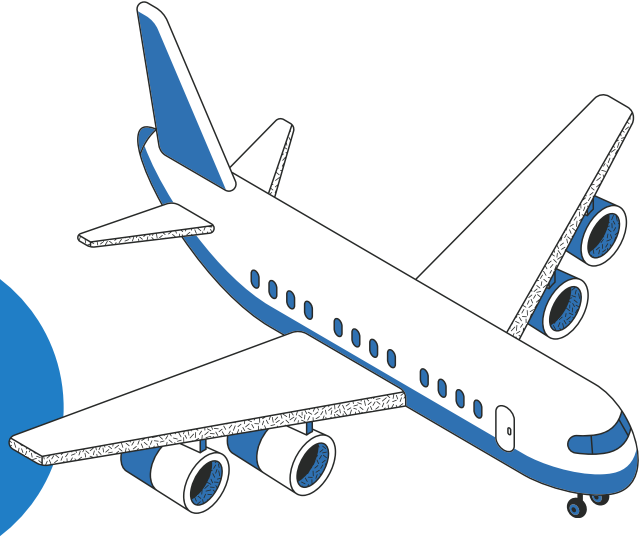

DATABASE PROJECT

Airline System

جامعة جدة
University of Jeddah

TEAM OF WORK

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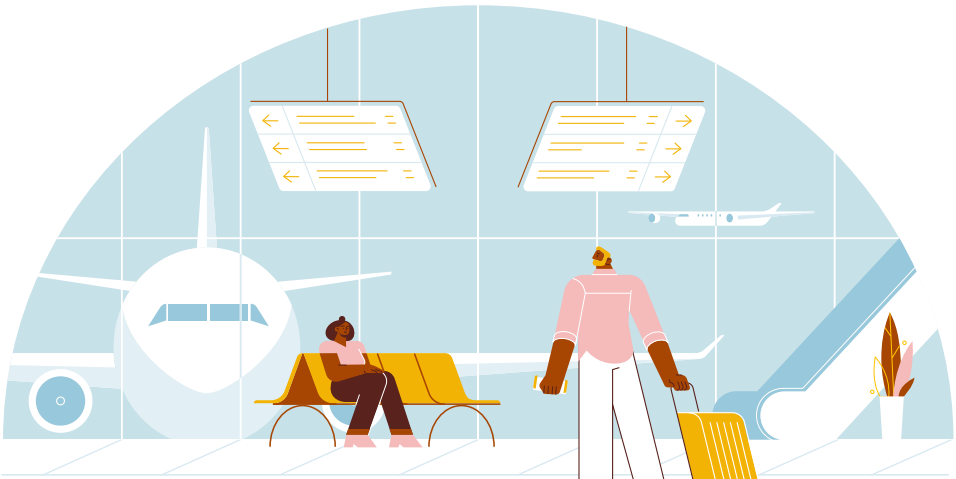
INTRODUCTION:

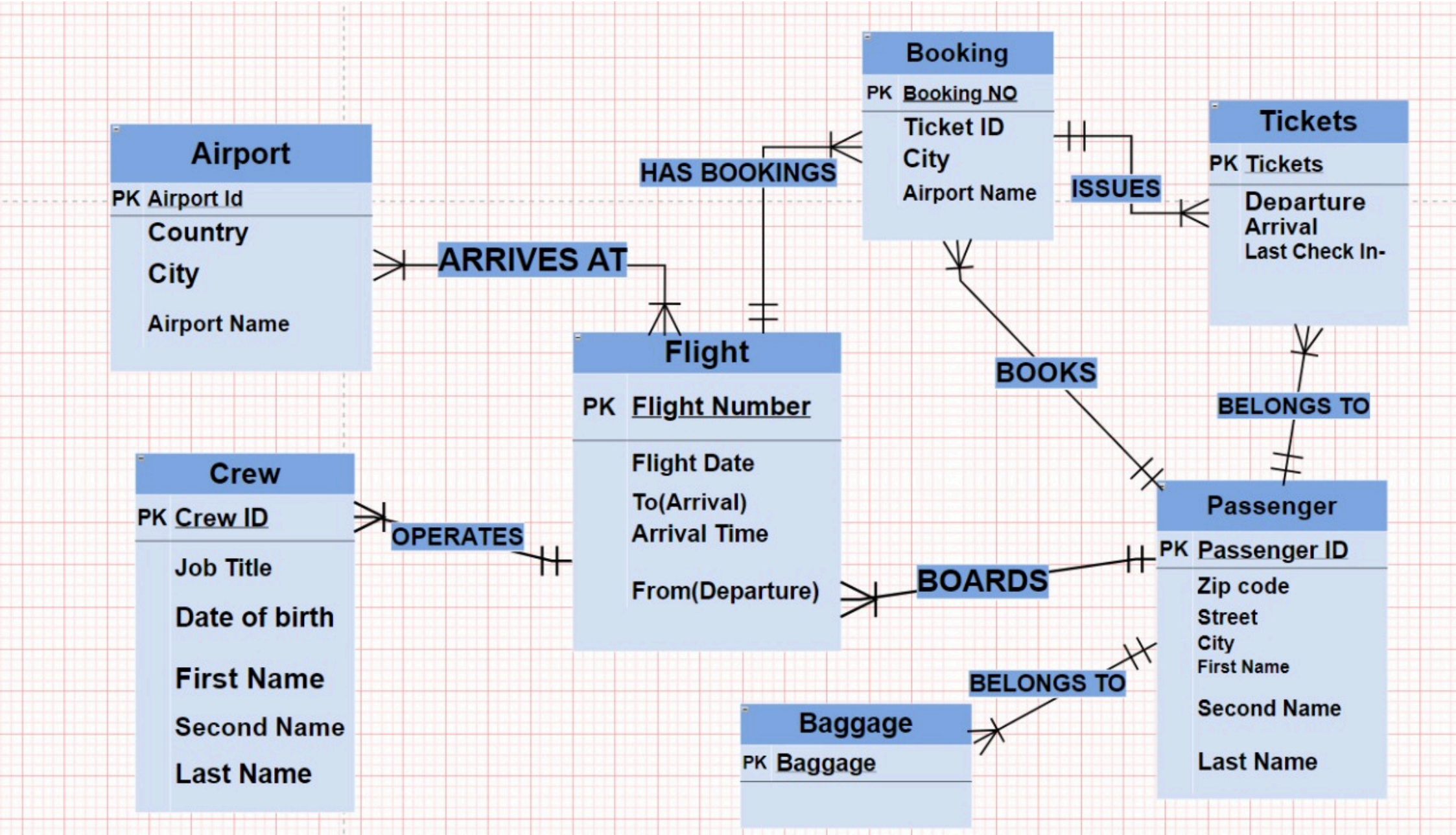
SKY AIRLINE AIMS TO EXPAND ITS OPERATIONS GLOBALLY, EXTENDING BEYOND LOCAL ROUTES. TO ACHIEVE STREAMLINED AIRLINE OPERATIONS, WE'RE DEVELOPING A COMPREHENSIVE DATABASE SYSTEM THAT AUTOMATES ESSENTIAL PROCESSES SUCH AS MANAGING FLIGHTS, PASSENGERS, BOOKINGS, AIRPORTS, TICKETS, CREW, AND BAGGAGE . "FLIGHTS":EACH FLIGHT OPERATES BETWEEN TWO AIRPORTS . "PASSENGERS:" BOOKINGS ARE ASSOCIATED WITH ONE PASSENGER FOR ACCURATE RESERVATION MANAGEMENT." BOOKINGS:"REPRESENT PASSENGER RESERVATIONS, EACH TIED TO ONE TICKET FOR SIMPLIFIED TRACKING."AIRPORTS:"DEPARTURE AND ARRIVAL POINTS FOR FLIGHTS, AIDING ROUTE PLANNING." TICKETS:"EACH BOOKING CORRESPONDS TO A TICKET WITH ESSENTIAL FLIGHT DETAILS."CREW:"ASSIGNED TO FLIGHTS FOR PASSENGER SAFETY AND COMFORT." BAGGAGE:"MANAGED FOR SMOOTH HANDLING AND DELIVERY." OUR DATABASE SYSTEM ENHANCES OPERATIONAL EFFICIENCY, IMPROVES CUSTOMER SERVICE, AND ENSURES ACCURATE AND TIMELY MANAGEMENT OF AIRLINE OPERATIONS ON A GLOBAL SCALE.



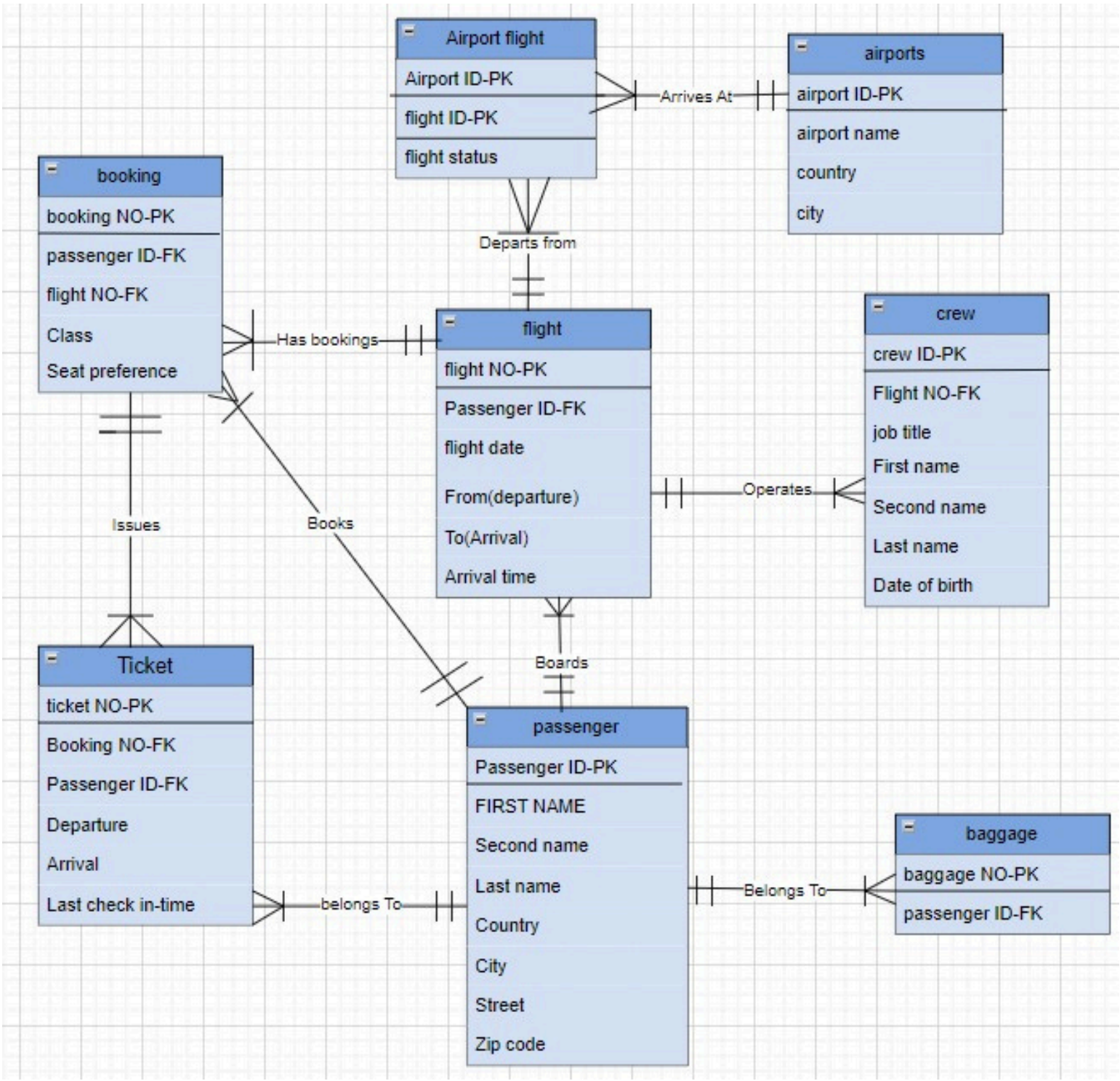
LIST OF ENTITIES

ENTITIES	DISCRIBTION	PRIMARY KEY
FLIGHTS	ENTITY WHICH REPRESENTS ALL FLIGHTS SCHEDULE AND INFORMATION .	FLIGHT NO
AIRPORT	ENTITY WHICH REPRESENTS THE AIRPORT ADRESS	AIRPORT ID
CREW	ENTITY WHICH REPRESENTS ALL EMPLOYEE WORKING IN THE AIRLINE DETERMINED BY THE ATTRIBUTE	CREW ID
PASSENGER	ENTITY WHICH REPRESENTS ALL PEOPLE THAT HAVE RESERVATION IN THE AIRLINE	PASSENGER ID
BOOKING	ENTITY WHICH REPRESENTS RESERVATION INFORMATIONS	BOOKING NO
BAGGAGE	ENTITY WHICH REPRESENTS WHAT PASSENGER BELONGINGS	BAGGAGE NO
TICKET	ENTITY WHICH SHOWS THAT YOU HAVE A RESERVATION	TICKET NO

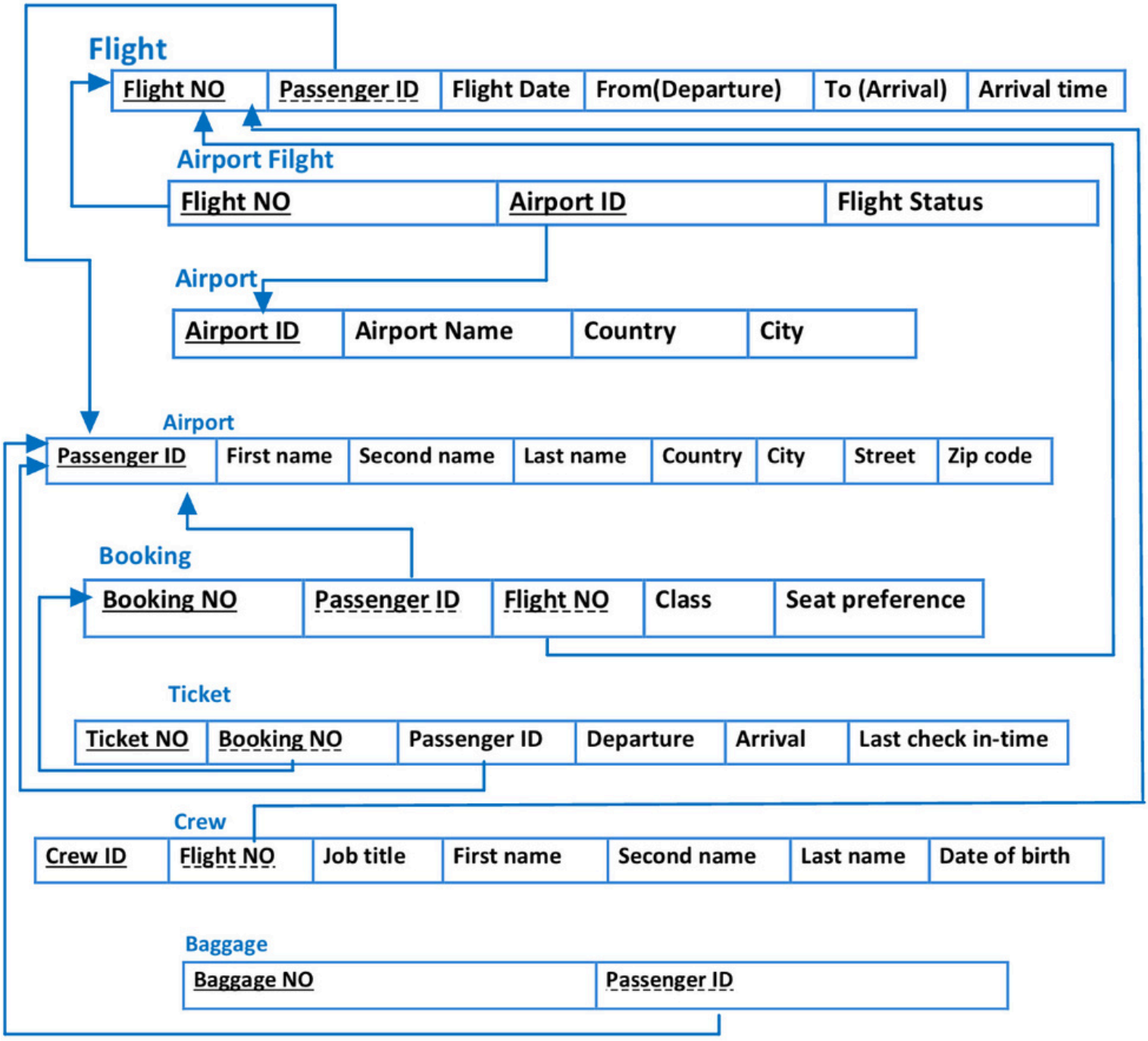
ER


Airport
PK Airport Id
Country
City
Airport Name
ARRIVES AT
HAS BOOKINGS
Booking
PK Booking NO
Ticket ID
City
Airport Name
ISSUES
Tickets
PK Tickets
Departure
Arrival
Last Check In-
Flight
PK Flight Number
Flight Date
To(Arrival)
Arrival Time
From(Departure)
BOOKS
BELONGS TO
Crew
PK Crew ID
Job Title
Date of birth
First Name
Second Name
Last Name
OPERATES
BOARDS
Passenger
PK Passenger ID
Zip code
Street
City
First Name
Second Name
Last Name
BELONGS TO
Baggage
PK Baggage

ERD


Airport flight
Airport ID-PK
flight ID-PK
flight status
Arrives At
airports
airport ID-PK
airport name
country
city
Departs from
booking
booking NO-PK
passenger ID-FK
flight NO-FK
Class
Seat preference
Has bookings
flight
flight NO-PK
Passenger ID-FK
flight date
From(departure)
To(Arrival)
Arrival time
crew
crew ID-PK
Flight NO-FK
job title
First name
Second name
Last name
Date of birth
Operates
Issues
Books
Boards
Ticket
ticket NO-PK
Booking NO-FK
Passenger ID-FK
Departure
Arrival
Last check in-time
belongs To
passenger
Passenger ID-PK
FIRST NAME
Second name
Last name
Country
City
Street
Zip code
Belongs To
baggage
baggage NO-PK
passenger ID-FK

RDM


Flight
Flight NO
Passenger ID
Flight Date
From(Departure)
To (Arrival)
Arrival time
Airport Filght
Flight NO
Airport ID
Flight Status
Airport
Airport ID
Airport Name
Country
City
Airport
Passenger ID
First name
Second name
Last name
Country
City
Street
Zip code
Booking
Booking NO
Passenger ID
Flight NO
Class
Seat preference
Ticket
Ticket NO
Booking NO
Passenger ID
Departure
Arrival
Last check in-time
Crew
Crew ID
Flight NO
Job title
First name
Second name
Last name
Date of birth
Baggage
Baggage NO
Passenger ID

NORMALIZATION

1NF:

- EACH RELATION HAS A UNIQUE PRIMARY KEY.
- THERE ARE NO MULTIVALUED ATTRIBUTES.
- ALL ATTRIBUTES ARE FUNCTIONALLY DEPENDENT ON THE PRIMARY KEY.
- NO REPEATING GROUPS ARE PRESENT.

2NF:

- THE SCHEMA IS ALREADY IN 1NF.
- NO RELATIONS EXHIBIT PARTIAL FUNCTIONAL DEPENDENCY.

3NF:

- THE SCHEMA IS ALREADY IN 2NF.
- NO RELATIONS HAVE TRANSITIVE FUNCTIONAL DEPENDENCIES.

FUNCTIONAL DESPONDENCIES (FD)

FLIGHT NO → FLIGHT DATE, DEPARTURE(FROM), ARRIVAL(TO),ARRIVALTIME

PASSENGER ID → FIRSTNAME, SECONDNAME, LASTNAME, COUNTRY, CITY, STREET, ZIPCODE

BOOKING NO → CLASS, SEAT PREFERENCE

TICKET NO → DEPARTURE, ARRIVAL, LAST CHECKIN TIME

CREW ID → JOB TITLE, FIRST NAME, SECOND NAME, LAST NAME, DATE OF BIRTH

CODING

FLIGHT ENTITY:

- **TABLE CREATION**

```
CREATE TABLE Flight (
    Flight_NO Number(2) Primary Key,
    Passenger_ID Number(4) References Passenger(Passenger_ID),
    FlightDate Date,
    FromDeparture Varchar(10),
    ToArrival Varchar(10),
    ArrivalTime Varchar(10)
);
```

```
Table created.
```

CODING

FLIGHT ENTITY:

- **INSERT INTO TABLE**

```
INSERT INTO Flight VALUES (10,2005,to_date ('22-06-2024','dd-mm-yyyy'),'Istanbul','Tokyo','8:00pm');
INSERT INTO Flight VALUES (11,2239,to_date ('15-07-2024','dd-mm-yyyy'),'Chicago','New York','4:30pm');
INSERT INTO Flight VALUES (12,6175,to_date ('13-06-2024','dd-mm-yyyy'),'Bali','Tokyo','6:00am');
INSERT INTO Flight VALUES (13,5151,to_date ('29-07-2024','dd-mm-yyyy'),'Dubai','London','11:45pm');
INSERT INTO Flight VALUES (14,4047,to_date ('03-08-2024','dd-mm-yyyy'),'Paris','Busan','7:00pm');
```

```
1 row(s) inserted.

1 row(s) inserted.

1 row(s) inserted.

1 row(s) inserted.

1 row(s) inserted.
```

```
SELECT * FROM Flight;
```

FLIGHT_NO	PASSENGER_ID	FLIGHTDATE	FROMDEPARTURE	TOARRIVAL	ARRIVALTIME
10	2005	22-JUN-24	Istanbul	Tokyo	8:00pm
11	2239	15-JUL-24	Chicago	New York	4:30pm
12	6175	13-JUN-24	Bali	Tokyo	6:00am
13	5151	29-JUL-24	Dubai	London	11:45pm
14	4047	03-AUG-24	Paris	Busan	7:00pm

Download CSV

5 rows selected.

CODING

PASSENGER ENTITY:

- **TABLE CREATION**

```
CREATE TABLE Passenger (
    Passenger_ID Number(4) Primary Key,
    ZipCode Number(3),
    Street Varchar(20),
    City Varchar(20),
    FirstName Varchar(10),
    SecondName Varchar(10),
    LastName Varchar(10)
);

```

```
Table created.
```

CODING

PASSENGER ENTITY:

- **INSERT INTO TABLE**

```
INSERT INTO Passenger VALUES (2005,100, 'Pine', 'Istanbul', 'Mohammad', 'Lateef', 'Yazan');
INSERT INTO Passenger VALUES (2239,662, 'Sunset', 'Dubai', 'Sara', 'Lima', 'McAvoy');
INSERT INTO Passenger VALUES (6175,310, 'Zahraa', 'Jeddah', 'Reem', 'Ahmed', 'Ayman');
INSERT INTO Passenger VALUES (5151,921, 'Cedar', 'Scranton', 'Chris', 'Ivan', 'Cerulli');
INSERT INTO Passenger VALUES (4047,515, 'Willow', 'Seul', 'Lara', 'Merry', 'Bing');
```

```
1 row(s) inserted.

1 row(s) inserted.

1 row(s) inserted.

1 row(s) inserted.

1 row(s) inserted.
```

```
SELECT * FROM Passenger;
```

PASSENGER_ID	ZIPCODE	STREET	CITY	FIRSTNAME	SECONDNAME	LASTNAME
2005	100	Pine	Istanbul	Mohammad	Lateef	Yazan
2239	662	Sunset	Dubai	Sara	Lima	McAvoy
6175	310	Zahraa	Jeddah	Reem	Ahmed	Ayman
5151	921	Cedar	Scranton	Chris	Ivan	Cerulli
4047	515	Willow	Seul	Lara	Merry	Bing

Download CSV

5 rows selected.

CODING

BOOKING ENTITY:

- **TABLE CREATION**

```
CREATE TABLE Booking (
    Booking_NO Varchar(3) Primary Key,
    Passenger_ID Number(4) References Passenger(Passenger_ID),
    Flight_NO Number(2) References Flight(Flight_NO),
    Class Varchar(10),
    SeatPreference Varchar(10)
);
```

```
Table created.
```

CODING

BOOKING ENTITY:

- **INSERT INTO TABLE**

```
INSERT INTO Booking VALUES ('A01',2005,10,'First','Window');
INSERT INTO Booking VALUES ('B03',2239,11,'Eco','Aisle');
INSERT INTO Booking VALUES ('A99',6175,12,'Business','FrontRow');
INSERT INTO Booking VALUES ('C70',5151,13,'Eco','Window');
INSERT INTO Booking VALUES ('Z08',4047,14,'First','Window');
```

```
1 row(s) inserted.

1 row(s) inserted.

1 row(s) inserted.

1 row(s) inserted.

1 row(s) inserted.
```

```
SELECT * FROM Booking;
```

BOOKING_NO	PASSENGER_ID	FLIGHT_NO	CLASS	SEATPREFERENCE
A01	2005	10	First	Window
B03	2239	11	Eco	Aisle
A99	6175	12	Business	FrontRow
C70	5151	13	Eco	Window
Z08	4047	14	First	Window

Download CSV

5 rows selected.

CODING

TICKET ENTITY:

- **TABLE CREATION**

```
CREATE TABLE Ticket (
    Ticket_NO Varchar(2) Primary Key,
    Booking_NO Varchar(3) References Booking(Booking_NO),
    Passenger_ID Number(4) References Passenger(Passenger_ID),
    Departure Varchar(10),
    Arrival Varchar(10),
    LastCheckInTime Varchar(10)
);

```

```
Table created.
```

CODING

TICKET ENTITY:

- **INSERT INTO TABLE**

```
INSERT INTO Ticket VALUES ('T1','A01',2005,'Istanbul','Tokyo','45min');
INSERT INTO Ticket VALUES ('T2','B03',2239,'Chicago','New York','90min');
INSERT INTO Ticket VALUES ('T3','A99',6175,'Bali','Tokyo','90min');
INSERT INTO Ticket VALUES ('T4','C70',5151,'Dubai','London','30min');
INSERT INTO Ticket VALUES ('T5','Z08',4047,'Paris','Busan','45min');
```

```
1 row(s) inserted.

1 row(s) inserted.

1 row(s) inserted.

1 row(s) inserted.

1 row(s) inserted.
```

```
SELECT * FROM Ticket;
```

TICKET_NO	BOOKING_NO	PASSENGER_ID	DEPARTURE	ARRIVAL	LASTCHECKINTIME
T1	A01	2005	Istanbul	Tokyo	45min
T2	B03	2239	Chicago	New York	90min
T3	A99	6175	Bali	Tokyo	90min
T4	C70	5151	Dubai	London	30min
T5	Z08	4047	Paris	Busan	45min

Download CSV

5 rows selected.

CODING

CREW ENTITY:

- **TABLE CREATION**

```
CREATE TABLE Crew (
    Crew_ID Number(4) Primary Key,
    Flight_NO Number(2) References Flight(Flight_NO),
    JobTitle Varchar2(20),
    DateofBirth Date,
    FirstName Varchar(10),
    SecondName Varchar(10),
    LastName Varchar(10)
);
```

```
Table created.
```

CODING

CREW ENTITY:

- **INSERT INTO TABLE**

```
INSERT INTO Crew VALUES (9680,10,'Pilot', to_date ('15-04-1977','dd-mm-yyyy'),'Rayleigh','Milo','Hill');
INSERT INTO Crew VALUES (5138,11,'Co-pilot', to_date ('30-11-1982','dd-mm-yyyy'),'Martinus','Lennon','Elder');
INSERT INTO Crew VALUES (2301,12,'Flight Attendant ', to_date ('10-10-1994','dd-mm-yyyy'),'Jasmine','Celine','Gray');
INSERT INTO Crew VALUES (4228,13,'Flight Engineer', to_date ('07-09-1989','dd-mm-yyyy'),'Hunter','Jude','Pierce');
INSERT INTO Crew VALUES (4727,14,'Pilot', to_date ('15-04-1977','dd-mm-yyyy'),'Tyla','Mia','Henley');
```

```
1 row(s) inserted.

1 row(s) inserted.

1 row(s) inserted.

1 row(s) inserted.

1 row(s) inserted.
```

```
SELECT * FROM Crew;
```

CREW_ID	FLIGHT_NO	JOBTITLE	DATEOFBIRTH	FIRSTNAME	SECONDNAME	LASTNAME
9680	10	Pilot	15-APR-77	Rayleigh	Milo	Hill
5138	11	Co-pilot	30-NOV-82	Martinus	Lennon	Elder
2301	12	Flight Attendant	10-OCT-94	Jasmine	Celine	Gray
4228	13	Flight Engineer	07-SEP-89	Hunter	Jude	Pierce
4727	14	Pilot	15-APR-77	Tyla	Mia	Henley

Download CSV

5 rows selected.

CODING

AIRPORTS ENTITY:

- **TABLE CREATION**

```
CREATE TABLE Airports (
    Airport_ID Varchar(3) Primary Key,
    AirportName Varchar(10),
    Country Varchar(10),
    City Varchar(10)
);
```

```
Table created.
```

CODING

- **INSERT INTO TABLE**

```
INSERT INTO Airports VALUES('F01','Jetport','Japan','Tokyo');
INSERT INTO Airports VALUES('F02','Airhub','USA','New York');
INSERT INTO Airports VALUES('F03','Jetport','Japan','Tokyo');
INSERT INTO Airports VALUES('F04','Flyzone','UK','London');
INSERT INTO Airports VALUES('F05','Skyport','Korea','Busan');
```

```
1 row(s) inserted.

1 row(s) inserted.

1 row(s) inserted.

1 row(s) inserted.

1 row(s) inserted.
```

```
SELECT * FROM Airports;
```

AIRPORT_ID	AIRPORTNAME	COUNTRY	CITY
F01	Jetport	Japan	Tokyo
F02	Airhub	USA	New York
F03	Jetport	Japan	Tokyo
F04	Flyzone	UK	London
F05	Skyport	Korea	Busan

Download CSV

5 rows selected.

CODING

AIRPORTFLIGHT ENTITY:

- **TABLE CREATION**

```
CREATE TABLE AirportFlight (
    Airport_ID Varchar(3) References Airports(Airport_ID),
    Flight_NO Number(2) References Flight(Flight_NO),
    FlightStatus Varchar(10)
);
```

```
Table created.
```

CODING

AIRPORTFLIGHT ENTITY:

- **INSERT INTO TABLE**

```
1  INSERT INTO AirportFlight VALUES('F01',10,'InTime');
2  INSERT INTO AirportFlight VALUES('F02',11,'Delayed');
3  INSERT INTO AirportFlight VALUES('F03',12,'InTime');
4  INSERT INTO AirportFlight VALUES('F04',13,'Delayed');
5  INSERT INTO AirportFlight VALUES('F05',14,'InTime');
6
7
8
9
```

```
1 row(s) inserted.

1 row(s) inserted.

1 row(s) inserted.

1 row(s) inserted.

1 row(s) inserted.
```

```
1  SELECT * FROM AirportFlight;
2
3
4
5
```

AIRPORT_ID	FLIGHT_NO	FLIGHTSTATUS
F01	10	InTime
F02	11	Delayed
F03	12	InTime
F04	13	Delayed
F05	14	InTime

Download CSV

5 rows selected.

CODING

BAGGAGE ENTITY:

- **TABLE CREATION**

```
CREATE TABLE Baggage (
    Baggage_NO Number(2) Primary Key,
    Passenger_ID Number(4) References Passenger(Passenger_ID)
);
```

```
Table created.
```

CODING

BAGGAGE ENTITY:

- **INSERT INTO TABLE**

```
1  INSERT INTO Baggage VALUES (20,2005);
2  INSERT INTO Baggage VALUES (22,2239);
3  INSERT INTO Baggage VALUES (61,6175);
4  INSERT INTO Baggage VALUES (51,5151);
5  INSERT INTO Baggage VALUES (40,4047);
6
7
8
```

```
1 row(s) inserted.

1 row(s) inserted.

1 row(s) inserted.

1 row(s) inserted.

1 row(s) inserted.
```

```
1  SELECT * FROM Baggage;
2
3
4
5
```

BAGGAGE_NO	PASSENGER_ID
20	2005
22	2239
61	6175
51	5151
40	4047

Download CSV

5 rows selected.

CODING

THE QUERIES:

1

```sql
SELECT FlightStatus, COUNT(*) AS TotalFlights
FROM AirportFlight
WHERE FlightStatus = 'InTime'
GROUP BY FlightStatus;
```

FLIGHTSTATUS	TOTALFLIGHTS
InTime	3

Download CSV

2

```sql
SELECT Passenger_ID, Ticket_NO, LastCheckInTime
FROM Ticket
WHERE LastCheckInTime = '45min' OR Passenger_ID > 6000;
```

PASSENGER_ID	TICKET_NO	LASTCHECKINTIME
2005	T1	45min
6175	T3	90min
4047	T5	45min

Download CSV

3 rows selected.

CODING

THE QUERIES:

3

```sql
SELECT t.*, p.City
FROM Ticket t
LEFT JOIN (
    SELECT Passenger_ID, City
    FROM Passenger) p ON t.Passenger_ID = p.Passenger_ID;
```

TICKET_NO	BOOKING_NO	PASSENGER_ID	DEPARTURE	ARRIVAL	LASTCHECKINTIME	CITY
T1	A01	2005	Istanbul	Tokyo	45min	Istanbul
T2	B03	2239	Chicago	New York	90min	Dubai
T3	A99	6175	Bali	Tokyo	90min	Jeddah
T4	C70	5151	Dubai	London	30min	Scranton
T5	Z08	4047	Paris	Busan	45min	Seul

Download CSV

5 rows selected.

4

```sql
SELECT FirstName, LastName, JobTitle, Flight_NO
FROM Crew
WHERE Crew_ID IN (
    SELECT Crew_ID
    FROM Crew
    WHERE JobTitle = 'Pilot' AND LastName LIKE 'H%'
);
```

FIRSTNAME	LASTNAME	JOBTITLE	FLIGHT_NO
Rayleigh	Hill	Pilot	10
Tyla	Henley	Pilot	14

Download CSV

2 rows selected.

CODING

THE PROCEDURES:

SQL Worksheet

Clear Find Actions Save Run

```
CREATE OR REPLACE PROCEDURE DisplayBookingInfo(p_passenger_id IN NUMBER)
AS
BEGIN
    FOR booking_rec IN (
        SELECT b.Booking_NO, b.Class, b.SeatPreference, f.Flight_NO, f.FlightDate, f.FromDeparture, f.ToArrival, f.Arrival
        FROM Booking b
        JOIN Flight f ON b.Flight_NO = f.Flight_NO
        WHERE b.Passenger_ID = p_passenger_id
    )
    LOOP
        DBMS_OUTPUT.PUT_LINE('Booking Number: ' || booking_rec.Booking_NO);
        DBMS_OUTPUT.PUT_LINE('Class: ' || booking_rec.Class);
        DBMS_OUTPUT.PUT_LINE('Seat Preference: ' || booking_rec.SeatPreference);
        DBMS_OUTPUT.PUT_LINE('Flight Number: ' || booking_rec.Flight_NO);
```

```
Procedure created.
```

CALL PROCEDURES:

```
EXEC DisplayBookingInfo(2239);
```

```
Statement processed.
Booking Number: B03
Class: Eco
Seat Preference: Aisle
Flight Number: 11
Flight Date: 15-07-2024
From: Chicago
To: New York
Arrival Time: 4:30pm
-----------------------------------
```

CODING

THE UPDATED PROCEDURES:

```
create or replace PROCEDURE FlightInformation(
    NewNumber IN Flight.Flight_NO%TYPE,
    Passenger_NO IN Flight.Passenger_ID%TYPE
)
AS
BEGIN
    UPDATE Flight
    SET Flight_NO = NewNumber
    WHERE Passenger_ID = Passenger_NO;

    COMMIT;
END FlightInformation;

/
```

```
Procedure created.
```

CALL PROCEDURES:

SQL Worksheet | Clear | Find | Actions | Save | Run

```
EXEC FlightInformation(34,1145);
SELECT*FROM Flight;
```

```
Statement processed.
```

PROJECT TEAM TASKS

TASKS	MADE BY
• E-R DIAGRAM • THE PROCEDURES	JOUD A
• RELATIONAL SCEMA(RDM), • NORMALIZATION, • FUNCTIONAL DEPENDENCY(FD)	LEEN
• E-E-R DIAGRAM	JOUD M
• CREAT TABLES, • INSERT INTO TABLES, • QUERIES	BUTHAINA
• INTRODUCTION, • LIST OF ENTITIES	ALL OF US