varchar2(10), lastn varchar2(10));  
2  
3 /
```

Type created.

```
SQL>  
SQL> create table name of name_p;
```

Table created.

SQL>

```
SQL> create type person_p as object (pid char(8), pname name_p, dob date, phone
char(9),gender char(1), map member function comps return integer, member function
fullname return varchar2) not final;
```

```
2
3 /
```

Type created.

SQL>

```
SQL> create or replace type airport_emp under person_p(role_ap
varchar2(25),oairportCode ref airport_t);
```

```
2
3 /
```

Type created.

SQL>

```
SQL> create table airpEmployee of airport_emp(pid primary key, check(role_ap
in('passenger assistant','baggage handler','reservation agent','avionics
technician','airtraffic control','airport manager')));
```

Table created.

SQL>

```
SQL> create or replace type airline_emp under person_p(role_al varchar2(25),
airlineoid ref airline_a,overriding member function fullname return varchar2);
```

```
2
3 /
```

Type created.

SQL>

```
SQL> create table airlEmployee of airline_emp(pid primary key,check(role_al
in('pilot', 'flight attendant','ground crew','airline manager','co-pilot')));
```

Table created.

SQL>

```
SQL> create or replace type documentInfo_t as object (passport_no varchar2(10),
issue_country varchar2(11), expiry_date DATE);
```

```
2
3 /
```

Type created.

SQL>

```
SQL> create table documentInfo of documentInfo_t(passport_no primary key);
```

Table created.

SQL>

```
SQL> create or replace type passenger_type under person_p (salutation varchar2(20),
ishelpRequired varchar2(10) , aoid ref documentInfo_t, member function
DisplayAgeGroup return varchar2);
```

2

3 /

Type created.

SQL>

```
SQL> create table passenger of passenger_type(pid primary key, salutation NOT NULL,
ishelpRequired NOT NULL);
```

Table created.

SQL>

```
SQL> create type passengerTour_t as object (bookingCode varchar2(10), checkinStatus
varchar2(10), seatCode varchar2(10), isAbleToSelectSeat varchar2(10), poid ref
passenger_type, foid ref flight_t);
```

2

3 /

Type created.

SQL>

```
SQL> create table passengerTour of passengerTour_t (bookingCode primary key, poid
NOT NULL, foid NOT NULL);
```

Table created.

SQL>

SQL>

SQL>

SQL>

SQL> @ etapa2.sql

SQL> set echo on

SQL>

```
SQL> create or replace type body airport_t as member function DisplayLocalTime
return TIMESTAMP WITH TIME ZONE
```

2 is

3 begin

4 return FROM_TZ(SYSTIMESTAMP, SESSIONTIMEZONE) AT TIME ZONE self.timezone;

5 end;

6 member function DisplayAirportCodePlusCity return varchar2

7 is

8 begin

9 return self.airportCode||' '||self.city;

10 end;

```
11 end;
12 /
```

Type body created.

SQL>

SQL>

SQL> create or replace type body flight_t as member function

CalculateDelayedDepTime return TIMESTAMP WITH TIME ZONE

```
2 is
```

```
3 begin
```

```
4     return self.ScheduledDepartureTime + INTERVAL '1' minute *
```

```
self.delayInMinutes;
```

```
5 end;
```

```
6
```

```
7 member function CalculateBoardingTime return TIMESTAMP WITH TIME ZONE
```

```
8 is
```

```
9 begin
```

```
10     IF self.isInternational = 1 THEN
```

```
11         return self.CalculateDelayedDepTime() - interval '90' minute;
```

```
12     ELSE
```

```
13         return self.CalculateDelayedDepTime() - interval '45' minute;
```

```
14     END IF;
```

```
15 end;
```

```
16
```

```
17 member function DisplayFlightInformation return varchar2
```

```
18 is
```

```
19 begin
```

```
20     return 'Flight Number: ' || self.flightNumber || ' STATUS ' || self.status ||
```

```
UPDATED DEPARTURE TIME: ' || self.CalculateDelayedDepTime() || ' BOARDING TIME:
```

```
' || self.CalculateBoardingTime();
```

```
21 end;
```

```
22
```

```
23 ORDER member function CompareFlightDuration(fl in flight_t) return integer
```

```
24 is
```

```
25 result integer := 0;
```

```
26 begin
```

```
27     if self.flightDurationInMinutes > fl.flightDurationInMinutes then
```

```
28         result := 1;
```

```
29     else if fl.flightDurationInMinutes > self.flightDurationInMinutes then
```

```
30         result := -1;
```

```
31     end if;
```

```
32     end if;
```

```
33     return result;
```

```
34 end;
```

```
35
```

```
36 end;
```

```
37 /
```

Type body created.

```

SQL>
SQL> create or replace type body person_p as map member function comps return
integer
2      is
3      begin
4      return sysdate-self.dob;
5      end;
6      member function fullname return varchar2
7      is
8      begin
9      return self.pname.firstn||' '||self.pname.lastn;
10     end;
11 end;
12 /

```

Type body created.

```

SQL>
SQL> create or replace type body airline_emp as overriding member function fullname
return varchar2
2      is
3      begin
4      return self.pname.lastn||' '||self.pname.firstn;
5      end;
6 end;
7 /

```

Type body created.

```

SQL>
SQL> create or replace type body passenger_type as member function DisplayAgeGroup
return varchar2
2      is
3      age integer;
4      begin
5          age := round(self.comps())/365,0);
6      IF age < 2 THEN
7          return 'infant';
8      ELSE IF age < 12 THEN
9          return 'children';
10     ELSE IF age < 65 THEN
11         return 'adult';
12     ELSE
13         return 'elder';
14     END IF;
15     END IF;
16     END IF;
17 end;
18 end;

```


19 /

Type body created.

SQL>

SQL>

SQL>

SQL> spool off

4. Data insertion spool file

```
SQL> @ etapa3.sql
```

```
SQL> set echo on;
```

```
SQL>
```

```
SQL> insert into airport values (airport_t('YVR', 'Vancouver International  
Airport', 'Canada', 'Vancouver', 49.194722, -123.183889, 'Etc/GMT+7'));
```

```
1 row created.
```

```
SQL>
```

```
SQL> insert into airport values (airport_t('YYZ', 'Toronto Pearson International  
Airport', 'Canada', 'Toronto', 43.676667, -79.630556, 'Etc/GMT+4'));
```

```
1 row created.
```

```
SQL>
```

```
SQL> insert into airport values (airport_t('HNL', 'Honolulu International Airport',  
'United States of America', 'Honolulu', 21.318611, -157.9225, 'Etc/GMT+10'));
```

```
1 row created.
```

```
SQL>
```

```
SQL> insert into airport values (airport_t('LAX', 'Los Angeles International  
Airport', 'United States of America', 'Los Angeles', 33.9425, -118.408056,  
'Etc/GMT+7'));
```

```
1 row created.
```

```
SQL>
```

```
SQL> insert into airport values (airport_t('LHR', 'London Heathrow Airport',  
'United Kingdom', 'London', 51.4775, -0.461389, 'Etc/GMT-1'));
```

```
1 row created.
```

```
SQL>
```

```
SQL> insert into airport values (airport_t('GRU', 'Sao Paulo/Guarulhos  
International Airport', 'Brazil', 'Sao Paulo', -23.435556, -46.473056,  
'Etc/GMT+3'));
```

```
1 row created.
```

```
SQL>
```

```
SQL> insert into boardinggate values (boardinggate_t('YVRA20', 'A20', (select  
ref(a) from airport a where airportCode = 'YVR')));
```

```
1 row created.
```

```
SQL>
```

```
SQL> insert into boardinggate values (boardinggate_t('YYZA20', 'A20', (select  
ref(a) from airport a where airportCode = 'YYZ')));
```

1 row created.

SQL>

```
SQL> insert into boardinggate values (boardinggate_t('GRUA20', 'A20', (select  
ref(a) from airport a where airportCode = 'GRU')));
```

1 row created.

SQL>

```
SQL> insert into boardinggate values (boardinggate_t('HNLA20', 'A20', (select  
ref(a) from airport a where airportCode = 'HNL')));
```

1 row created.

SQL>

```
SQL> insert into boardinggate values (boardinggate_t('LAXA20', 'A20', (select  
ref(a) from airport a where airportCode = 'LAX')));
```

1 row created.

SQL>

```
SQL> insert into boardinggate values (boardinggate_t('LHRA20', 'A20', (select  
ref(a) from airport a where airportCode = 'LHR')));
```

1 row created.

SQL>

```
SQL> insert into boardinggate values (boardinggate_t('YVRA15', 'A15', (select  
ref(a) from airport a where airportCode = 'YVR')));
```

1 row created.

SQL>

```
SQL> insert into boardinggate values (boardinggate_t('YYZA15', 'A15', (select  
ref(a) from airport a where airportCode = 'YYZ')));
```

1 row created.

SQL>

```
SQL> insert into boardinggate values (boardinggate_t('GRUA15', 'A15', (select  
ref(a) from airport a where airportCode = 'GRU')));
```

1 row created.

SQL>

```
SQL> insert into boardinggate values (boardinggate_t('HNLA15', 'A15', (select  
ref(a) from airport a where airportCode = 'HNL')));
```

1 row created.

```
SQL>
SQL> insert into boardinggate values (boardinggate_t('LAXA15', 'A15', (select
ref(a) from airport a where airportCode = 'LAX')));
```

1 row created.

```
SQL>
SQL> insert into boardinggate values (boardinggate_t('LHRA15', 'A15', (select
ref(a) from airport a where airportCode = 'LHR')));
```

1 row created.

```
SQL>
SQL> insert into airline values(airline_a( '8323','Delta Air Lines'));
```

1 row created.

```
SQL>
SQL> insert into airline values(airline_a('3908','Turkish Airlines'));
```

1 row created.

```
SQL>
SQL> insert into airline values(airline_a('0538','Air Canada'));
```

1 row created.

```
SQL>
SQL> insert into airline values(airline_a('4555','Air France-KLM'));
```

1 row created.

```
SQL>
SQL> insert into airline values(airline_a('4139','Aeromexico'));
```

1 row created.

```
SQL>
SQL> insert into airline values(airline_a('2771','Afrijet'));
```

1 row created.

```
SQL>
SQL> insert into airline values(airline_a('UA', 'United Airlines'));
```

1 row created.

```
SQL>
SQL> insert into aircraft values (aircraft_t('AB1310', 'Boeing', 'B777', 500, 350,
(select ref(a) from airline a where airline_ID = 'UA')));
```

1 row created.

```
SQL> insert into aircraft values (aircraft_t('AA5090', 'Airbus', 'A320', 1500, 180,
(select ref(a) from airline a where airline_ID = '0538')));
```

1 row created.

```
SQL> insert into aircraft values (aircraft_t('AE3665', 'Embraer', 'E195', 3500,
120, (select ref(a) from airline a where airline_ID = '8323')));
```

1 row created.

```
SQL> insert into aircraft values (aircraft_t('AB2310', 'Boeing', 'B777', 6000, 330,
(select ref(a) from airline a where airline_ID = '3908')));
```

1 row created.

```
SQL> insert into aircraft values (aircraft_t('AA6090', 'Airbus', 'A320', 25000,
170, (select ref(a) from airline a where airline_ID = '0538')));
```

1 row created.

```
SQL> insert into aircraft values (aircraft_t('AE4665', 'Embraer', 'E195', 45000,
115, (select ref(a) from airline a where airline_ID = '4139')));
```

1 row created.

```
SQL> insert into aircraft values (aircraft_t('AB3310', 'Boeing', 'B787', 6700, 250,
(select ref(a) from airline a where airline_ID = '0538')));
```

1 row created.

```
SQL> insert into aircraft values (aircraft_t('AA7090', 'Airbus', 'A380', 27000,
250, (select ref(a) from airline a where airline_ID = '4555')));
```

1 row created.

```
SQL> insert into aircraft values (aircraft_t('AE5665', 'Embraer', 'E190', 47000,
105, (select ref(a) from airline a where airline_ID = '8323')));
```

1 row created.

SQL>

```
SQL> insert into flight values (flight_t(
  2 'U1',
  3 'UA30',
  4 (select ref(dpa) from airport dpa where airportcode = 'LAX'),
  5 (select ref(ara) from airport ara where airportcode = 'HNL'),
  6 (select ref(bg) from boardinggate bg where BGID = 'LAXA15'),
```

```

7 (select ref(al) from airline al where airline_ID = 'UA'),
8 (select ref(ac) from aircraft ac where aircraftID = 'AB1310'),
9 timestamp '2023-11-29 07:00:00 -7:00',
10 0,
11 317,
12 'delayed',
13 30,
14 null
15 ));

```

1 row created.

SQL>

```

SQL> insert into flight values (flight_t(
2 'DA1',
3 'DA650',
4 (select ref(dpa) from airport dpa where airportcode = 'LAX'),
5 (select ref(ara) from airport ara where airportcode = 'HNL'),
6 (select ref(bg) from boardinggate bg where BGID = 'LAXA15'),
7 (select ref(al) from airline al where airline_ID = '8323'),
8 (select ref(ac) from aircraft ac where aircraftID = 'AE3665'),
9 timestamp '2023-07-12 21:00:00 -7:00',
10 0,
11 317,
12 'arrived',
13 0,
14 timestamp '2023-07-12 23:17:00 -10:00'
15 ));

```

1 row created.

SQL>

```

SQL> insert into flight values (flight_t(
2 'AC1',
3 'AC1450',
4 (select ref(dpa) from airport dpa where airportcode = 'YVR'),
5 (select ref(ara) from airport ara where airportcode = 'YYZ'),
6 (select ref(bg) from boardinggate bg where BGID = 'YVRA20'),
7 (select ref(al) from airline al where airline_ID = '0538'),
8 (select ref(ac) from aircraft ac where aircraftID = 'AB3310'),
9 timestamp '2023-08-21 13:00:00 -7:00',
10 0,
11 281,
12 'arrived',
13 0,
14 timestamp '2023-08-21 20:41:00 -4:00'
15 ));

```

1 row created.

```

SQL>
SQL> insert into flight values (flight_t(
  2  'AC2',
  3  'AC3450',
  4  (select ref(dpa) from airport dpa where airportcode = 'YYZ'),
  5  (select ref(ara) from airport ara where airportcode = 'LHR'),
  6  (select ref(bg) from boardinggate bg where BGID = 'YYZA20'),
  7  (select ref(al) from airline al where airline_ID = '0538'),
  8  (select ref(ac) from aircraft ac where aircraftID = 'AB3310'),
  9  timestamp '2023-11-14 13:00:00 -4:00',
10  1,
11  457,
12  'on time',
13  0,
14  null
15  ));

```

1 row created.

```

SQL>
SQL> insert into flight values (flight_t(
  2  'U2',
  3  'UA30',
  4  (select ref(dpa) from airport dpa where airportcode = 'LAX'),
  5  (select ref(ara) from airport ara where airportcode = 'HNL'),
  6  (select ref(bg) from boardinggate bg where BGID = 'LAXA20'),
  7  (select ref(al) from airline al where airline_ID = 'UA'),
  8  (select ref(ac) from aircraft ac where aircraftID = 'AB1310'),
  9  timestamp '2023-08-24 10:00:00 -7:00',
10  0,
11  317,
12  'arrived',
13  30,
14  timestamp '2023-08-24 12:47:00 -10:00'
15  ));

```

1 row created.

```

SQL>
SQL>
SQL> insert into airpEmployee
values(airport_emp('12345678',name_p('Dave','Smith'),'01-May-1995','34-678999','M',
'passenger assistant',(select ref(rp) from airport rp where
rp.airportCode='YVR')));

```

1 row created.

```

SQL>
SQL> insert into airpEmployee values(airport_emp('33345678',name_p('Many','Smith'),
  2  '3-Aug-2000','34-632569','M','passenger assistant',(select ref(rp) from

```



```
airport rp where rp.airportCode='LAX')));
```

1 row created.

```
SQL>
```

```
SQL> insert into airpEmployee values(airport_emp('12346789',name_p('Seth','Jones'),
2      '01-Jun-1995','34-678945','M','reservation agent',(select ref(rp) from
airport rp where rp.airportCode='HNL')));
```

1 row created.

```
SQL>
```

```
SQL> insert into airpEmployee
values(airport_emp('33245339',name_p('Lily','Taylor'),
2      '5-Jan-2001','34-632669','F','airport manager',
3      (select ref(rp) from airport rp where rp.airportCode='YYZ')));
```

1 row created.

```
SQL>
```

```
SQL> insert into airpEmployee
values(airport_emp('33245434',name_p('Riley','MacDonald'),
2      '5-Jan-2001','34-633269','F','airtraffic control',
3      (select ref(rp) from airport rp where rp.airportCode='HNL')));
```

1 row created.

```
SQL>
```

```
SQL> insert into airpEmployee values(airport_emp('33245675',name_p('Leo','De Cat'),
2      '4-Feb-2002','34-633209','M','avionics technician',
3      (select ref(rp) from airport rp where rp.airportCode='GRU')));
```

1 row created.

```
SQL>
```

```
SQL>
```

```
SQL> insert into AIRLEMPLOYEE
values(airline_emp('43245675',name_p('Gilbert','Cote'),
2      '4-Feb-1996','34-563209','M','flight attendant',
3      (select ref(ar) from airline ar where ar.airline_id='8323')));
```

1 row created.

```
SQL>
```

```
SQL> insert into AIRLEMPLOYEE
values(airline_emp('46545675',name_p('Martha','Lewis'),
2      '20-Mar-1998','34-563222','F','flight attendant',
3      (select ref(ar) from airline ar where ar.airline_id='3908')));
```

1 row created.

```

SQL>
SQL> insert into AIRLEMPLOYEE values(airline_emp('46545347',name_p('Jym','Lewis'),
2      '05-Aug-1994','34-563278','M','pilot',
3      (select ref(ar) from airline ar where ar.airline_id='4139')));

1 row created.

SQL>
SQL> insert into AIRLEMPLOYEE
values(airline_emp('46986347',name_p('Mary','Wilson'),
2      '05-June-1995','34-993278','F','co-pilot',
3      (select ref(ar) from airline ar where ar.airline_id='4555')));

1 row created.

SQL>
SQL> insert into documentInfo values
(documentInfo_t('A001122','Canada',TO_DATE('17/12/2025', 'DD/MM/YYYY' )));

1 row created.

SQL> insert into documentInfo values
(documentInfo_t('A002244','USA',TO_DATE('17/12/2035', 'DD/MM/YYYY' )));

1 row created.

SQL> insert into documentInfo values
(documentInfo_t('A001166','Japan',TO_DATE('17/02/2029', 'DD/MM/YYYY' )));

1 row created.

SQL> insert into documentInfo values
(documentInfo_t('A002288','Brazil',TO_DATE('07/12/2032', 'DD/MM/YYYY' )));

1 row created.

SQL> insert into documentInfo values
(documentInfo_t('A009999','Germany',TO_DATE('07/12/2032', 'DD/MM/YYYY' )));

1 row created.

SQL> insert into documentInfo values
(documentInfo_t('A009998','Germany',TO_DATE('07/12/2032', 'DD/MM/YYYY' )));

1 row created.

SQL>
SQL> insert into passenger values (passenger_type('1234', name_p('Johnny', 'Depp'),
TO_DATE('09/06/1963', 'DD/MM/YYYY' ), '647780775', 'M','MS','YES',(select ref(a)

```

```
from documentInfo a where passport_no =  
2 'A002244')));
```

1 row created.

SQL>

```
SQL> insert into passenger values (passenger_type('1005', name_p('Mouralii', 'Ki'),  
TO_DATE('10/01/2005', 'DD/MM/YYYY' ), '649690775', 'F','MS','YES',(select ref(a)  
from documentInfo a where passport_no =  
2 'A001122')));
```

1 row created.

SQL>

```
SQL> insert into passenger values (passenger_type('1008', name_p('Hazel', 'Hu'),  
TO_DATE('17/12/2005', 'DD/MM/YYYY' ), '649680775', 'F','MS','YES',(select ref(a)  
from documentInfo a where passport_no =  
2 'A002288')));
```

1 row created.

SQL>

```
SQL> insert into passenger values (passenger_type('1009', name_p('Marina', 'Li'),  
TO_DATE('18/11/2005', 'DD/MM/YYYY' ), '649690775', 'F','MS','YES',(select ref(a)  
from documentInfo a where passport_no =  
2 'A001166')));
```

1 row created.

SQL>

```
SQL> insert into passenger values (passenger_type('1007', name_p('Mukta', 'Dey'),  
TO_DATE('17/12/1995', 'DD/MM/YYYY' ), '647680775', 'F','MS','YES',(select ref(a)  
from documentInfo a where passport_no =  
2 'A002244')));
```

1 row created.

SQL>

```
SQL> insert into passenger values (passenger_type('2007', name_p('Monique',  
'Schroeder'), TO_DATE('31/12/2022', 'DD/MM/YYYY' ), '647999999',  
'F','MS','YES',(select ref(a) from documentInfo a where  
2 passport_no = 'A009999')));
```

1 row created.

SQL>

```
SQL> insert into passenger values (passenger_type('2008', name_p('Suzanne',  
'Schroeder'), TO_DATE('31/12/2018', 'DD/MM/YYYY' ), '647888888',  
'F','MS','YES',(select ref(a) from documentInfo a where  
2 passport_no = 'A009998')));
```

1 row created.

SQL>

```
SQL> insert into passengerTour values (passengerTour_t('T1231','CHECKED','L01',
'YES',(select ref(p) from passenger p where pid = '1234')),(select ref(f) from
flight f where flightID = 'DA1')));
```

1 row created.

SQL>

```
SQL> insert into passengerTour values (passengerTour_t('T1232','CHECKED','L03',
'YES',(select ref(p) from passenger p where pid = '1234')),(select ref(f) from
flight f where flightID = 'U2')));
```

1 row created.

SQL>

```
SQL> insert into passengerTour values (passengerTour_t('T1235','CHECKED','L03',
'YES',(select ref(p) from passenger p where pid = '1009')),(select ref(f) from
flight f where flightID = 'AC2')));
```

1 row created.

SQL>

```
SQL> insert into passengerTour values (passengerTour_t('T1234','CHECKED','L03',
'YES',(select ref(p) from passenger p where pid = '1007')),(select ref(f) from
flight f where flightID = 'DA1')));
```

1 row created.

SQL>

```
SQL> insert into passengerTour values (passengerTour_t('T1245','CHECKED','L04',
'NO',(select ref(p) from passenger p where pid = '1008')),(select ref(f) from
flight f where flightID = 'AC1')));
```

1 row created.

SQL>

```
SQL> insert into passengerTour values (passengerTour_t('T1345','CHECKED','L05',
'NO',(select ref(p) from passenger p where pid = '1005')),(select ref(f) from
flight f where flightID = 'U1')));
```

1 row created.

SQL>

SQL>

SQL> spool off

4.1 Proof that object tables are populated (spool file)

```
SQL> SELECT * FROM airport;
```

```
AIR NAME
```

```
COUNTRY
```

```
CITY
```

```
LATITUDE
```

```
LONGITUDE
```

```
TIMEZONE
```

```
YVR Vancouver International Airport
```

```
Canada
```

```
Vancouver
```

```
49.194722 -123.18389
```

```
Etc/GMT+7
```

```
AIR NAME
```

```
COUNTRY
```

```
CITY
```

```
LATITUDE
```

```
LONGITUDE
```

```
TIMEZONE
```

```
YYZ Toronto Pearson International Airport
```

```
Canada
```

```
Toronto
```

```
43.676667 -79.630556
```

```
Etc/GMT+4
```

```
AIR NAME
```

```
COUNTRY
```

```
CITY
```

```
LATITUDE
```

```
LONGITUDE
```

```
TIMEZONE
```

```
HNL Honolulu International Airport
```

```
United States of America
```

```
Honolulu
```

```
21.318611 -157.9225
```

```
Etc/GMT+10
```

```
AIR NAME
```

```
COUNTRY
```

```
CITY
```

```
LATITUDE
```

```
LONGITUDE
```

TIMEZONE

LAX Los Angeles International Airport
United States of America
Los Angeles
Etc/GMT+7

33.9425 -118.40806

AIR NAME

COUNTRY

CITY

LATITUDE LONGITUDE

TIMEZONE

LHR London Heathrow Airport
United Kingdom
London
Etc/GMT-1

51.4775 -.461389

AIR NAME

COUNTRY

CITY

LATITUDE LONGITUDE

TIMEZONE

GRU Sao Paulo/Guarulhos International Airport
Brazil
Sao Paulo
Etc/GMT+3

-23.435556 -46.473056

6 rows selected.

SQL>

SQL> SELECT * FROM boardingGate;

BGID GAT

AOID

YVRA20 A20

00002202080924694CBA9DEF76E0603F82E14E7A4E091B44FD6660F1D5E0603F82E14E3C8E

YYZA20 A20

00002202080924694CBA9EEF76E0603F82E14E7A4E091B44FD6660F1D5E0603F82E14E3C8E

GRUA20 A20
00002202080924694CBAA2EF76E0603F82E14E7A4E091B44FD6660F1D5E0603F82E14E3C8E

BGID GAT

AOID

HNLA20 A20
00002202080924694CBA9FEF76E0603F82E14E7A4E091B44FD6660F1D5E0603F82E14E3C8E

LAXA20 A20
00002202080924694CBAA0EF76E0603F82E14E7A4E091B44FD6660F1D5E0603F82E14E3C8E

LHRA20 A20
00002202080924694CBAA1EF76E0603F82E14E7A4E091B44FD6660F1D5E0603F82E14E3C8E

BGID GAT

AOID

YVRA15 A15
00002202080924694CBA9DEF76E0603F82E14E7A4E091B44FD6660F1D5E0603F82E14E3C8E

YYZA15 A15
00002202080924694CBA9EEF76E0603F82E14E7A4E091B44FD6660F1D5E0603F82E14E3C8E

GRUA15 A15
00002202080924694CBAA2EF76E0603F82E14E7A4E091B44FD6660F1D5E0603F82E14E3C8E

BGID GAT

AOID

HNLA15 A15
00002202080924694CBA9FEF76E0603F82E14E7A4E091B44FD6660F1D5E0603F82E14E3C8E

LAXA15 A15
00002202080924694CBAA0EF76E0603F82E14E7A4E091B44FD6660F1D5E0603F82E14E3C8E

LHRA15 A15
00002202080924694CBAA1EF76E0603F82E14E7A4E091B44FD6660F1D5E0603F82E14E3C8E

12 rows selected.

SQL>


```
SQL> SELECT * FROM airline;
```

```
AIRL AIRLINE_NAME
```

```
-----
```

```
8323 Delta Air Lines
3908 Turkish Airlines
0538 Air Canada
4555 Air France-KLM
4139 Aeromexico
2771 Afrijet
UA   United Airlines
```

```
7 rows selected.
```

```
SQL>
```

```
SQL> SELECT * FROM aircraft;
```

```
AIRCRA MAKE                                MODEL                                HOURSFLOWN
```

```
-----
```

```
NUMBEROFSEATS
```

```
-----
```

```
AIRLINEOID
```

```
-----
```

```
AB1310 Boeing                                B777                                500
      350
```

```
00002202080924694CBAB5EF76E0603F82E14E7A4E091B44FD666DF1D5E0603F82E14E3C8E
```

```
AA5090 Airbus                                A320                                1500
      180
```

```
00002202080924694CBAB1EF76E0603F82E14E7A4E091B44FD666DF1D5E0603F82E14E3C8E
```

```
AIRCRA MAKE                                MODEL                                HOURSFLOWN
```

```
-----
```

```
NUMBEROFSEATS
```

```
-----
```

```
AIRLINEOID
```

```
-----
```

```
AE3665 Embraer                                E195                                3500
      120
```

```
00002202080924694CBAAFEF76E0603F82E14E7A4E091B44FD666DF1D5E0603F82E14E3C8E
```

```
AB2310 Boeing                                B777                                6000
      330
```

```
AIRCRA MAKE                                MODEL                                HOURSFLOWN
```

```
-----
```

```
NUMBEROFSEATS
```

```
-----
```

```
AIRLINEOID
```

00002202080924694CBAB0EF76E0603F82E14E7A4E091B44FD666DF1D5E0603F82E14E3C8E

AA6090 Airbus	A320	25000
170		

00002202080924694CBAB1EF76E0603F82E14E7A4E091B44FD666DF1D5E0603F82E14E3C8E

AE4665 Embraer	E195	45000
----------------	------	-------

AIRCRA MAKE	MODEL	HOURSFLOWN
-------------	-------	------------

NUMBEROFSEATS

AIRLINEOID

115

00002202080924694CBAB3EF76E0603F82E14E7A4E091B44FD666DF1D5E0603F82E14E3C8E

AB3310 Boeing	B787	6700
250		

00002202080924694CBAB1EF76E0603F82E14E7A4E091B44FD666DF1D5E0603F82E14E3C8E

AIRCRA MAKE	MODEL	HOURSFLOWN
-------------	-------	------------

NUMBEROFSEATS

AIRLINEOID

AA7090 Airbus	A380	27000
250		

00002202080924694CBAB2EF76E0603F82E14E7A4E091B44FD666DF1D5E0603F82E14E3C8E

AE5665 Embraer	E190	47000
105		

00002202080924694CBAAFEF76E0603F82E14E7A4E091B44FD666DF1D5E0603F82E14E3C8E

AIRCRA MAKE	MODEL	HOURSFLOWN
-------------	-------	------------

NUMBEROFSEATS

AIRLINEOID

9 rows selected.

SQL>

SQL> SELECT flightId, flightNumber FROM flight;

FLIGHTID	FLIGHT
U1	UA30
DA1	DA650
AC1	AC1450
AC2	AC3450
U2	UA30

```
SQL>
SQL> SELECT * FROM airpEmployee;
```

PID

PNAME(FIRSTN, LASTN)

DOB PHONE G ROLE_AP

OAIRPORTCODE

12345678
NAME_P('Dave', 'Smith')
01-MAY-95 34-678999 M passenger assistant
00002202080924694CBA9DEF76E0603F82E14E7A4E091B44FD6660F1D5E0603F82E14E3C8E

PID

PNAME(FIRSTN, LASTN)

DOB PHONE G ROLE_AP

OAIRPORTCODE

33345678
NAME_P('Many', 'Smith')
03-AUG-00 34-632569 M passenger assistant
00002202080924694CBAA0EF76E0603F82E14E7A4E091B44FD6660F1D5E0603F82E14E3C8E

PID

PNAME(FIRSTN, LASTN)

DOB PHONE G ROLE_AP

OAIRPORTCODE

12346789
NAME_P('Seth', 'Jones')
01-JUN-95 34-678945 M reservation agent

00002202080924694CBA9FEF76E0603F82E14E7A4E091B44FD6660F1D5E0603F82E14E3C8E

PID

PNAME(FIRSTN, LASTN)

DOB PHONE G ROLE_AP

OAIRPORTCODE

33245339

NAME_P('Lily', 'Taylor')

05-JAN-01 34-632669 F airport manager

00002202080924694CBA9FEF76E0603F82E14E7A4E091B44FD6660F1D5E0603F82E14E3C8E

PID

PNAME(FIRSTN, LASTN)

DOB PHONE G ROLE_AP

OAIRPORTCODE

33245434

NAME_P('Riley', 'MacDonald')

05-JAN-01 34-633269 F airtraffic control

00002202080924694CBA9FEF76E0603F82E14E7A4E091B44FD6660F1D5E0603F82E14E3C8E

PID

PNAME(FIRSTN, LASTN)

DOB PHONE G ROLE_AP

OAIRPORTCODE

33245675

NAME_P('Leo', 'De Cat')

04-FEB-02 34-633209 M avionics technician

00002202080924694CBAA2EF76E0603F82E14E7A4E091B44FD6660F1D5E0603F82E14E3C8E

6 rows selected.

SQL>

SQL> SELECT * FROM airlEmployee;

PID

PNAME(FIRSTN, LASTN)

DOB PHONE G ROLE_AL

AIRLINEOID

43245675

NAME_P('Gilbert', 'Cote')

04-FEB-96 34-563209 M flight attendant

00002202080924694CBAAFEF76E0603F82E14E7A4E091B44FD666DF1D5E0603F82E14E3C8E

PID

PNAME(FIRSTN, LASTN)

DOB PHONE G ROLE_AL

AIRLINEOID

46545675

NAME_P('Martha', 'Lewis')

20-MAR-98 34-563222 F flight attendant

00002202080924694CBAB0EF76E0603F82E14E7A4E091B44FD666DF1D5E0603F82E14E3C8E

PID

PNAME(FIRSTN, LASTN)

DOB PHONE G ROLE_AL

AIRLINEOID

46545347

NAME_P('Jym', 'Lewis')

05-AUG-94 34-563278 M pilot

00002202080924694CBAB3EF76E0603F82E14E7A4E091B44FD666DF1D5E0603F82E14E3C8E

PID

PNAME(FIRSTN, LASTN)

DOB PHONE G ROLE_AL

AIRLINEOID

46986347

NAME_P('Mary', 'Wilson')

05-JUN-95 34-993278 F co-pilot

00002202080924694CBAB2EF76E0603F82E14E7A4E091B44FD666DF1D5E0603F82E14E3C8E

SQL>

SQL> SELECT * FROM documentInfo;

PASSPORT_N ISSUE_COUNT EXPIRY_DA

PASSPORT_N	ISSUE_COUNT	EXPIRY_DA
A001122	Canada	17-DEC-25
A002244	USA	17-DEC-35
A001166	Japan	17-FEB-29
A002288	Brazil	07-DEC-32
A009999	Germany	07-DEC-32
A009998	Germany	07-DEC-32

6 rows selected.

SQL>

SQL> SELECT * FROM passenger;

PID

PNAME(FIRSTN, LASTN)

DOB	PHONE	G	SALUTATION	ISHELPREQU
-----	-------	---	------------	------------

AOID

1234

NAME_P('Johnny', 'Depp')

09-JUN-63 647780775 M MS YES

00002202080924694CBACFEF76E0603F82E14E7A4E091B44FD66BFF1D5E0603F82E14E3C8E

PID

PNAME(FIRSTN, LASTN)

DOB	PHONE	G	SALUTATION	ISHELPREQU
-----	-------	---	------------	------------

AOID

1005

NAME_P('Mouralii', 'Ki')

10-JAN-05 649690775 F MS YES

00002202080924694CBACEEF76E0603F82E14E7A4E091B44FD66BFF1D5E0603F82E14E3C8E

PID

PNAME(FIRSTN, LASTN)

DOB	PHONE	G	SALUTATION	ISHELPREQU
-----	-------	---	------------	------------

AOID

1008

NAME_P('Hazel', 'Hu')

17-DEC-05 649680775 F MS YES

00002202080924694CBAD1EF76E0603F82E14E7A4E091B44FD66BFF1D5E0603F82E14E3C8E

PID

PNAME(FIRSTN, LASTN)

DOB	PHONE	G	SALUTATION	ISHELPREQU
-----	-------	---	------------	------------

AOID

1009

NAME_P('Marina', 'Li')

18-NOV-05 649690775 F MS YES

00002202080924694CBAD0EF76E0603F82E14E7A4E091B44FD66BFF1D5E0603F82E14E3C8E

PID

PNAME(FIRSTN, LASTN)

DOB	PHONE	G	SALUTATION	ISHELPREQU
-----	-------	---	------------	------------

AOID

1007

NAME_P('Mukta', 'Dey')

17-DEC-95 647680775 F MS YES

00002202080924694CBACFEF76E0603F82E14E7A4E091B44FD66BFF1D5E0603F82E14E3C8E

PID

PNAME(FIRSTN, LASTN)

DOB	PHONE	G	SALUTATION	ISHELPREQU
-----	-------	---	------------	------------

AOID

2007

NAME_P('Monique', 'Schroeder')

31-DEC-22 647999999 F MS YES

00002202080924694CBAD2EF76E0603F82E14E7A4E091B44FD66BFF1D5E0603F82E14E3C8E

PID

PNAME(FIRSTN, LASTN)

DOB	PHONE	G	SALUTATION	ISHELPREQU
-----	-------	---	------------	------------

AOID

2008

NAME_P('Suzanne', 'Schroeder')

31-DEC-18 647888888 F MS YES

00002202080924694CBAD3EF76E0603F82E14E7A4E091B44FD66BFF1D5E0603F82E14E3C8E

7 rows selected.

SQL>

SQL> spool off

5. SQL Queries

set echo on

```
SELECT f.airlineoid.airline_name AS Airline_Name
FROM flight f
WHERE f.arrivalAirport.city = 'Honolulu' AND ref(f) IN
(
    SELECT foid
    FROM passengertour t
    WHERE
        (SELECT ref(p)
         FROM passenger p
         WHERE p.fullname() = 'Johnny Depp') = t.poid
);
```

```
select rp.pid, rp.pname.firstN AS First_Name, round(rp.comps()/365,0) AS Age from
airpEmployee rp order by value(rp);
```

```
select f.flightid, f.flightnumber, f.CompareFlightDuration(flight_t(
'DA1',
'DA650',
(select ref(dpa) from airport dpa where airportcode = 'LAX'),
(select ref(ara) from airport ara where airportcode = 'HNL'),
(select ref(bg) from boardinggate bg where BGID = 'LAXA15'),
(select ref(al) from airline al where airline_ID = '8323'),
(select ref(ac) from aircraft ac where aircraftID = 'AE3665'),
timestamp '2023-07-12 21:00:00 -7:00',
0,
317,
'arrived',
0,
timestamp '2023-07-12 23:17:00 -10:00'
))
AS CompareValue FROM flight f;
```

```
select ape.pid from airpEmployee ape where ape.fullname() = 'Many Smith';
```

```
select f.flightid, f.flightnumber, f.flightdurationinminutes,
f.CalculateDelayedDepTime() as Departure_Time,
TO_CHAR(FROM_TZ(cast(f.CalculateDelayedDepTime() + interval '1' minute *
f.FlightDurationInMinutes as timestamp), f.departureAirport.timezone) AT
TIME ZONE f.arrivalAirport.timezone, 'DD-MON-YY HH24.MI.SS.FF9 AM
TZh:TzM') AS Predicted_Arrival_Time FROM flight f, dual WHERE f.status <>
'arrived';
```

```
SELECT DISTINCT f.departureAirport.airportCode, f.departureAirport.city AS
Departure_City, f.arrivalAirport.airportCode, f.arrivalAirport.city AS
Arrival_City, SDO_GEOM.SDO_DISTANCE(
    SDO_GEOMETRY(2001, 4326, SDO_POINT_TYPE(f.departureAirport.longitude,
f.departureAirport.latitude, NULL), NULL, NULL),
    SDO_GEOMETRY(2001, 4326, SDO_POINT_TYPE(f.arrivalAirport.longitude,
```

```
f.arrivalAirport.latitude, NULL), NULL, NULL),  
    0.005,  
    'unit=KM'  
) AS distance_km  
FROM flight f;
```

```
select ar.airlineoid.airline_name, ar.model from aircraft ar;
```

```
select f.flightID from flight f where f.aircraftoid. aircraftID = 'AE3665';
```

```
select pt.poid.pname from passengerTour pt where pt.foid.airlineoid.airline_ID =  
'UA';
```

```
select rp.oairportCode.name, rp.fullname(), role_ap from airpEmployee rp where  
rp.role_ap='airport manager';
```

```
select ac.aircraftoid.numberofSeats, flightNumber from Flight ac order by  
value(ac);
```

```
SELECT p.fullname() AS Name, p.aoid.issue_country AS Country, p.DisplayAgeGroup()  
AS Age_Group from passenger p WHERE p.displayagegroup() <> 'adult';
```

6. Query execution spool file

```

SQL> @ etapa4-select.sql
SQL> set echo on
SQL>
SQL> SELECT f.airlineoid.airline_name AS Airline_Name
  2 FROM flight f
  3 WHERE f.arrivalAirport.city = 'Honolulu' AND ref(f) IN
  4 (
  5     SELECT foid
  6     FROM passengertour t
  7     WHERE
  8         (SELECT ref(p)
  9          FROM passenger p
 10          WHERE p.fullname() = 'Johnny Depp') = t.poid
11 );

```

```

AIRLINE_NAME
-----
Delta Air Lines
United Airlines

```

```

SQL>
SQL> select rp.pid, rp.pname.firstN AS First_Name, round(rp.comps()/365,0) AS Age
from airpEmployee rp order by value(rp);

```

PID	FIRST_NAME	AGE
33245675	Leo	22
33245434	Riley	23
33245339	Lily	23
33345678	Many	23
12346789	Seth	28
12345678	Dave	29

6 rows selected.

```

SQL>
SQL> select f.flightid, f.flightnumber, f.CompareFlightDuration(flight_t(
  2 'DA1',
  3 'DA650',
  4 (select ref(dpa) from airport dpa where airportcode = 'LAX'),
  5 (select ref(ara) from airport ara where airportcode = 'HNL'),
  6 (select ref(bg) from boardinggate bg where BGID = 'LAXA15'),
  7 (select ref(al) from airline al where airline_ID = '8323'),
  8 (select ref(ac) from aircraft ac where aircraftID = 'AE3665'),
  9 timestamp '2023-07-12 21:00:00 -7:00',
10 0,
11 317,
12 'arrived',
13 0,
14 timestamp '2023-07-12 23:17:00 -10:00'

```

```

15 ))
16 AS CompareValue FROM flight f;

```

FLIGHTID	FLIGHT	COMPAREVALUE
U1	UA30	0
DA1	DA650	0
AC1	AC1450	-1
AC2	AC3450	1
U2	UA30	0

```

SQL>
SQL> select ape.pid from airpEmployee ape where ape.fullname() = 'Many Smith';

```

```

PID
-----
33345678

```

```

SQL>
SQL> select f.flightid, f.flightnumber, f.flightdurationinminutes,
2 f.CalculateDelayedDepTime() as Departure_Time,
3 TO_CHAR(FROM_TZ(cast(f.CalculateDelayedDepTime() + interval '1' minute *
4 f.FlightDurationInMinutes as timestamp), f.departureAirport.timezone) AT
5 TIME ZONE f.arrivalAirport.timezone, 'DD-MON-YY HH24.MI.SS.FF9 AM
6 TZh:Tz') AS Predicted_Arrival_Time FROM flight f, dual WHERE f.status <>
7 'arrived';

```

FLIGHTID	FLIGHT	FLIGHTDURATIONINMINUTES	DEPARTURE_TIME	PREDICTED_ARRIVAL_TIME
U1	UA30	317	29-NOV-23 07.30.00.000000000 AM	-07:00
			29-NOV-23 09.47.00.000000000 AM	-10:00

AC2	AC3450	457	14-NOV-23 01.00.00.000000000 PM	-04:00
-----	--------	-----	---------------------------------	--------

FLIGHTID	FLIGHT	FLIGHTDURATIONINMINUTES	DEPARTURE_TIME	PREDICTED_ARRIVAL_TIME
			15-NOV-23 01.37.00.000000000 AM	+01:00

SQL>

```
SQL> SELECT DISTINCT f.departureAirport.airportCode, f.departureAirport.city AS
  2  Departure_City, f.arrivalAirport.airportCode, f.arrivalAirport.city AS
  3  Arrival_City, SDO_GEOM.SDO_DISTANCE(
  4    SDO_GEOMETRY(2001, 4326, SDO_POINT_TYPE(f.departureAirport.longitude,
  5    f.departureAirport.latitude, NULL), NULL, NULL),
  6    SDO_GEOMETRY(2001, 4326, SDO_POINT_TYPE(f.arrivalAirport.longitude,
  7    f.arrivalAirport.latitude, NULL), NULL, NULL),
  8    0.005,
  9    'unit=KM'
 10  ) AS distance_km
 11  FROM flight f;
```

DEP DEPARTURE_CITY	ARR
ARRIVAL_CITY	DISTANCE_KM
LAX Los Angeles	HNL
Honolulu	4113.22579
YVR Vancouver	YYZ
Toronto	3354.8004
YYZ Toronto	LHR
London	5723.14193

SQL>

```
SQL> select ar.airlineoid.airline_name, ar.model from aircraft ar;
```

AIRLINEOID.AIRLINE_N MODEL

United Airlines	B777
Air Canada	A320
Delta Air Lines	E195
Turkish Airlines	B777
Air Canada	A320
Aeromexico	E195
Air Canada	B787
Air France-KLM	A380
Delta Air Lines	E190

9 rows selected.

SQL>

```
SQL> select f.flightID from flight f where f.aircraftoid. aircraftID = 'AE3665';
```

FLIGHTID

DA1

SQL>

SQL> select pt.poid.pname from passengerTour pt where pt.foid.airlineoid.airline_ID = 'UA';

POID.PNAME(FIRSTN, LASTN)

NAME_P('Johnny', 'Depp')

NAME_P('Mouralii', 'Ki')

SQL>

SQL> select rp.oairportCode.name, rp.fullname(), role_ap from airpEmployee rp where rp.role_ap='airport manager';

OAIRPORTCODE.NAME

RP.FULLNAME()

ROLE_AP

Toronto Pearson International Airport

Lily Taylor

airport manager

SQL>

SQL> select ac.aircraftoid.numberofSeats, flightNumber from Flight ac order by value(ac);

AIRCRAFTOID.NUMBEROFSEATS FLIGHT

250 AC1450

350 UA30

350 UA30

120 DA650

250 AC3450

SQL>

SQL> SELECT p.fullname() AS Name, p.aoid.issue_country AS Country,
p.DisplayAgeGroup() AS Age_Group from passenger p WHERE p.displayagegroup() <>
'adult';

NAME

COUNTRY

AGE_GROUP

Monique Schroeder

Germany
infant

Suzanne Schroeder
Germany
children

NAME

COUNTRY

AGE_GROUP

SQL>

SQL> spool off