Database Management Final Project

Grup 29

Database Implementation and Application Development

Arda Küçükler - 05170000115
Emin Fidan - 05170000118
Fethi Can Bayraktar - 05170000117
Ragıp Burak Genç - 05180000744

3. Write down 5 triggers. Triggers should be meaningful.

```
USE Son

   I)     Go

CREATE TRIGGER Number_of_available_seat_decrease
ON SEAT_RESERVATION
AFTER INSERT
AS BEGIN
UPDATE LEG_INSTANCE
SET Number_of_available_seats=Number_of_available_seats-1
END

   II)    GO
CREATE TRIGGER CR_database
ON ALL SERVER
AFTER CREATE_DATABASE
AS
BEGIN
PRINT('Yeni bir TABLO oluşturuldu')
END;

   III)   GO
CREATE TRIGGER dr_table
ON ALL SERVER
AFTER DROP_TABLE
AS
BEGIN
PRINT('Bir Tablo Silindi..')
END;


   IV)    GO

CREATE TRIGGER Number_of_available_seat_increase
ON SEAT_RESERVATION
AFTER DELETE
AS BEGIN
UPDATE LEG_INSTANCE
SET Number_of_available_seats=Number_of_available_seats+1
END

   V)     GO
CREATE TRIGGER Corona_Virus
ON CUSTOMER
FOR INSERT
AS
if(exists(SELECT * FROM inserted WHERE Country='İngiltere'))

BEGIN

PRINT('Koronavirüs tehlikesi olduğundan dolayı 15 gün karantinada kalmalısınız')
```

```
END
```

4. Write down 5 check constraints. Check constraints should be meaningful.

4.1. In AIRPLANE_TYPE , Max_seats only can be between 1 and 700

```
use Son

ALTER TABLE AIRPLANE_TYPE ADD CONSTRAINT AIRPLNAE_Max_seats
CHECK(Max_seats BETWEEN 1 AND 700)
```

4.2. Weekdays in FLIGHT can be 'Pazartesi’, 'Salı', 'Çarşamba', 'Perşembe', 'Cuma ', 'Cumartesi, and 'Pazar'

```
ALTER TABLE FLIGHT  ADD CONSTRAINT FLIGHT_WEEKDAYS
CHECK(Weekdays='Pazartesi' or Weekdays='Salı' or Weekdays='Çarşamba' or
Weekdays='Perşembe' or Weekdays='Cuma ' or Weekdays='Cumartesi' or Weekdays='Pazar')
```

4.3. Amount in FARE , should be smaller than 10000

```
ALTER TABLE FARE  ADD CONSTRAINT FARE_AMOUNT
CHECK(Amount<10000)
```

4.4. Number_of_available_seats in LEG_INSTANCE , should be between 1 and 700

```
ALTER TABLE LEG_INSTANCE  ADD CONSTRAINT LEG_INSTANCE_NUMBER_OF_AVAILABLE_SEATS
CHECK(Number_of_available_seats>=1 AND Number_of_available_seats<700)
```

4.5. Date in LEG_INSTANCE , should be bigger than '2016-01-01'

```
ALTER TABLE LEG_INSTANCE  ADD CONSTRAINT LEG_INSTANCE_DATE
CHECK(Date>'2016-01-01')
```

5.A Write sample INSERT, DELETE and UPDATE statements for 5 of the tables you choose.

INSERT

```
INSERT INTO FLIGHT (Flight_number ,Airline ,Weekdays)
VALUES(7,'THK','Pazartesi')


INSERT INTO CUSTOMER(Passaport_number,E_Mail
,Address,Country,Customer_phone,Customer_name)
VALUES(124365879,'tarik@gmail.com','salim mah','kore','1112','Hasan')


INSERT INTO COMPANY(Company_name)
VALUES('G')


INSERT INTO AIRLINE(Company_name ,Airplane_id ,Total_number_of_seats,Airplane_type)
VALUES('B',1734,42,'AIRBUS')


INSERT INTO FARE(Flight_number ,Fare_code ,Amount,Restrictions)
VALUES(2,723,340,'AAAA')

INSERT INTO AIRPLANE (Company_name ,Airplane_id ,Total_number_of_seats,Airplane_type)
VALUES('C',3322,22,'CARGO')
```

UPDATE

```
UPDATE AIRPORT
SET State='Cubuk'
WHERE Airport_code = 2

UPDATE FLIGHT
SET Weekdays='Cumartesi'
WHERE Airline='THK'

UPDATE FLIGHT_LEG
SET Millage_information='200 mil eksik'
WHERE Flight_number=5

UPDATE LEG_INSTANCE
SET Number_of_available_seats=123
WHERE Arrival_airport_code=3;

UPDATE FARE
SET Amount=350
WHERE Fare_code=223
```

DELETE

```
DELETE FROM COMPANY WHERE Company_name='F'

DELETE FROM FFC WHERE Tottal_milage=454

DELETE FROM AIRPLANE WHERE Airplane_id=1234

DELETE FROM SEAT_RESERVATION WHERE Customer_name='Veli'

DELETE FROM FARE WHERE Amount=350
```

5. Write down the following SQL statements:

B. Write 10 SELECT statements for the database you have implemented.

I. 3 of them should use minimum 2 tables.

I.1. Selecting which seats are reserved by CUSTOMERs

```
use Son
SELECT CUSTOMER.Passaport_number , CUSTOMER.Customer_name,
SEAT_RESERVATION.Seat_number

FROM CUSTOMER,SEAT_RESERVATION
WHERE CUSTOMER.Passaport_number=SEAT_RESERVATION.Passaport_number
```

I.2 . Select statement which puts in order Fare_code, Restrictions and Amount data for each FLIGHT according to Flight_number

```
use Son
SELECT FLIGHT.Flight_number,FARE.Fare_code ,FARE.Amount,FARE.Restrictions

FROM FARE ,FLIGHT
WHERE FARE.Flight_number=FARE.Flight_number
ORDER BY Flight_number
```

I.3 Select statement for COUNTRY information based on Customer_name

```
use Son
SELECT SEAT_RESERVATION.Customer_name ,CUSTOMER.Country

FROM CUSTOMER,SEAT_RESERVATION
WHERE  SEAT_RESERVATION.Passaport_number=CUSTOMER.Passaport_number
```

	Passaport_number	Customer_name	Seat_number
1	123456789	Hasan	2
2	123654789	Melih	6

	Flight_number	Fare_code	Amount	Restrictions
1	1	225	250	aafs
2	1	723	340	AAAA
3	1	224	340	asdf
4	1	226	256	sffgeg
5	2	225	250	aafs
6	2	723	340	AAAA
7	2	224	340	asdf
8	2	226	256	sffgeg
9	3	225	250	aafs
10	3	723	340	AAAA
11	3	224	340	asdf
12	3	226	256	sffgeg
13	5	225	250	aafs
14	5	723	340	AAAA
15	5	224	340	asdf
16	5	226	256	sffgeg
17	7	225	250	aafs
18	7	723	340	AAAA
19	7	224	340	asdf
20	7	226	256	sffgeg

	Customer_name	Country
1	Ali	ABD
2	Ayse	TURKEY

	Max_seats	Airport_code
1	523	2
2	625	1
3	523	3

II. 4 of them should use minimum 3 tables.

II.1. Select statement of Max_seat, Airport_code, Airport_name for AIRPLANEs which has more than 100 seats

```
use Son
SELECT AIRPLANE_TYPE.Max_seats ,CAN_LAND.Airport_code

FROM AIRPLANE_TYPE,CAN_LAND
WHERE  Max_seats>100 and CAN_LAND.Airplane_type_name=AIRPLANE_TYPE.Airplane_type_name
```

II.2. Select statement for Restrictions and Mileage_informations based on days of the week

```
use Son
SELECT FLIGHT.Weekdays ,FLIGHT_LEG.Milage_information ,FARE.Restrictions

FROM FLIGHT,FARE,FLIGHT_LEG
WHERE FARE.Flight_number=FLIGHT.Flight_number AND
FLIGHT_LEG.Flight_number=FLIGHT.Flight_number
```

II.3. Select statement for Addresses and Total_mileage information based on Customer_names

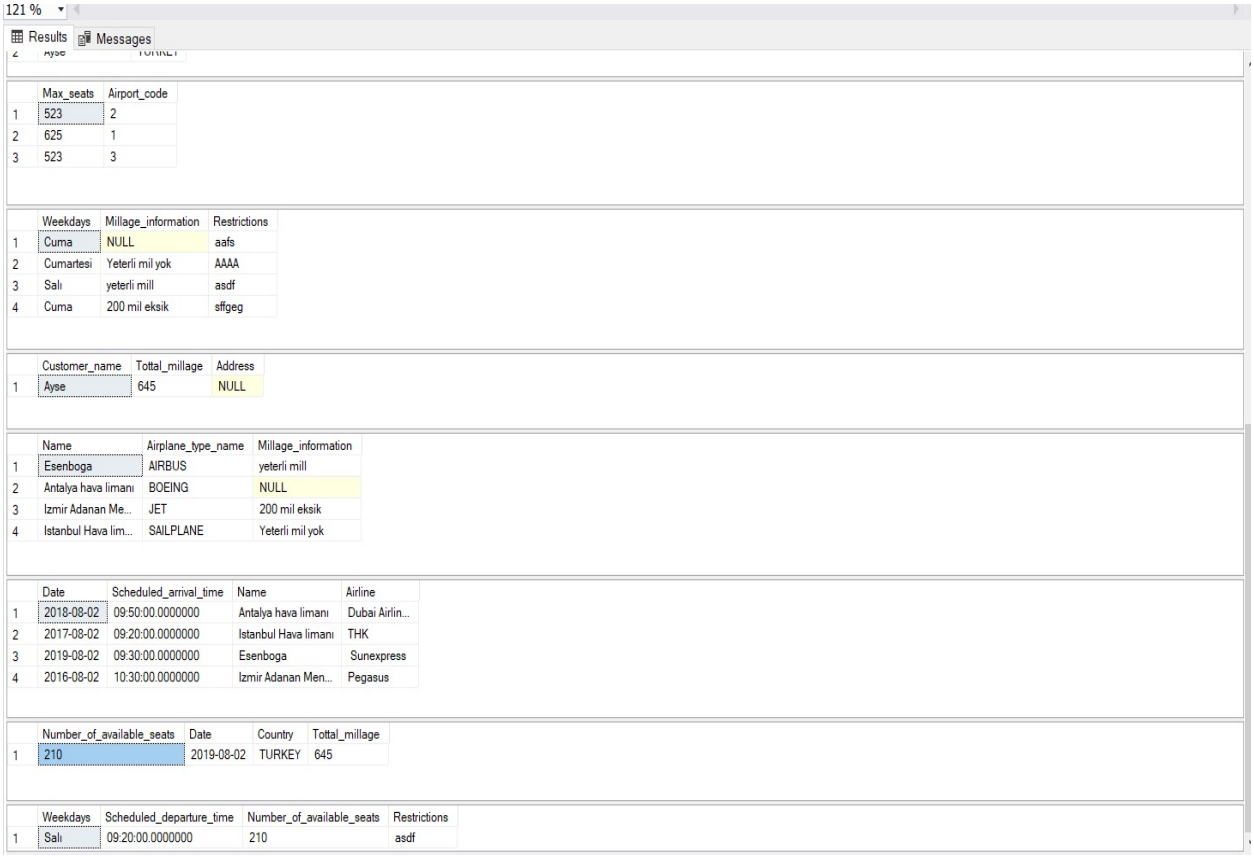
```
use Son
SELECT SEAT_RESERVATION.Customer_name, FFC.Tottal_milage,CUSTOMER.Address

FROM SEAT_RESERVATION,FFC,CUSTOMER
WHERE SEAT_RESERVATION.Passaport_number=CUSTOMER.Passaport_number AND
FFC.Passaport_number=CUSTOMER.Passaport_number
```

II.4 . Select statement of Airport_name and Milage_information for planes which CAN_LAND

```
use Son
SELECT AIRPORT.Name ,CAN_LAND.Airplane_type_name,FLIGHT_LEG.Milage_information

FROM AIRPORT,CAN_LAND,FLIGHT_LEG
WHERE CAN_LAND.Airport_code=AIRPORT.Airport_code AND
FLIGHT_LEG.Departure_airport_code=AIRPORT.Airport_code
```



121 %

Results | Messages

	Max_seats	Airport_code
1	523	2
2	625	1
3	523	3

	Weekdays	Millage_information	Restrictions
1	Cuma	NULL	aafs
2	Cumartesi	Yeterli mil yok	AAAA
3	Salı	yeterli mill	asdf
4	Cuma	200 mil eksik	sffgeg

	Customer_name	Tottal_millage	Address
1	Ayse	645	NULL

	Name	Airplane_type_name	Millage_information
1	Esenboga	AIRBUS	yeterli mill
2	Antalya hava limanı	BOEING	NULL
3	Izmir Adanan Me...	JET	200 mil eksik
4	Istanbul Hava lim...	SAILPLANE	Yeterli mil yok

	Date	Scheduled_arrival_time	Name	Airline
1	2018-08-02	09:50:00.0000000	Antalya hava limanı	Dubai Airlin...
2	2017-08-02	09:20:00.0000000	Istanbul Hava limanı	THK
3	2019-08-02	09:30:00.0000000	Esenboga	Sunexpress
4	2016-08-02	10:30:00.0000000	Izmir Adanan Men...	Pegasus

	Number_of_available_seats	Date	Country	Tottal_millage
1	210	2019-08-02	TURKEY	645

	Weekdays	Scheduled_departure_time	Number_of_available_seats	Restrictions
1	Salı	09:20:00.0000000	210	asdf

III. 3 of them should use minimum 4 tables

III.1. Select statement for an AIRPLANE's AIRLINE, Airport_name and Scheduled_arrival_time

```
use Son
SELECT LEG_INSTANCE.Date , FLIGHT_LEG.Scheduled_arrival_time ,AIRPORT.Name
,FLIGHT.Airline

FROM LEG_INSTANCE, FLIGHT_LEG ,AIRPORT,FLIGHT
WHERE  LEG_INSTANCE.Flight_number=FLIGHT_LEG.Flight_number AND
LEG_INSTANCE.Leg_number=FLIGHT_LEG.Leg_number
AND FLIGHT_LEG.Flight_number=FLIGHT.Flight_number AND
FLIGHT_LEG.Departure_airport_code=AIRPORT.Airport_code
```

III.2. Select statement for Date, Country and Total_milage attributes in cases where Number_of_avaliable_seats on an AIRPLANE is more than 209

```
use Son
SELECT LEG_INSTANCE.Number_of_available_seats ,SEAT_RESERVATION.Date
,CUSTOMER.Country,FFC.Tottal_milage

FROM LEG_INSTANCE,SEAT_RESERVATION,CUSTOMER,FFC
WHERE  LEG_INSTANCE.Number_of_available_seats>=210 and
LEG_INSTANCE.Flight_number=SEAT_RESERVATION.Flight_number AND
SEAT_RESERVATION.Passaport_number =CUSTOMER.Passaport_number AND
CUSTOMER.Passaport_number=FFC.Passaport_number
```

III.3. Select statement of Departure_time, Number_of_available_seats and Restrictions AIRPLANEs that departures on Weekdays = "Salı"

```
use Son
SELECT FLIGHT.Weekdays,
FLIGHT_LEG.Scheduled_departure_time,LEG_INSTANCE.Number_of_available_seats,FARE.Restr
ictions

FROM FARE,FLIGHT,LEG_INSTANCE,FLIGHT_LEG
WHERE FLIGHT.Weekdays='Salı' and  FARE.Flight_number=FLIGHT.Flight_number AND
LEG_INSTANCE.Flight_number=FLIGHT_LEG.Flight_number AND
FLIGHT_LEG.Flight_number=FLIGHT.Flight_number
```

5.C. Write 4 SELECT statements to exemplify nested and/or correlated nested queries.

1. Select statement for FLIGHTs which's FARE is more than average amount for flights

```
SELECT *
FROM FARE
WHERE Amount > (
    SELECT AVG(Amount)
    FROM FARE);
```

2. Number_of _avaliable_seats on LEG_INTANCEs to City="Ankara"

```
SELECT Number_of_available_seats
FROM LEG_INSTANCE
WHERE Arrival_airport_code  IN(
    SELECT Airport_code
    FROM AIRPORT
       WHERE City='Ankara'
       )
```

3. Dates of which CUSTOMERs named 'Ali' have a FLIGHT

```
SELECT Date
FROM SEAT_RESERVATION
WHERE Leg_number  IN(
    SELECT Leg_number
    FROM LEG_INSTANCE
       WHERE Customer_name='Ali'
       )
```

4. Countries which can be flown to between dates "01-01-2017" AND "2019-01-01"

```
SELECT Country

FROM CUSTOMER
WHERE Passaport_number  IN(
    SELECT Passaport_number
    FROM SEAT_RESERVATION
       WHERE Date BETWEEN '2017-01-01' AND '2019-01-01'
       )
```

5.D. Write 2 SELECT statements to exemplify EXISTS and NOT EXISTS statements.

EXIST

1.1. Gives Scheduled_departure _time information for FLIGHT_LEGs on Weekdays = “Salı”

```
SELECT Scheduled_departure_time
FROM FLIGHT_LEG
WHERE EXISTS (SELECT Airline FROM  FLIGHT WHERE
FLIGHT.Flight_number=FLIGHT_LEG.Flight_number AND Weekdays='Salı' )
```

1.2. Gives Amount information for FAREs on Weekdays = ”Cuma”

```
SELECT Amount
FROM FARE
WHERE EXISTS (SELECT Flight_number FROM  FLIGHT WHERE
FLIGHT.Flight_number=FARE.Flight_number AND Weekdays='Cuma' )
```

NOT EXIST

1.1. Gives Airport_code information if there is an AIRPLANE_TYPE with "Max_seats = 565" doesn't exist.

```
SELECT Airport_code
FROM CAN_LAND
WHERE NOT EXISTS (SELECT * FROM  AIRPLANE_TYPE WHERE
CAN_LAND.Airplane_type_name=AIRPLANE_TYPE.Airplane_type_name AND Max_seats=565 )
```

1.2. Gives Customer_name information there is a LEG_INSTANCE with Arrival_time = "11:21:11" doesn't exist.

```
SELECT Customer_name
FROM SEAT_RESERVATION
WHERE NOT EXISTS (SELECT * FROM  LEG_INSTANCE WHERE
SEAT_RESERVATION.Date=LEG_INSTANCE.Date AND Arrival_time='11:21:11' )
```

	Scheduled_departure_time
1	09:20:00.0000000

	Amount
1	250
2	256

	Airport_code
1	2
2	1
3	32
4	5
5	3

	Customer_name
1	Ali

5.E. Write 3 SELECT statements to exemplify LEFT, RIGHT and FULL OUTER JOIN statements.

1 - LEFT JOIN

1.1.

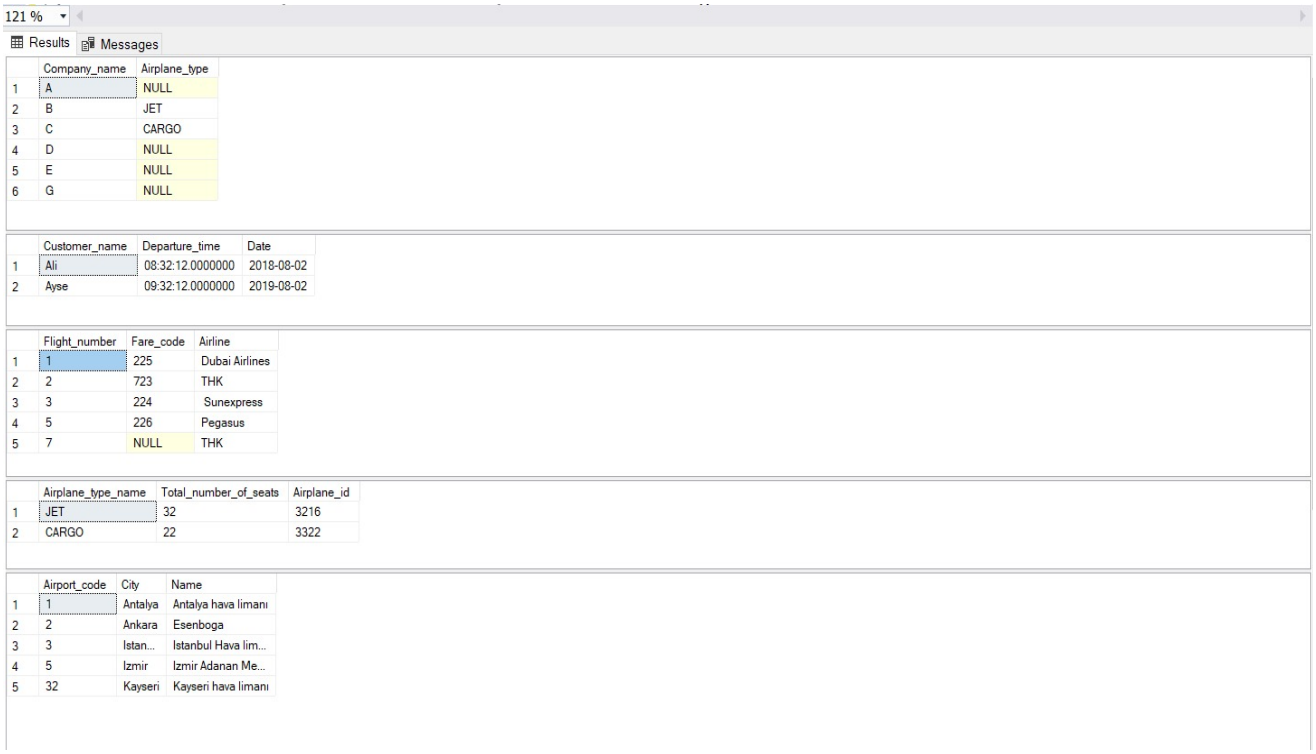
```
SELECT COMPANY.Company_name, AIRPLANE.Airplane_type
FROM COMPANY
LEFT JOIN AIRPLANE
ON COMPANY.Company_name=AIRPLANE.Company_name
```

1.2.

```
SELECT SEAT_RESERVATION.Customer_name, LEG_INSTANCE.Departure_time ,LEG_INSTANCE.Date
FROM SEAT_RESERVATION
LEFT JOIN LEG_INSTANCE
ON SEAT_RESERVATION.Date=LEG_INSTANCE.Date
```

1.3.

```
SELECT FLIGHT.Flight_number ,FARE.Fare_code, FLIGHT.Airline
FROM FLIGHT
LEFT JOIN FARE
ON FLIGHT.Flight_number=FARE.Flight_number
```



121 %

Results | Messages

	Company_name	Airplane_type
1	A	NULL
2	B	JET
3	C	CARGO
4	D	NULL
5	E	NULL
6	G	NULL

	Customer_name	Departure_time	Date
1	Ali	08:32:12.0000000	2018-08-02
2	Ayse	09:32:12.0000000	2019-08-02

	Flight_number	Fare_code	Airline
1	1	225	Dubai Airlines
2	2	723	THK
3	3	224	Sunexpress
4	5	226	Pegasus
5	7	NULL	THK

	Airplane_type_name	Total_number_of_seats	Airplane_id
1	JET	32	3216
2	CARGO	22	3322

	Airport_code	City	Name
1	1	Antalya	Antalya hava limanı
2	2	Ankara	Esenboga
3	3	Istan...	Istanbul Hava lim...
4	5	Izmir	Izmir Adanan Me...
5	32	Kayseri	Kayseri hava limanı

2 - RIGHT JOIN

2.1.

```
SELECT AIRPLANE_TYPE.Airplane_type_name
,AIRPLANE.Total_number_of_seats,AIRPLANE.Airplane_id
FROM AIRPLANE_TYPE
RIGHT JOIN AIRPLANE
ON AIRPLANE.Airplane_type=AIRPLANE_TYPE.Airplane_type_name
```

2.2.

```
SELECT CAN_LAND.Airport_code,AIRPORT.City,AIRPORT.Name
FROM CAN_LAND
RIGHT JOIN AIRPORT
ON CAN_LAND.Airport_code=AIRPORT.Airport_code
```

2.3.

```
SELECT LEG_INSTANCE.Flight_number,LEG_INSTANCE.Date,FLIGHT_LEG.Millage_information
FROM LEG_INSTANCE
RIGHT JOIN FLIGHT_LEG
ON FLIGHT_LEG.Flight_number=LEG_INSTANCE.Flight_number
```

	Airplane_type_name	Total_number_of_seats	Airplane_id
1	JET	32	3216
2	CARGO	22	3322

	Airport_code	City	Name
1	1	Antalya	Antalya hava limanı
2	2	Ankara	Esenboga
3	3	Istan...	Istanbul Hava lim...
4	5	Izmir	Izmir Adanan Me...
5	32	Kayseri	Kayseri hava limanı

	Flight_number	Date	Millage_information
1	1	2018-08-02	NULL
2	2	2017-08-02	Yeterli mil yok
3	3	2019-08-02	yeterli mill
4	5	2016-08-02	200 mil eksik

	Airport_code	Name	Scheduled_arrival_time
1	1	Antalya hava limanı	09:20:00.0000000
2	2	Esenboga	09:50:00.0000000
3	3	Istanbul Hava lim...	10:30:00.0000000
4	5	Izmir Adanan Me...	09:30:00.0000000
5	32	Kayseri hava limanı	NULL

	Passaport_number	Customer_name	Date	Flight_number
1	987654321	Busra	NULL	NULL
2	123456789	Hasan	2018-08-02	1
3	124365879	Hasan	NULL	NULL
4	124563978	Hatice	NULL	NULL
5	123654789	Melih	2019-08-02	3

	Passaport_number	Date	Address	Country	E_Mail
1	123456789	2018-08-02	denizlili mah	ABD	ali@gmail.com
2	123654789	2019-08-02	NULL	TURKEY	NULL
3	NULL	NULL	salim mah	kore	tarik@gmail.c...
4	NULL	NULL	deniz mah	K KORE	NULL
5	NULL	NULL	saluk mah	CIN	Veli@gmail.c...

3 – FULL OUTER JOIN

3.1.

```
SELECT AIRPORT.Airport_code,AIRPORT.Name,FLIGHT_LEG.Scheduled_arrival_time
FROM FLIGHT_LEG
FULL OUTER JOIN  AIRPORT
ON FLIGHT_LEG.Arrival_airport_code=AIRPORT.Airport_code
ORDER BY AIRPORT.Airport_code
```

3.2.

```
SELECT CUSTOMER.Passaport_number
,CUSTOMER.Customer_name,SEAT_RESERVATION.Date,SEAT_RESERVATION.Flight_number
FROM CUSTOMER
FULL OUTER JOIN  SEAT_RESERVATION
ON  CUSTOMER.Passaport_number=SEAT_RESERVATION.Passaport_number
ORDER BY CUSTOMER.Customer_name
```

3.3.

```
SELECT SEAT_RESERVATION.Passaport_number,
SEAT_RESERVATION.Date,CUSTOMER.Address,CUSTOMER.Country,CUSTOMER.E_Mail
FROM SEAT_RESERVATION
FULL OUTER JOIN  CUSTOMER
ON  CUSTOMER.Passaport_number=SEAT_RESERVATION.Passaport_number
ORDER BY CUSTOMER.Passaport_number
```

6. Create 5 views that are reasonable.

1. The view created according to CUSTOMERs' Name and Country data.

```
use Son
go
CREATE VIEW Customer_info
AS
SELECT Country,Customer_name
FROM  CUSTOMER
```

2. The view which holds Passport_number information for CUSTOMERs whose names starts with the letter "A"

```
use Son
GO
CREATE VIEW Customer_name_passaport
AS
SELECT Customer_name , Passaport_number
FROM CUSTOMER
WHERE Customer_name LIKE 'A%'
```

3. The view which holds Date and Flight_number information for FLIGHTs dated from 2016 to 2022

```
use Son
GO
CREATE VIEW LEG_INSTANCE_DATE_FLIGHT_NUMBER
AS
SELECT Date, Flight_number
FROM LEG_INSTANCE
WHERE Date >'2016-01-01' AND Date<'2022-01-01'
```

4. The view that shows on which days of the week, AIRLINE THK organizes FLIGHTs

```
use Son
GO
CREATE VIEW FLIGHT_on_WEEKDAYS
AS
SELECT Weekdays, Airline
FROM FLIGHT
WHERE Airline LIKE 'THK'
```

5. The view which holds Airplane_type and Company_name information for an AIRPLANE

```
use Son
GO
CREATE VIEW AIRPLANE_TYPE_COMPANY_NAME
AS
SELECT Company_name,Airplane_type
FROM AIRPLANE
```