University of Jeddah College of
Computer Science and Engineering

King Abdul-Aziz International Airport

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Computer Science and Engineering

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Section: CY9

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Introduction

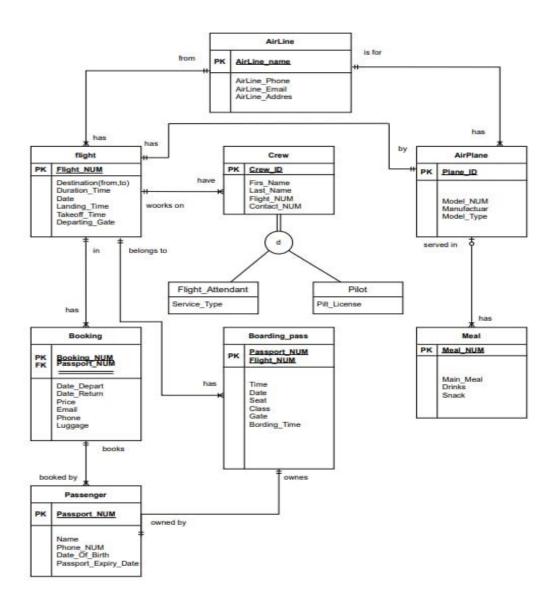## Phase1:

problem description :

King Abdelaziz airport needs a new database system to organize online booking and make it easier for the passengers to book their flights this database will help the passenger to be able to find information about their flights and keep them updated and help the staff analyse the fights and the passengers and make it easier to deal with the knowledge of the passengers and the flights.

Entities:

1- Airline
2- Airplane
3- Flight
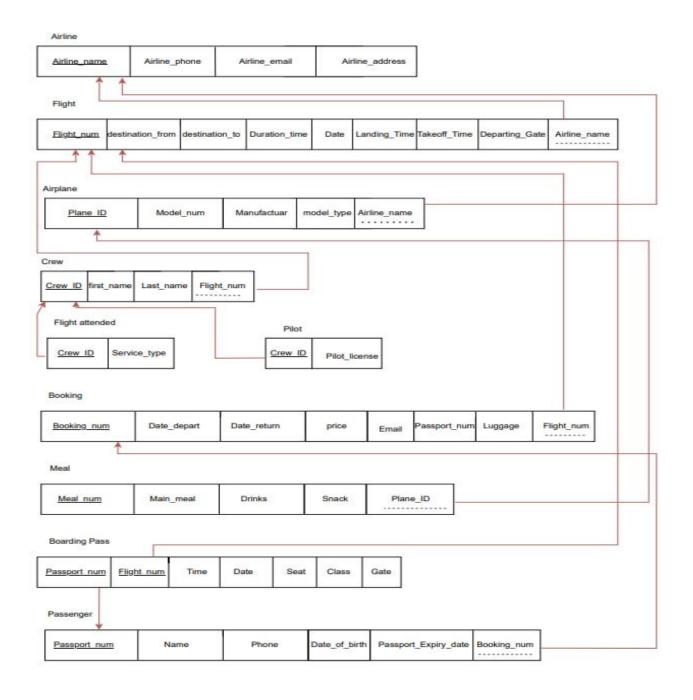4- Booking
5- Meal
6- Boarding_pass
7- Passenger
8 -Crew

Phase2:

AirLine

PK	AirLine_name
	AirLine_Phone
	AirLine_Email
	AirLine_Addres

flight

PK	Flight_NUM
	Destination(from,to)
	Duration_Time
	Date
	Landing_Time
	Takeoff_Time
	Departing_Gate

Crew

PK	Crew_ID
	Firs_Name
	Last_Name
	Flight_NUM
	Contact_NUM

AirPlane

PK	Plane_ID
	Model_NUM
	Manufactuar
	Model_Type

Flight_Attendant

Service_Type

Pilot

Pilt_License

Booking

PK FK	Booking_NUM Passport_NUM
	Date_Depart
	Date_Return
	Price
	Email
	Phone
	Luggage

Boarding_pass

PK	Passport_NUM Flight_NUM
	Time
	Date
	Seat
	Class
	Gate
	Bording_Time

Meal

PK	Meal_NUM
	Main_Meal
	Drinks
	Snack

Passenger

PK	Passport_NUM
	Name
	Phone_NUM
	Date_Of_Birth
	Passport_Expiry_Date

4

Phase 3:

Airline

Airline_name	Airline_phone	Airline_email	Airline_address

Flight

Flight_num	destination_from	destination_to	Duration_time	Date	Landing_Time	Takeoff_Time	Departing_Gate	Airline_name

Airplane

Plane_ID	Model_num	Manufactuar	model_type	Airline_name

Crew

Crew_ID	first_name	Last_name	Flight_num

Flight attended

Crew_ID	Service_type

Pilot

Crew_ID	Pilot_license

Booking

Booking_num	Date_depart	Date_return	price	Email	Passport_num	Luggage	Flight_num

Meal

Meal_num	Main_meal	Drinks	Snack	Plane_ID

Boarding Pass

Passport_num	Flight_num	Time	Date	Seat	Class	Gate

Passenger

Passport_num	Name	Phone	Date_of_birth	Passport_Expiry_date	Booking_num

Normalization:

The condition for 1NF:
  1-All relation must have unique primary key.
  2-Remove repeating group or remove multi value attribute.
  3-remove composite attribute
 The flight entity has a composite attribute Destination (to, from)
 When we turned the er diagram to relation the composite attribute was broken
into two separate entities.

The condition for 2NF:
1-Remove partial functional dependencies.
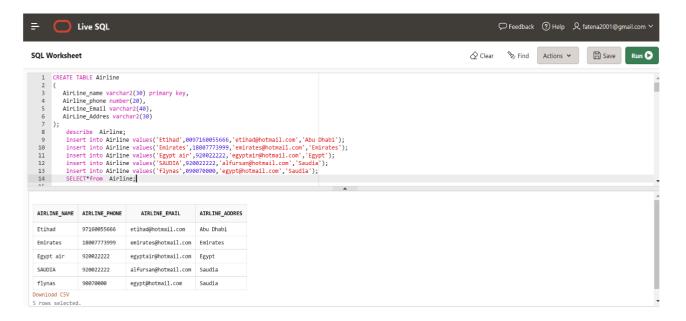 already in 2NF.

The condition for 3NF:
 1-Remove transitive dependencies.
 already in 3NF; No transitive dependency
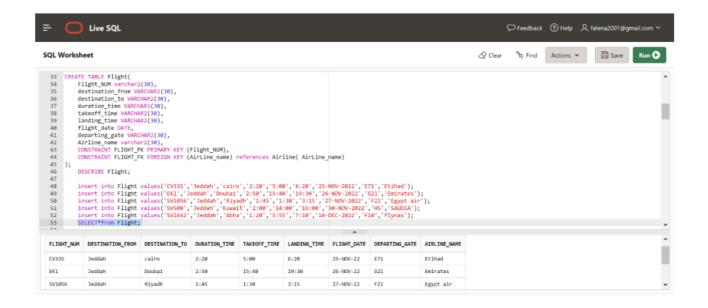
Phase4:

code:

1- Airline Table

2- Airplane Table

3- Flight Table

SQL Worksheet   ⟋ Clear   ⚲ Find   Actions ∨   💾 Save   Run ▶

```
33   CREATE TABLE Flight(
34       Flight_NUM varchar2(30),
35       destination_from VARCHAR2(30),
36       destination_to VARCHAR2(30),
37       duration_time VARCHAR2(30),
38       takeoff_time VARCHAR2(30),
39       landing_time VARCHAR2(30),
40       flight_date DATE,
41       departing_gate VARCHAR2(30),
42       Airline_name varchar2(30),
43       CONSTRAINT FLIGHT_PK PRIMARY KEY (Flight_NUM),
44       CONSTRAINT FLIGHT_FK FOREIGN KEY (AirLine_name) references Airline( AirLine_name)
45   );
46       DESCRIBE Flight;
47
48       insert into Flight values('CV335','Jeddah','cairo','2:20','5:00','6:20','25-NOV-2022','E71','Etihad');
49       insert into Flight values('EK1','Jeddah','Doubai','2:50','15:40','19:30','26-NOV-2022','G21','Emirates');
50       insert into Flight values('SV1056','Jeddah','Riyadh','1:45','1:30','3:15','27-NOV-2022','F21','Egypt air');
51       insert into Flight values('SV500','Jeddah','Kuwait','2:00','14:00','16:00','30-NOV-2022','H5','SAUDIA');
52       insert into Flight values('SV1642','Jeddah','Abha','1:20','5:55','7:10','10-DEC-2022','F10','flynas');
53       SELECT*from Flight;
```

FLIGHT_NUM	DESTINATION_FROM	DESTINATION_TO	DURATION_TIME	TAKEOFF_TIME	LANDING_TIME	FLIGHT_DATE	DEPARTING_GATE	AIRLINE_NAME
CV335	Jeddah	cairo	2:20	5:00	6:20	25-NOV-22	E71	Etihad
EK1	Jeddah	Doubai	2:50	15:40	19:30	26-NOV-22	G21	Emirates
SV1056	Jeddah	Riyadh	1:45	1:30	3:15	27-NOV-22	F21	Egypt air

4- Crew Table

SQL Worksheet   ⟋ Clear   ⚲ Find   Actions ∨   💾 Save   Run ▶

```
55   CREATE TABLE Crew (
56       Crew_ID Varchar2(30),
57       first_name VARCHAR2(30),
58       last_name VARCHAR2(30),
59       Flight_NUM varchar2(30),
60       CONSTRAINT CREW_PK PRIMARY KEY (Crew_ID),
61       CONSTRAINT CREW_FK FOREIGN KEY (Flight_NUM) REFERENCES Flight (Flight_NUM)
62   );
63       DESCRIBE Crew;
64       -- FLIGHT ATTENDET INFO
65       insert into Crew values ('ANH178H', 'CLARK', 'KING','CV335' );
66       insert into Crew values ('JXW443M', 'MILLER','FORD','SV1056' );
67       insert into Crew values ('LME284F', 'ALELEN','TURNER','SV500' );
68       insert into Crew values ('OZQ035Z', 'SMITH','BLAKE','EK1' );
69       insert into Crew values ('LAW630B', 'JONES','TURNER','SV1642' );
70       -- PILOT INFO
71       insert into Crew values ('QWE165G', 'ADAM', 'TURNER','CV335' );
72       insert into Crew values ('FVH548V', 'JAMES', 'FORD','SV1056' );
73       insert into Crew values ('KIS043F', 'SCOTT','BLAKE','SV500' );
74       insert into Crew values ('DZM364G', 'BLAKE','FORD','EK1' );
75       insert into Crew values ('LAG829A', 'JONES','KING','SV1642' );
76       SELECT *FROM Crew:
```

CREW_ID	FIRST_NAME	LAST_NAME	FLIGHT_NUM
ANH178H	CLARK	KING	CV335
JKW443M	MILLER	FORD	SV1056
LME284F	ALELEN	TURNER	SV500

5-Flight Attended Table

Join:

SELECT Crew_ID,first_name,last_name,Flight_NUM,service_type
FROM Crew NATURAL JOIN FlightAttended ;

6-Pilot Table

Join:

SELECT Crew_ID,first_name,last_name,Pilot_license,Flight_NUM FROM Crew NATURAL JOIN Pilot
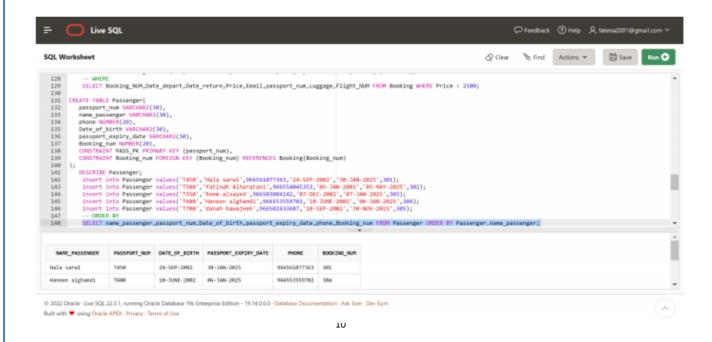
7-Booking Table

Where:

SELECT Booking_NUM,Date_depart,Date_return,Price,Email,passport_num,Luggage,Flight_NUM FROM Booking WHERE Price > 2500

8- Passenger Table

Order by:

SELECT name_passenger,passport_num,Date_of_birth,passport_expiry_date,phone,Booking_num FROM Passenger ORDER BY Passenger.name_passenger
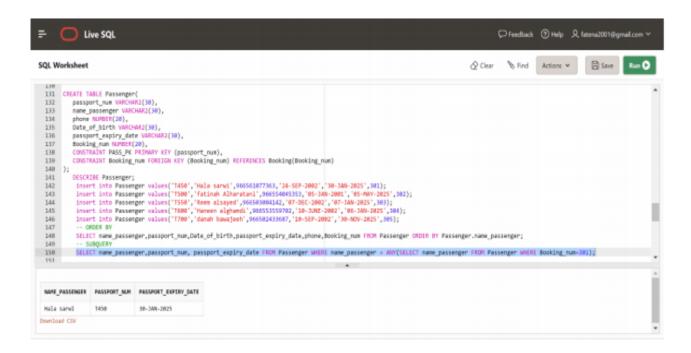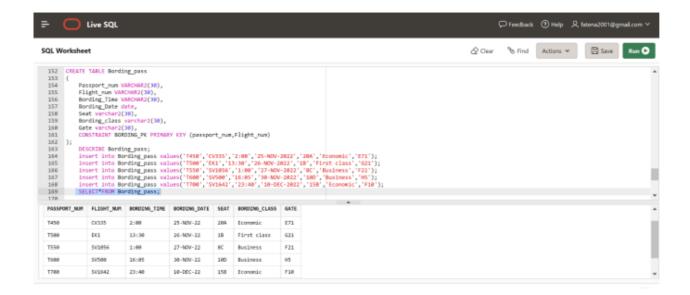
9-Passenger Table

SUBQUERY:

SELECT name_passenger,passport_num, passport_expiry_date FROM Passenger WHERE name_passenger = ANY(SELECT name_passenger FROM Passenger WHERE Booking_num=301)

10-Bording_pass Table

11Meal Table:

Aggregate function:

SELECT COUNT(Meal_num) AS MEAL_NUMBER, Main_meal AS MEAL_NAME FROM Meal GROUP BY Main_meal ;