Assignment – 4

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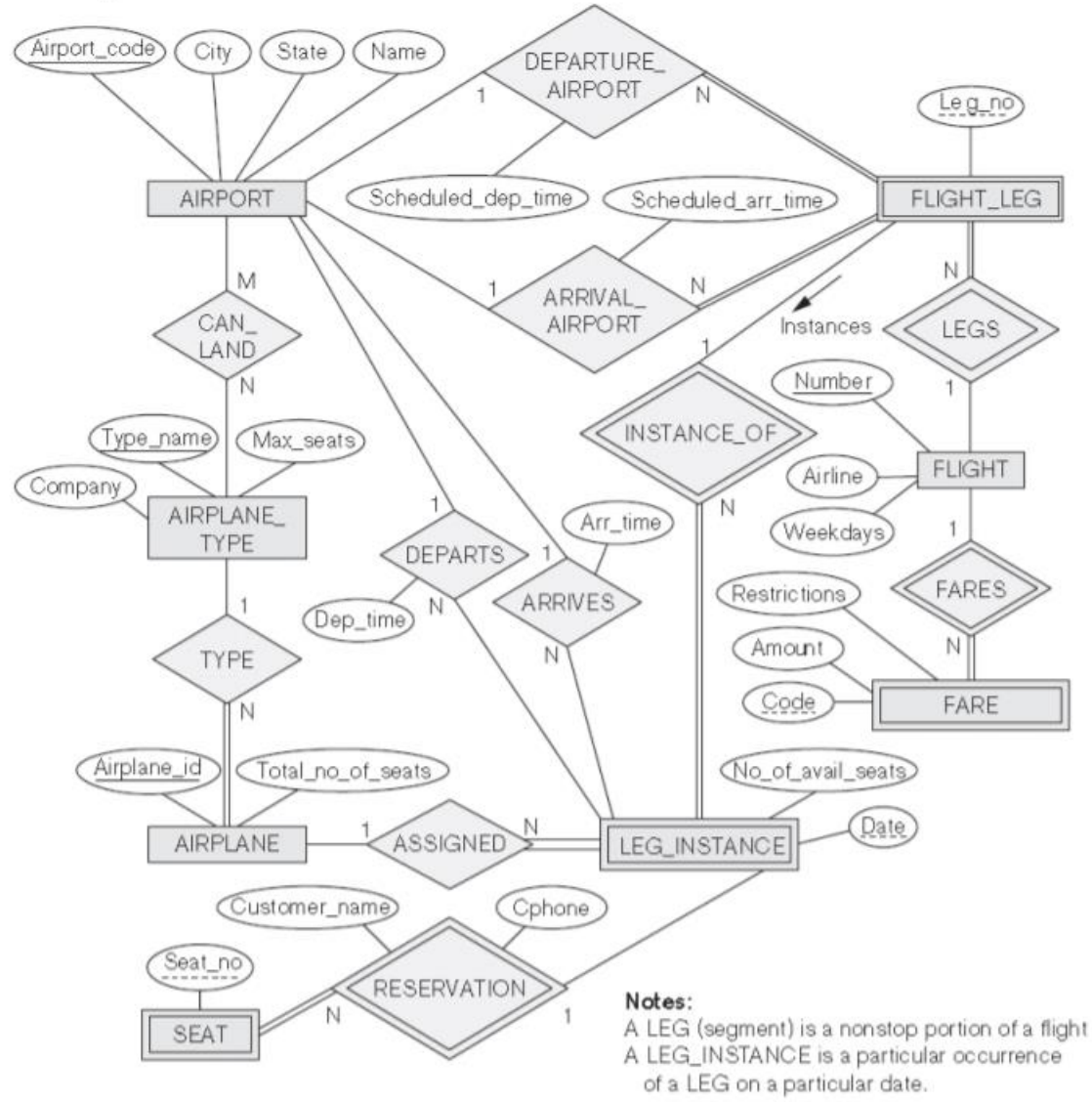
Sec – A

Problem Statement:

Convert the ER Model into Relational Database and create using SQL.

An ER diagram for an AIRLINE database schema.



Creating Database:

```
/* 1 */
```

```sql
create table AIRPORT
(
Airport_code int primary key,
City varchar(20),
State varchar(20),
Name_of_Airport varchar(30)
);

/* 2 */
create table AIRPLANE_TYPE
(
Company varchar(20),
Type_name VARCHAR(20) PRIMARY KEY,
max_seats int
);

/* 3 */
create table AIRPLANE
(
Airplane_ID int primary key,
Total_number_of_seats int,
Type_name varchar(20) ,
foreign key(Type_name) references  AIRPLANE_TYPE(Type_name)
);

/* 4 */
create table FLIGHT
(
Flight_number int primary key,
Airline varchar(20),
Weekdays varchar(20)
);

/* 5 */
create table FARE
(
Restriction int,
Amt int,
code int,
Flight_number int,
primary key(Flight_number,code),
foreign key(Flight_number) references  Flight(Flight_number)
);

/* 6  many to many */
create table Can_land
(
Airport_code int,
```

```
Type_name varchar(20),
foreign key(Airport_code) references AIRPORT(Airport_code),
foreign key(Type_name) references AIRPLANE_TYPE(Type_name)
);

/* 7 */
create table Flight_leg
(
Flight_number int,
leg_number int,
Dept_airport int,
Dept_time int,
Arr_time int,
Arr_airport int,
primary key(Flight_number,leg_number),
foreign key(Arr_airport) references  AIRPORT(Airport_code),
foreign key(Dept_airport) references  AIRPORT(Airport_code),
foreign key(Flight_number) references  Flight(Flight_number)
);

/* 8 */
create table leg_instance
(
Avl_seats int,
Date_of_journey date,
dept_time int,
arr_time int,
Airplane_id int,
leg_number int,
Flight_number int,
primary key(Date_of_journey,leg_number,flight_number),
foreign key(leg_number,flight_number) references Flight_leg(leg_number,flight_
number),
foreign key(Airplane_id) references Airplane(Airplane_id)
);

/* 9 */
create table seat
(
seat_no int,
Date_of_journey date,
leg_number int,
Flight_number int,
customer_name varchar(30),
phone_number int,
primary key(Date_of_journey,leg_number,flight_number,seat_no),
foreign key(leg_number,flight_number,Date_of_journey) references leg_instance(
leg_number,flight_number,Date_of_journey)
```

```
);
```

Inserting values :

```
insert into airport values(101,'A','AS','AA');
insert into airport values(102,'B','BS','AB');
insert into airport values(103,'X','XS','AX');
insert into airport values(104,'M','MS','AM');


insert into airplane_type values('BOING','B007',250);
insert into airplane_type values('BOING','B777',230);
insert into airplane_type values('BOING','B888',300);
insert into airplane_type values('HOVER','H007',250);
insert into airplane_type values('BOING','H777',280);
insert into airplane_type values('BOING','H888',200);
insert into airplane_type values('HOVER', 'AIRBUS1223', 250);


insert into airplane  values(2001,280,'H777');
insert into airplane  values(2002,230,'B777');
insert into airplane  values(2003,250,'B007');
insert into airplane  values(2004,280,'H777');
insert into airplane  values(2005,230,'B777');
insert into airplane  values(2006,300,'B888');
insert into airplane  values(2007,200,'H888');
insert into airplane  values(2008,250,'AIRBUS1223');


insert into flight values(3001,'Spicejet','MTWTFSS');
insert into flight values(3002,'Spicejet','MTWT');
insert into flight values(3003,'Spicejet','FSS');
insert into flight values(3004,'Spicejet','MTSS');
insert into flight values(3005,'Etihad','MTWTFSS');
insert into flight values(3006,'Emirates','TFSS');
insert into flight values(3007,'Emirates','MTWT');
insert into flight values(3008,'Kingfisher','TFSS');
insert into flight values(3009,'Luftansa','MTWTFSS');
insert into flight values(3010,'Luftansa','MTWTFSS');


insert into fare values(5,4500,1,3001);
insert into fare values(3,4500,2,3002);
insert into fare values(2,4500,3,3003);
insert into fare values(3,4500,4,3004);
insert into fare values(4,4500,5,3005);
insert into fare values(4,4500,6,3006);
insert into fare values(3,4500,7,3007);
```

```
insert into fare values(2,4500,8,3008);

insert into  Can_land values(101,'B007');
insert into  Can_land values(101,'B777');
insert into  Can_land values(101,'B888');
insert into  Can_land values(101,'H007');
insert into  Can_land values(101,'H888');
insert into  Can_land values(101,'H777');
insert into  Can_land values(101,'AIRBUS1223');
insert into  Can_land values(102,'B007');
insert into  Can_land values(102,'B777');
insert into  Can_land values(102,'B888');
insert into  Can_land values(102,'H007');
insert into  Can_land values(102,'H888');
insert into  Can_land values(102,'H777');
insert into  Can_land values(102,'AIRBUS1223');
insert into  Can_land values(103,'B007');
insert into  Can_land values(103,'B777');
insert into  Can_land values(103,'B888');
insert into  Can_land values(103,'H007');
insert into  Can_land values(103,'H888');
insert into  Can_land values(103,'H777');
insert into  Can_land values(103,'AIRBUS1223');
insert into  Can_land values(104,'B007');
insert into  Can_land values(104,'B777');
insert into  Can_land values(104,'B888');
insert into  Can_land values(104,'H007');
insert into  Can_land values(104,'H888');
insert into  Can_land values(104,'H777');
insert into  Can_land values(104,'AIRBUS1223');


insert into flight_leg values(3001 ,4001,102,1200,1300,104);
insert into flight_leg values(3005 ,4002,101,1400,1600,102);
insert into flight_leg values(3002 ,4003,101,1900,2100,102);
insert into flight_leg values(3003 ,4004,101,1200,1400,102);
insert into flight_leg values(3004 ,4005,103,2000,2300,104);
insert into flight_leg values(3005 ,4006,103,1700,1800,101);
insert into flight_leg values(3006 ,4007,103,1900,2100,102);


insert into leg_instance values(250,'01-Apr-2014',1200,1300,2007,4001,3001);
insert into leg_instance values(230,'01-May-2014',1400,1600,2005,4002,3005);
insert into leg_instance values(250,'01-Dec-2014',1200,1300,2008,4003,3002);
insert into leg_instance values(250,'01-Feb-2014',1200,1300,2008,4004,3003);
insert into leg_instance values(250,'01-Jan-2014',1200,1300,2005,4005,3004);
insert into leg_instance values(250,'01-Jan-2014',1200,1300,2008,4006,3005);
insert into leg_instance values(250,'01-Feb-2014',1200,1300,2005,4007,3006);
```

```
insert into seat values(1,'01-Apr-2014',4001,3001, 'Cust_1', 98761);
insert into seat values(2,'01-May-2014',4002,3005, 'Cust_2', 98765);
insert into seat values(3,'01-Dec-2014',4003,3002, 'Cust_1', 98762);
insert into seat values(4,'01-Feb-2014',4004,3003, 'Cust_4', 98764);
insert into seat values(5,'01-Jan-2014',4005,3004, 'Cust_3', 98763);
insert into seat values(6,'01-Jan-2014',4006,3005, 'Cust_5', 98765);
insert into seat values(7,'01-Feb-2014',4007,3006, 'Cust_2', 98762);
```

Queries:

1	Find the customer name reserved by maximum number of seats.

```
select customer_name, count(*) No_of_ticket from seat
group by customer_name having
count(*)=(select max(count(*)) from seat group by customer_name);
```

	CUSTOMER_NAME	NO_OF_TICKET
1	Cust_1	3

2	Find the flight no of all flights that can be used on non-stop flights from B to M

```
SELECT FLIGHT_NUMBER
FROM FLIGHT_LEG F, AIRPORT D, AIRPORT A
WHERE (A.AIRPORT_CODE=F.ARR_AIRPORT)
AND (F.DEPT_AIRPORT=D.AIRPORT_CODE)
AND (D.CITY='B') AND (A.CITY='M');
```

	FLIGHT_NUMBER
1	3001

3	Find the flight No which charges the lowest fare from city A to city B

```
WITH ATOB(FLIGHT_NUMBER, AMT) AS (
SELECT F.FLIGHT_NUMBER, FARE.AMT
FROM FARE, flight_leg F, AIRPORT D, AIRPORT A
WHERE FARE.FLIGHT_NUMBER=F.FLIGHT_NUMBER AND A.AIRPORT_CODE=F.ARR_AIRPORT AN
D F.DEPT_AIRPORT=D.AIRPORT_CODE AND D.CITY='A' AND A.CITY='B')
SELECT FLIGHT_NUMBER FROM ATOB WHERE AMT IN ( SELECT MIN(AMT) FROM ATOB);
```

	FLIGHT_NUMBER
1	3002
2	3003
3	3005

4	Find all flights running on every day from city A to city B.

```
WITH ATOB(FLIGHT_NUMBER, WEEKDAYS) AS
(SELECT F.FLIGHT_NUMBER, FLIGHT.WEEKDAYS
FROM flight_leg F, AIRPORT D, AIRPORT A, FLIGHT
WHERE FLIGHT.FLIGHT_NUMBER=F.FLIGHT_NUMBER AND A.AIRPORT_CODE=F.ARR_AIRPORT
AND F.DEPT_AIRPORT=D.AIRPORT_CODE AND D.CITY='A' AND A.CITY='B')
SELECT FLIGHT_NUMBER FROM ATOB WHERE WEEKDAYS='MTWTFSS';
```

	FLIGHT_NUMBER
1	3005

5	Find all flights departure from City X.

```
SELECT FLIGHT_NUMBER
FROM FLIGHT_LEG F, AIRPORT D
WHERE F.DEPT_AIRPORT=D.AIRPORT_CODE AND D.CITY='X';
```

	FLIGHT_NUMBER
1	3004
2	3005
3	3006

6	Find all the flights which are having greater than 200 seats.

```
SELECT FLIGHT_NUMBER FROM leg_instance WHERE avl_seats>200;
```

	FLIGHT_NUMBER
1	3001
2	3005
3	3002
4	3003
5	3004
6	3005
7	3006

7	Find how many passengers are travelled from city X on 01-01-2014

```
SELECT A.CITY, F.FLIGHT_NUMBER
FROM SEAT S, FLIGHT_LEG F, LEG_INSTANCE L, AIRPORT A
WHERE (S.FLIGHT_NUMBER =F.FLIGHT_NUMBER)
AND (L.LEG_NUMBER=F.LEG_NUMBER)
```

```
AND (S.Date_of_journey=L.Date_of_journey)
AND (A.AIRPORT_CODE=f.dept_airport)
AND A.CITY='X' AND (L.Date_of_journey='01-01-2014');
```

	CITY	FLIGHT_NUMBER
1	X	3004
2	X	3005

8	Find the flight names which are departs between 5pm to 8 pm at city X

```
SELECT F.FLIGHT_NUMBER, FL.AIRLINE
FROM FLIGHT FL, SEAT S, FLIGHT_LEG F, LEG_INSTANCE L, AIRPORT A
WHERE F.FLIGHT_NUMBER=FL.FLIGHT_NUMBER
AND (S.FLIGHT_NUMBER =F.FLIGHT_NUMBER)
AND (L.LEG_NUMBER=F.LEG_NUMBER)
AND (S.Date_of_journey=L.Date_of_journey)
AND (A.AIRPORT_CODE=f.dept_airport)
AND A.CITY='X' AND L.DEPT_TIME BETWEEN 1700 AND 2000;
```

FLIGHT_...	AIRLINE

9	Find the company name designed by flight AIRBUS123.

```
SELECT TYPE_NAME, COMPANY
FROM AIRPLANE_TYPE NATURAL JOIN AIRPLANE
WHERE TYPE_NAME='AIRBUS123';
```

TYPE_N...	COMPANY

10	Find the total no.of hours travelled by the flight AIRBUS123.

```
SELECT SUM(ARR_TIME-DEPT_TIME)/100 AS TRAVEL_TIME
FROM AIRPLANE_TYPE NATURAL JOIN AIRPLANE NATURAL JOIN LEG_INSTANCE
WHERE TYPE_NAME='AIRBUS123';
```

TRAVEL_TIME
(null)