

We, Yicheng Wang, Ivy Nicole Dioso, Sanjil Amgain, declare that the attached assignment is our own work in accordance with Seneca's Academic Policy. No part of this assignment has been copied manually or electronically from any other source (including websites) or distributed to other students.

## **Member Contributions**

Each member must specify their contribution to the project:

### **Name Task(s) Completed**

1. Yicheng Wang: Part I/II/III
2. Ivy Nicole Dioso: Part I/II/III
3. Sanjil Amgain: Part I/II/III

## **PART I: DATABASE NORMALIZATION & ERD (50%)**

- BookingRecord Table

- 1NF

BookingID, Flight\_num → BookedOn, Airline\_code, Airline\_Name, Aircraft\_code, Aircraft\_desc, operatedBy, dep\_date, dep\_time, dep\_airport\_code, dep\_airport\_name, dep\_city, arr\_date, arr\_time, arr\_airport\_code, arr\_airport\_name, arr\_city

- 2NF

BookingID, Flight\_num → dep\_date, dep\_time, arr\_date, arr\_time

BookingID → BookedOn

Flight\_num → Airline\_code, Airline\_Name, Aircraft\_code, Aircraft\_desc, operatedBy, dep\_airport\_code, dep\_airport\_name, dep\_city, arr\_airport\_code, arr\_airport\_name, arr\_city

- 3NF

BookingID, Flight\_num → dep\_date, dep\_time, arr\_date, arr\_time

BookingID → BookedOn

Airline\_code → Airline\_Name

Aircraft\_code → Aircraft\_desc

dep\_airport\_code → dep\_airport\_name, dep\_city

arr\_airport\_code → arr\_airport\_name, arr\_city

Flight\_num → Airline\_code, Aircraft\_code, operatedBy, dep\_airport\_code, arr\_airport\_code

- Ticket Table

- 1NF

eticket\_num → BookingID, traveler\_id, traveler\_fname, traveler\_lname, Gender, Meal\_preference, ticket\_price, taxes\_fees

- 2NF

Already in 2NF. No partial dependencies since the PK is not composite

- 3NF

traveler\_id → traveler\_fname, traveler\_lname, Gender

eticket\_num → BookingID, traveler\_id, Meal\_preference, ticket\_price, taxes\_fees

Final 3NF Tables:

Booking(BookingID → booking\_date)

Airline(Airline\_code → Airline\_Name)

Aircraft(Aircraft\_code → Aircraft\_desc)

Airport(Airport\_code → Airport\_name, City)

Flight(Flight\_num → Airline\_code, Aircraft\_code, operatedBy, dep\_airport\_code, arr\_airport\_code)

BookingRecord(BookingID, Flight\_num → dep\_date, dep\_time, arr\_date, arr\_time)

Traveler(traveler\_id → first\_name, last\_name, gender)

TICKET(eticket\_num → BookingID, traveler\_id, Meal\_preference, ticket\_price, taxes\_fees)

logical database design:

Booking[BookingID(PK), booking\_date]

Airline[Airline\_code(PK), Airline\_Name]

Aircraft[Aircraft\_code(PK), Aircraft\_desc]

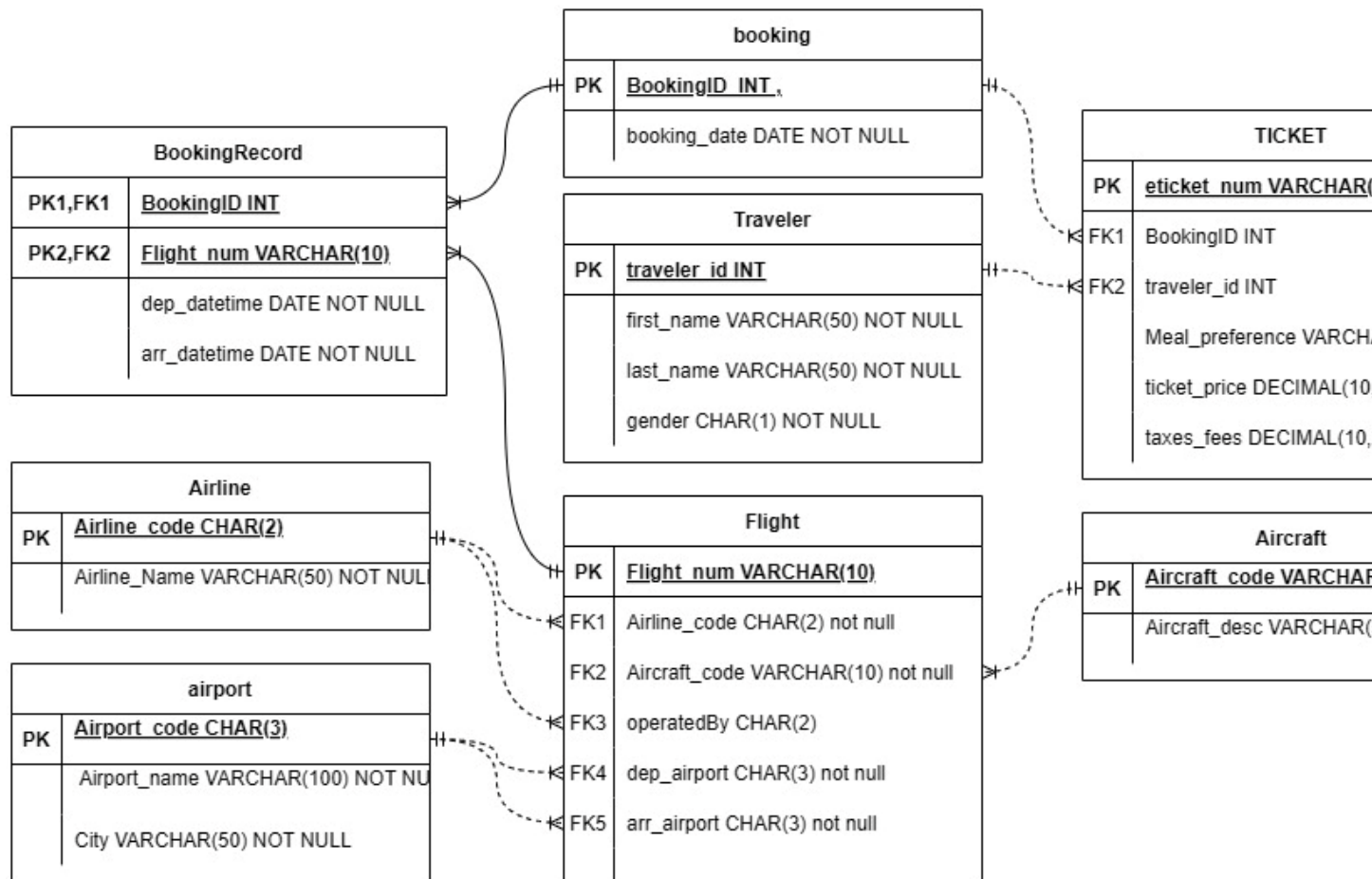
Airport[Airport\_code(PK), Airport\_name, City]

Flight[Flight\_num(PK), Airline\_code(FK), Aircraft\_code(FK), operatedBy(FK), dep\_airport\_code(FK), arr\_airport\_code(FK)]

BookingRecord[BookingID(PK,FK), Flight\_num(PK,FK), dep\_date, dep\_time, arr\_date, arr\_time]

Traveler[traveler\_id(PK), first\_name, last\_name, gender]

TICKET[eticket\_num(PK), BookingID(FK), traveler\_id(FK), Meal\_preference, ticket\_price, taxes\_fees]



## PART II: DATABASE IMPLEMENTATION (20%)

Provide a screenshot of the object explorer displaying tables, columns, and constraints.

Connections

DBS211

Tables (Filtered)

AIRCRAFT

AIRLINE

AIRPORT

BOOKING

BOOKINGRECORD

CUSTOMERS

EMPLOYEES

FLIGHT

OFFICES

ORDERDETAILS

ORDERS

PAYMENTS

PRODUCTLINES

PRODUCTS

TICKET

TRAVELER

Views

Editing Views

Project2\_Group5.SQL

DBS211

Welcome Page

FLIGHT

Columns

Data

Model

Constraints

Grants

Statistics

Triggers

Flashback

Dependencies

Details

Partitions

Indexes

Actions...

	CONSTRAINT_NAME	CONSTRAINT_TYPE	SEARCH_CONDITION
1	SYS_C004218781	Check	"AIRLINE CODE" IS N
2	SYS_C004218782	Check	"AIRCRAFT CODE" IS
3	SYS_C004218783	Check	"DEP AIRPORT" IS NO
4	SYS_C004218784	Check	"ARR AIRPORT" IS NO
5	SYS_C004218785	Primary Key	(null)
6	SYS_C004218786	Foreign Key	(null)
7	SYS_C004218787	Foreign Key	(null)
8	SYS_C004218788	Foreign Key	(null)
9	SYS_C004218789	Foreign Key	(null)
10	SYS_C004218790	Foreign Key	(null)

DBS211_251NGG32.BOOKINGRECORD	
PF * BOOKINGID	NUMBER (*,0)
PF * FLIGHT_NUM	VARCHAR2 (10 BYTE)
* DEP_DATETIME	DATE
* ARR_DATETIME	DATE
BOOKINGRECORD_PK (BOOKINGID, FLIGHT_NUM)	
SYS_C004218794 (BOOKINGID)	
SYS_C004218795 (FLIGHT_NUM)	

DBS211_251NGG32.FLIGHT	
P * FLIGHT_NUM	VARCHAR2 (10 BYTE)
F * AIRLINE_CODE	CHAR (2 BYTE)
F * AIRCRAFT_CODE	VARCHAR2 (10 BYTE)
F OPERATEDBY	CHAR (2 BYTE)
F * DEP_AIRPORT	CHAR (3 BYTE)
F * ARR_AIRPORT	CHAR (3 BYTE)
FLIGHT_PK (FLIGHT_NUM)	
SYS_C004218786 (AIRLINE_CODE)	
SYS_C004218787 (AIRCRAFT_CODE)	
SYS_C004218788 (OPERATEDBY)	
SYS_C004218789 (DEP_AIRPORT)	
SYS_C004218790 (ARR_AIRPORT)	

DBS211_251NGG32.AIRLINE	
P * AIRLINE_CODE	CHAR (2 BYTE)
* AIRLINE_NAME	VARCHAR2 (50 BYTE)
AIRLINE_PK (AIRLINE_CODE)	

DBS211_251NGG32.AIRCRAFT	
P * AIRCRAFT_CODE	VARCHAR2 (10 BYTE)
* AIRCRAFT_DESC	VARCHAR2 (50 BYTE)
AIRCRAFT_PK (AIRCRAFT_CODE)	

DBS211_251NGG32.AIRPORT	
P * AIRPORT_CODE	CHAR (3 BYTE)
* AIRPORT_NAME	VARCHAR2 (100 BYTE)
* CITY	VARCHAR2 (50 BYTE)
AIRPORT_PK (AIRPORT_CODE)	

PART III: DATA MANIPULATION (30%)

For the following queries, include: (a) The **SQL command** (in the SQL file and the document)

(b) The **output in text format**

(c) The **number of rows affected**

--P3 Q1

SELECT

Flight\_num,

Airline\_code,

Airline\_Name,

Aircraft\_code,

Aircraft\_desc,

dep\_airport AS departure\_airport\_code,

ap1.Airport\_name AS departure\_airport\_name,

arr\_airport AS arrival\_airport\_code,

ap2.Airport\_name AS arrival\_airport\_name

FROM Flight

JOIN Airline USING(Airline\_code)

JOIN Aircraft USING(Aircraft\_code)

JOIN Airport ap1 ON dep\_airport = ap1.Airport\_code

JOIN Airport ap2 ON arr\_airport = ap2.Airport\_code

WHERE Flight\_num = 'AF393';

-- 1 row affected

"FLIGHT_NUM"	"AIRLINE_CODE"	"AIRLINE_NAME"	"AIRCRAFT_CODE"	"AIRCRAFT_DESC"	"DEPARTURE_AIRPORT_CODE"	"DEPARTURE_AIRPORT_NAME"	"ARRIVAL_AIRPORT_CODE"	"ARRIVAL_AIRPORT_NAME"
"AF393"	"AF"	"Air France"	"A380"	"Airbus A380"	"YYZ"	"Toronto Pearson Intl"	"CDG"	"Charles de Gaulle"

--P3 Q2

```

SELECT
    BookingID,
    booking_date,
    Flight_num,
    dep_airport AS departure_airport_code,
    TO_CHAR(dep_datetime, 'DD-MON-YY HH24:MI:SS') AS departure_date_time,
    arr_airport AS arrival_airport_code,
    TO_CHAR(arr_datetime, 'DD-MON-YY HH24:MI:SS') AS arrival_date_time
FROM BookingRecord
JOIN Booking USING(BookingID)
JOIN Flight USING(Flight_num)
WHERE BookingID = 56753365
ORDER BY dep_datetime;
-- 1 row affected

```

"BOOKINGID"	"BOOKING_DATE"	"FLIGHT_NUM"	"DEPARTURE_AIRPORT_CODE"	"DEPARTURE_DATE_TIME"	"ARRIVAL_AIRPORT_CODE"	"ARRIVAL_DATE_TIME"
56753365	01-JUN-19	"AF393"	"YYZ"	"22-JUN-19 21:08:00"	"CDG"	"22-JUN-19 22:00:00"

```

--P3 Q3
SELECT
    BookingID,
    eticket_num,
    first_name AS traveler_first_name,
    last_name AS traveler_last_name
FROM TICKET
JOIN Traveler USING(traveler_id)
WHERE BookingID = 56753365;
-- 3 row affected

```

"BOOKINGID"	"ETICKET_NUM"	"TRAVELER_FIRST_NAME"	"TRAVELER_LAST_NAME"
56753365	"573480996619"	"Mariam"	"Daoud"
56753365	"573480996620"	"Yasmine"	"Ch"
56753365	"0573480996621"	"Hasan"	"Ch"

--P3 Q4

SELECT

SUM(ticket\_price + taxes\_fees) AS total\_fees

FROM TICKET

WHERE BookingID = 56753365;

-- 1 row affected

"TOTAL_FEES"
4177

--P3 Q5

CREATE VIEW Book\_ticket AS

SELECT

BookingID,

COUNT(eticket\_num) AS number\_of\_tickets

FROM Booking

LEFT JOIN TICKET USING(BookingID)

GROUP BY BookingID;

-- 2 row affected

"BOOKINGID"	"NUMBER_OF_TICKETS"
56753365	3
56753936	1