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]

A diagram of a flight

AI-generated content may be incorrect.

PART II: DATABASE IMPLEMENTATION (20%)

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

A screenshot of a computer

AI-generated content may be incorrect.

A diagram of a plane

AI-generated content may be incorrect.

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 |