

## BTD210- Assignment 2

### Learning outcomes

Upon successful completion of this assignment, you will have demonstrated the abilities to:

1. Convert tables into 3NF and infer the associated ERD
2. Implement the relational database model by creating tables and constraints on attributes.
3. Enter data into the database.
4. Query the database to retrieve information.

Please work in **groups** to complete this assignment. This assignment is **worth 10%** of the total course grade and will be evaluated through your written submission, as well as the assignment demo. During the assignment demo, group members are randomly selected to present the answers to each of the assignment questions. Group members who are not present during the assignment demo will lose the demo mark (up to 30% of assignment mark).

### Submission

Please submit the submission file(s) through Blackboard. Only one person must submit for the group and only the last submission will be marked.

- Assignment SQL file: Asg2\_grp**GroupNumber**.SQL
- Assignment document: Asg2\_grp**GroupNumber**.docx

### **Assignment overview**

The CheapFare airline reservation company is a flight booking company of domestic and international airline tickets. The company wants to use a relational database for its operations. The manager has decided to refer to examples of bookings that are usually issued following a flight reservation by customers.

During the interview with the airline reservation company manager, the following information has been obtained:

- 1- Each booking may correspond to a one-way trip or a round-trip with several flights booked to lead to destination.
- 2- A flight is identified with a flight number (flight\_num). A flight number (e.g. AF393) determines the airline the flight belongs to (e.g. AF), and might be operated by a partnering airline (operatedBy is an airline\_code).
- 3- Each flight is always associated with the same aircraft, determined with aircraft\_code and description.
- 4- Flights determined with a flight\_num always operate from the same departure airport and to the same arrival airport. Departure dates and time and arrival dates and time may vary.
- 5- A booking may generate several e-tickets, one per passenger. For example, booking\_id 56753365 for a mom and two kids generates 3 different e\_tickets.
- 6- Each ticket is identified with an eticket\_num and it belongs to one traveler. The database should also save the traveler meal preference (optional), the ticket price and the ticket tax fees.
- 7- A traveler is identified with a traveler id. The attributes are last name, first name and gender.

<u>BookingRecord</u>					
<u>BookingID</u>	56753365	56753365	56753936	56753936	
<u>BookedOn</u>	28-Jan-19	28-Jan-19	25-Jan-19	25-Jan-19	
<u>Flight_num</u>	AF393	AF5106	AF393	AF386	
<u>Airline_code</u>	AF	AF	AF	AF	
<u>Airline_Name</u>	Air France	Air France	Air France	Air France	
<u>Aircraft_code</u>	772	332	772	772	
<u>Aircraft_desc</u>	BOEING 777 285-305 STD	AIRBUS INDUSTRIE JET 200-345 STD	BOEING 777 285-305 STD	BOEING 777 285-305 STD	SEATS
<u>operatedBy</u>	AF	MEA	AF	AF	
<u>dep_date</u>	22-Jun-19	23-Jun-19	22-Jun-19	17-Jul-19	
<u>dep_time</u>	9:20 PM	1:40 PM	9:20 PM	5:00 PM	
<u>dep_airport cod</u>	YYZ	CDG	YYZ	CDG	
<u>dep_airport nam</u>	Toronto Pearson Intl, Ontario	Charles de Gaul	Toronto Pearson Intl, Ontario	Charles de Gaul	
<u>dep_city</u>	Toronto	Paris	Toronto	Paris	
<u>arr_date</u>	23-Jun-19	23-Jun-19	23-Jun-19	17-Jul-19	
<u>arr_time</u>	10:50 AM	6:55 PM	10:50 AM	7:20 PM	
<u>arr_airport cod</u>	CDG	BEY	CDG	YYZ	
<u>arr_airport nam</u>	Charles de Gaul		Charles de Gaul	Toronto Pearson Intl, Ontario	
<u>arr city</u>	Paris	Beirut	Paris	Toronto	

## BTD210 - Database Design Principles

TICKET				
eticket_num	573480996631	573480996619	573480996620	0573480996621
BookingID	56753936	56753365	56753365	56753365
traveler_id	111	112	113	114
traveler_Fname	Andrew	Mariam	Yasmine	Hasan
traveler_Lname	Smith	Daoud	Ch	Ch
Gender	Male	Female	Female	Male
Meal_preference	Vegetarian	Halal	Vegetarian	Halal
ticket_price	1200	1353	1142	1142
taxes_fees	182	182	180	180

**Part I. Database Normalization and Entity Relationship Model (40%)**

- 1- For each of the given tables, convert to 3NF, showing all steps (from 1NF to 3NF). Use the arrow notation. Do NOT include derived attributes.

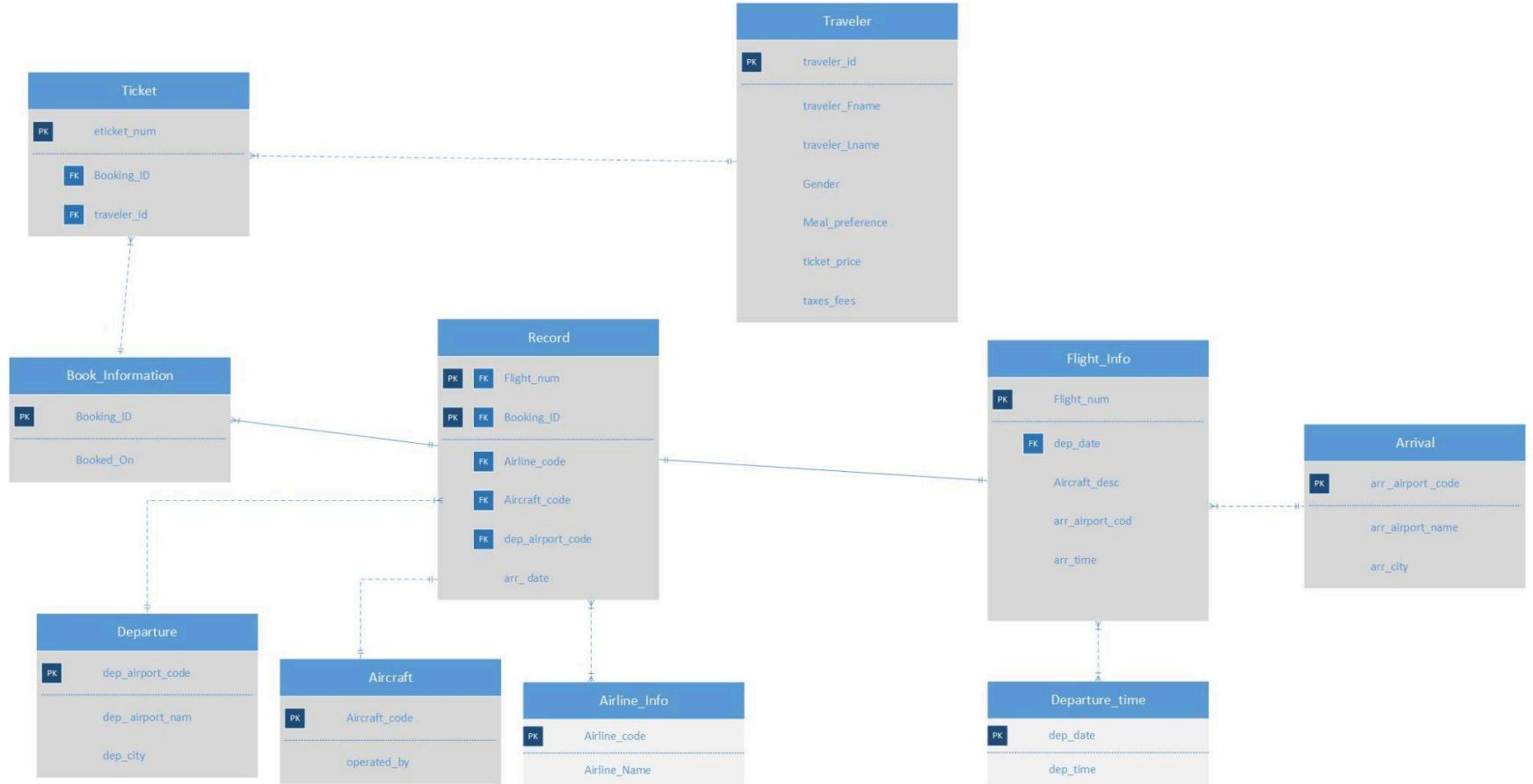
**Booking Record :-**  
 Primary key : (Booking ID, Flight-num)  
 Partial dependency : Booking ID → BookedOn  
 $\text{Flight\_num} \rightarrow \text{Aircraft\_desc, dep\_date, dep\_time,}$   
 $\text{arr\_airport\_cod, arr\_city, arr\_time,}$   
 $\text{arr\_airport\_name.}$   
 Transitive dependency : Airline-code → Airline-Name.  
 $\text{dep\_date} \rightarrow \text{dep\_time.}$   
 $\text{arr\_airport\_cod} \rightarrow \text{arr\_airport\_name, dep\_city.}$   
 $\text{arr\_airport\_cod} \rightarrow \text{arr\_airport\_nam, arr\_city.}$   
 1NF :-  
 $\text{Booking ID, flight\_num} \rightarrow \text{BookedOn, Airline\_code, Airline\_Name, Aircraft\_code,}$   
 $\text{Aircraft\_desc, operated\_By, dep\_date, dep\_time, dep\_airport\_cod, dep\_airport\_nam,}$   
 $\text{dep\_city, arr\_date, arr\_time, arr\_airport\_cod, arr\_airport\_nam, arr\_city.}$   
 2NF :-  
 $\text{Booking ID} \rightarrow \text{BookedOn}$   
 $\text{Flight\_num} \rightarrow \text{Aircraft\_desc, dep\_date, dep\_time, arr\_airport\_cod, arr\_city,}$   
 $\text{arr\_time, arr\_airport\_name.}$   
 $\text{Booking ID, Flight\_num} \rightarrow \text{Airline\_code, Airline\_Name, Aircraft\_code,}$   
 $\text{OperatedBy, dep\_airport\_cod, dep\_airport\_nam, dep\_city, arr\_date.}$   
 3NF :-  
 $\text{Airline\_code} \rightarrow \text{Airline\_Name.}$   
 $\text{dep\_date} \rightarrow \text{dep\_time.}$   
 $\text{dep\_airport\_cod} \rightarrow \text{dep\_airport\_nam, dep\_city.}$   
 $\text{arr\_airport\_cod} \rightarrow \text{arr\_airport\_nam, arr\_city.}$   
 $\text{Aircraft\_code} \rightarrow \text{operated\_By.}$   
 $\text{Booking ID} \rightarrow \text{BookedOn.}$   
 $\text{Flight\_num} \rightarrow \text{Aircraft\_desc, dep\_date, arr\_airport\_cod, arr\_time.}$   
 $\text{Booking ID, Flight\_num} \rightarrow \text{Airline\_code, Aircraft\_code, dep\_airport\_code,}$   
 $\text{arr\_date.}$

Ticket :-  
Primary key: eticket\_num.  
Partial dependency:  
Transitive dependency: traveler\_id  $\rightarrow$  traveler\_Fname, traveler\_Lname, Gender, Meal-preference, ticket-price, taxes-fees.

INF  $\Rightarrow$  2NF:-  
 $eticket\_num \rightarrow$  BookingID, traveler\_id, traveler\_Fname, traveler\_Lname, Gender, Meal-preference, ticket-price, taxes-fees.

3NF:-  
 $traveler\_id \rightarrow$  traveler\_Fname, traveler\_Lname, Gender, Meal-preference, ticket-price, taxes-fees.  
 $eticket\_num \rightarrow$  BookingID, traveler\_id.

- 2- Combine the tables obtained at the end of the normalization process into one logical design. Draw the *ERD* using Microsoft Visio. Note that your design must not have any many-to-many relationships or multi-valued attributes. PK and FK must be clearly stated. Strong and weak relationships must be labelled correctly. Export the *ERD* to .jpg and insert in your assignment document file.

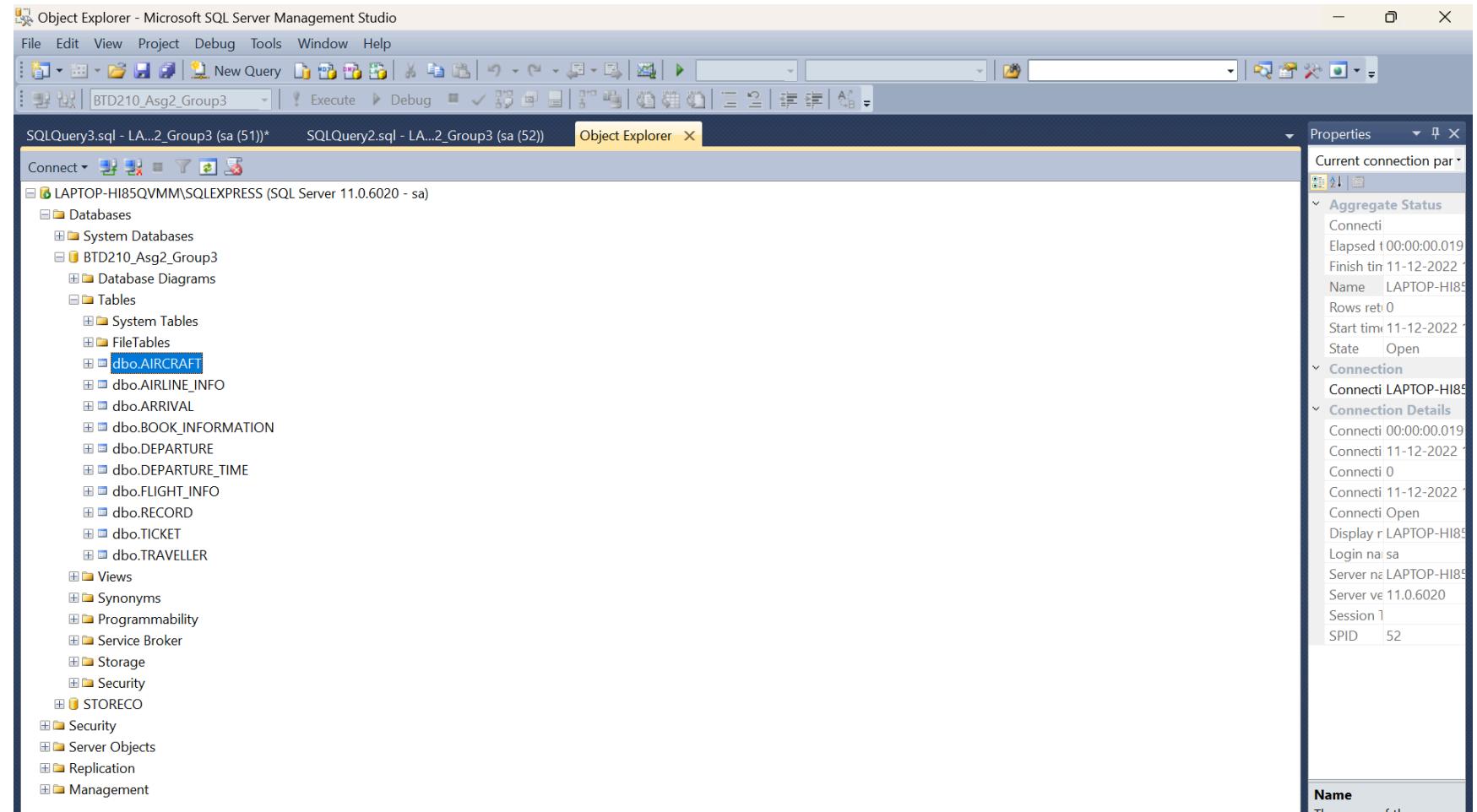


### Part II. Database IMPLEMENTATION (20%)

In your SQL file, write the SQL statements to:

- 1- Create a database named BTD210\_Asg2\_YourGroupNo.
- 2- Create the tables of your relational database model. These must match your design in Part I. Specify the PK, FK, and other necessary constraints.

- 3- In your assignment document file, paste a screenshot of the object explorer displaying the table's columns, keys and constraints. You can include many screenshots.



FOR table AIRCRAFT:-

## BTD210 - Database Design Principles

The screenshot shows the Microsoft SQL Server Management Studio interface. The title bar reads "LAPTOP-HI85QVMM\SQLEXPRESS.BTD210\_Asg2\_Group3 - dbo.AIRCRAFT - Microsoft SQL Server Management Studio". The menu bar includes File, Edit, View, Project, Debug, Table Designer, Tools, Window, and Help. The toolbar has various icons for database management tasks. The main window displays the "Table Designer" for the "AIRCRAFT" table. The table structure shows two columns: "AIRCRAFT\_CODE" (int) and "OPERATED\_BY" (varchar(5)). The "Properties" pane on the right shows the table's properties, including its name "AIRCRAFT", schema "dbo", and database "BTD210\_Asg2\_Group3". The "Column Properties" pane at the bottom provides detailed settings for the "AIRCRAFT\_CODE" column, such as its name, data type (int), and whether it allows nulls (No). The "Table Designer" section also shows the collation of the table.

For table AIRLINE\_INFO:-

## BTD210 - Database Design Principles

The screenshot shows the Microsoft SQL Server Management Studio interface. The title bar reads "LAPTOP-HI85QVMM\SQLEXPRESS.BTD210\_Asg2\_Group3 - dbo.AIRLINE\_INFO - Microsoft SQL Server Management Studio". The menu bar includes File, Edit, View, Project, Debug, Table Designer, Tools, Window, and Help. The toolbar has various icons for database management tasks. The main window displays the "Table Designer" for the "AIRLINE\_INFO" table. The table structure is shown in a grid:

Column Name	Data Type	Allow Nulls
AIRLINE_CODE	varchar(10)	<input type="checkbox"/>
AIRLINE_NAME	varchar(25)	<input type="checkbox"/>
		<input type="checkbox"/>

The "Properties" pane on the right shows the following details for the table:

- [Tbl] dbo.AIRLINE\_INFO
- (Identity)
  - (Name) AIRLINE\_INFO
  - Database BTD210\_Asg2\_Group3
  - Descripti
  - Schema dbo
  - Server Laptop-hi85q
  - Table Designer
    - Identity C
    - Indexable Yes
    - Lock Esc Table
    - Regular T PRIMARY
    - Replicate No
    - Row GUI
    - Text/Image PRIMARY
- (Identity)

The "Column Properties" pane at the bottom shows the properties for the "AIRLINE\_CODE" column:

Property	Value
(Name)	AIRLINE_CODE
Allow Nulls	No
Data Type	varchar
Default Value or Binding	
Length	10

For table ARRIVAL:-

## BTD210 - Database Design Principles

The screenshot shows the Microsoft SQL Server Management Studio interface. The title bar reads "LAPTOP-HI85QVMM\SQLEXPRESS.BTD210\_Asg2\_Group3 - dbo.ARRIVAL - Microsoft SQL Server Management Studio". The menu bar includes File, Edit, View, Project, Debug, Table Designer, Tools, Window, and Help. The toolbar has various icons for database management tasks. The main window displays the "Table Designer" for the "ARRIVAL" table. The table structure is shown in a grid:

Column Name	Data Type	Allow Nulls
ARR_AIRPORT_CODE	varchar(5)	<input type="checkbox"/>
ARR_AIRPORT_NAME	varchar(50)	<input checked="" type="checkbox"/>
ARR_CITY	varchar(30)	<input type="checkbox"/>

The "Properties" pane on the right shows the following details for the "ARRIVAL" table:

- [Tbl] dbo.ARRIVAL
- (Identity)
  - (Name) ARRIVAL
  - Database BTD210\_Asg2
  - Descripti
- Schema dbo
- Server N:\laptop-hi85q
- Table Designer
  - Identity C
  - Indexable Yes
  - Lock Esc Table
  - Regular T PRIMARY
  - Replicate No
  - Row GUI
  - Text/Image PRIMARY

The "Column Properties" pane at the bottom shows the properties for the "ARR\_AIRPORT\_CODE" column:

General	Value
(Name)	ARR_AIRPORT_CODE
Allow Nulls	No
Data Type	varchar
Default Value or Binding	
Length	5

Other sections in the Column Properties pane include "Table Designer" and "(General)".

For table BOOK\_INFORMATION:-

## BTD210 - Database Design Principles

The screenshot shows the Microsoft SQL Server Management Studio interface. The title bar indicates the connection is to LAPTOP-HI85QVMM\SQLEXPRESS.BTD210\_Asg2\_Group3 - dbo.BOOK\_INFORMATION. The main area displays the Table Designer for the 'BOOK\_INFORMATION' table. The table has two columns: 'BOOKING\_ID' (int) and 'BOOKED\_ON' (date). The 'Allow Nulls' checkbox is unchecked for both columns. The properties pane on the right shows the table is named 'BOOK\_INFO' and is part of the 'BTD210\_Asg2\_Group3' database. The 'Identity' property is set to 'Yes'. The 'Column Properties' pane at the bottom shows the 'General' properties for the 'BOOKING\_ID' column, including its name, data type (int), and nullability (No).

Column Name	Data Type	Allow Nulls
BOOKING_ID	int	<input type="checkbox"/>
BOOKED_ON	date	<input type="checkbox"/>

Properties [Tbl] dbo.BOOK\_INFO [Identity]  
(Name) BOOK\_INFO  
Database BTD210\_Asg2\_Group3  
Description  
Schema dbo  
Server Laptop-hi85qvm  
Table Designer  
Identity Yes  
Indexable Yes  
Lock Escalation Table  
> Regular PRIMARY  
Replicate No  
Row GUI  
Text/Image PRIMARY

Column Properties [General]  
(Name) BOOKING\_ID  
Allow Nulls No  
Data Type int  
Default Value or Binding  
Table Designer Collation <database default>  
(General)

For table DEPARTURE:-

## BTD210 - Database Design Principles

The screenshot shows the Microsoft SQL Server Management Studio interface. The title bar reads "LAPTOP-HI85QVMM\SQLEXPRESS.BTD210\_Asg2\_Group3 - dbo.DEPARTURE - Microsoft SQL Server Management Studio". The main window displays the "Table Designer" for the "dbo.DEPARTURE" table. The table structure is as follows:

Column Name	Data Type	Allow Nulls
DEP_AIRPORT_CODE	varchar(5)	<input type="checkbox"/>
DEP_AIRPORT_NAME	varchar(50)	<input type="checkbox"/>
DEP_CITY	varchar(30)	<input type="checkbox"/>

The "Properties" pane on the right shows the following details for the table:

- [Tbl] dbo.DEPARTURE
- (Identity)
  - (Name) DEPARTURE
  - Database BTD210\_Asg2\_Group3
  - Descripti
- Schema dbo
- Server Laptop-hi85q
- Table Designer
  - Identity C
  - Indexable Yes
  - Lock Esc Table
  - Regular T PRIMARY
  - Replicate No
  - Row GUI
  - Text/Image PRIMARY

The "Column Properties" pane at the bottom shows the properties for the "DEP\_AIRPORT\_CODE" column:

General	Value
(Name)	DEP_AIRPORT_CODE
Allow Nulls	No
Data Type	varchar
Default Value or Binding	
Length	5

Other sections in the Column Properties pane include "Table Designer" and "(General)".

For table DEPARTURE\_TIME:-

## BTD210 - Database Design Principles

The screenshot shows the Microsoft SQL Server Management Studio interface. The title bar reads "LAPTOP-HI85QVMM\SQLEXPRESS.BTD210\_Asg2\_Group3 - dbo.DEPARTURE\_TIME - Microsoft SQL Server Management Studio". The menu bar includes File, Edit, View, Project, Debug, Table Designer, Tools, Window, and Help. The toolbar has various icons for database management tasks. The main window displays the "Table Designer" for the "DEPARTURE\_TIME" table. The table structure is shown in a grid:

Column Name	Data Type	Allow Nulls
DEP_DATE	date	<input type="checkbox"/>
DEP_TIME	varchar(10)	<input type="checkbox"/> <input type="checkbox"/>

The "Properties" pane on the right shows the table's properties. Under the [Tbl] section, it lists the table name as "dbo.DEPARTURE\_TIME", its schema as "dbo", and its server as "laptop-hi85q". Under the "Table Designer" section, it indicates that the table is regular, has no primary key, and is not replicated. The "Identity" section shows that the table uses the database's default identity settings.

**Column Properties**

Column Name	Type	Allow Nulls
DEP_DATE	date	No
DEP_TIME	varchar(10)	No

**(General)**

Name	Value
(Name)	DEP_DATE
Allow Nulls	No
Data Type	date
Default Value or Binding	

**Table Designer**

Collation	Value
Collation	<database default>

**(General)**

For table FLIGHT\_INFO:-

## BTD210 - Database Design Principles

The screenshot shows the Microsoft SQL Server Management Studio interface. The title bar indicates the connection is to LAPTOP-HI85QVMM\SQLEXPRESS.BTD210\_Asg2\_Group3 - dbo.FLIGHT\_INFO. The main area displays the Table Designer for the FLIGHT\_INFO table. The table structure is as follows:

Column Name	Data Type	Allow Nulls
FLIGHT_NUM	varchar(10)	<input type="checkbox"/>
AIRCRAFT_DESC	varchar(50)	<input type="checkbox"/>
DEP_DATE	date	<input type="checkbox"/>
ARR_AIRPORT_CODE	varchar(5)	<input type="checkbox"/>
ARR_TIME	varchar(10)	<input type="checkbox"/>

The Column Properties pane on the left shows the properties for the FLIGHT\_NUM column:

- (Name) FLIGHT\_NUM
- Allow Nulls No
- Data Type varchar
- Default Value or Binding
- Length 10

The Properties pane on the right shows the table-level properties for the FLIGHT\_INFO table:

- [Tbl] dbo.FLIGHT\_INFO
- (Identity)
  - (Name) FLIGHT\_INFO
  - Database BTD210\_Asg2
  - Descripti
  - Schema dbo
  - Server N: laptop-hi85q
- Table Designer
  - Identity C
  - Indexable Yes
  - Lock Esc: Table
  - Regular [ PRIMARY ]
  - Replicate No
  - Row GUI
  - Text/Imag PRIMARY

For table RECORD:-

## BTD210 - Database Design Principles

The screenshot shows the Microsoft SQL Server Management Studio interface. The title bar reads "LAPTOP-HI85QVMM\SQLEXPRESS.BTD210\_Asg2\_Group3 - dbo.RECORD - Microsoft SQL Server Management Studio". The main window displays the "Table Designer" for the "RECORD" table. The table structure is as follows:

Column Name	Data Type	Allow Nulls
FLIGHT_NUM	varchar(10)	<input type="checkbox"/>
BOOKING_ID	int	<input type="checkbox"/>
AIRLINE_CODE	varchar(10)	<input type="checkbox"/>
AIRCRAFT_CODE	int	<input type="checkbox"/>
DEP_AIRPORT_CODE	varchar(5)	<input type="checkbox"/>
ARR_DATE	date	<input type="checkbox"/>

The "Properties" pane on the right shows the following details for the "RECORD" table:

- [Tbl] dbo.RECORD
- (Identity)
  - (Name) RECORD
  - Database BTD210\_Asg2
  - Descripti
  - Schema dbo
  - Server Nlaptop-hi85q
- Table Designer
  - Identity C
  - Indexable Yes
  - Lock Esc Table
  - Regular T PRIMARY
  - Replicate No
  - Row GUI
  - Text/Image PRIMARY

The "Column Properties" pane at the bottom shows the properties for the "FLIGHT\_NUM" column:

General	FLIGHT_NUM
(Name)	FLIGHT_NUM
Allow Nulls	No
Data Type	varchar
Default Value or Binding	
Length	10

Other sections in the Column Properties pane include "Table Designer" and "(General)".

For table TICKET:-

## BTD210 - Database Design Principles

The screenshot shows the Microsoft SQL Server Management Studio (SSMS) interface. The title bar indicates the connection is to 'LAPTOP-HI85QVMM\SQLEXPRESS.BTD210\_Asg2\_Group3 - dbo.TICKET'. The main area displays the 'Table Designer' for the 'TICKET' table. The table structure is shown in a grid:

Column Name	Data Type	Allow Nulls
ETICKET_NUM	varchar(15)	<input type="checkbox"/>
BOOKING_ID	int	<input type="checkbox"/>
TRAVELLER_ID	int	<input type="checkbox"/>

The 'Properties' pane on the right shows the following details for the 'TICKET' table:

- [Tbl] dbo.TICKET
- (Identity)
  - (Name) TICKET
  - Database BTD210\_Asg2
  - Descripti
- Schema dbo
- Server N:laptop-hi85q
- Table Designer
  - Identity C
  - Indexable Yes
  - Lock Esc Table
  - Regular T PRIMARY
  - Replicate No
  - Row GUI
  - Text/Image PRIMARY

The 'Column Properties' pane at the bottom left shows the properties for the 'ETICKET\_NUM' column:

- (General)
  - (Name) ETICKET\_NUM
  - Allow Nulls No
  - Data Type varchar
  - Default Value or Binding
  - Length 15
- Table Designer
  - Column Properties
- (General)

The status bar at the bottom shows the system tray with icons for weather (-2°C, Snow to stop), search, file explorer, task manager, and other system icons. The date and time are also displayed.

For table TRAVELLER:-

## BTD210 - Database Design Principles

The screenshot shows the Microsoft SQL Server Management Studio interface. The title bar reads "LAPTOP-HI85QVMM\SQLEXPRESS.BTD210\_Asg2\_Group3 - dbo.TRAVELLER - Microsoft SQL Server Management Studio". The main window displays the "Table Designer" for the "dbo.TRAVELLER" table. The table structure is as follows:

Column Name	Data Type	Allow Nulls
TRAVELLER_ID	int	<input type="checkbox"/>
TRAVELLER_FNAME	varchar(20)	<input type="checkbox"/>
TRAVELLER_LNAME	varchar(20)	<input type="checkbox"/>
GENDER	varchar(10)	<input type="checkbox"/>
MEAL_PREFERENCE	varchar(20)	<input type="checkbox"/>
TICKET_PRICE	int	<input type="checkbox"/>
TAXES_FEES	int	<input type="checkbox"/>

The "Properties" pane on the right shows the following settings for the "dbo.TRAVELLER" table:

- [Tbl] dbo.TRAVELLER
- (Identity)
  - (Name) TRAVELLER
  - Database BTD210\_Asg2
  - Descripti
  - Schema dbo
  - Server N:laptop-hi85q
- Table Designer
  - Identity C
  - Indexable Yes
  - Lock Esc Table
  - Regular T PRIMARY
  - Replicate No
  - Row GUI
  - Text/Image PRIMARY

The "Column Properties" pane at the bottom shows the properties for the "TRAVELLER\_ID" column:

General	Value
(Name)	TRAVELLER_ID
Allow Nulls	No
Data Type	int
Default Value or Binding	
Table Designer	
Collation	<database default>

- 4- Enter the data from the samples shown in the given tables. Include all *insert* queries in your SQL file. Paste the output in your assignment document file.

## BTD210 - Database Design Principles

For table TRAVELLER:-

The screenshot shows the Microsoft SQL Server Management Studio interface. A query window displays the results of a SELECT statement on the TRAVELLER table. The results grid shows four rows of data with columns: TRAVELLER\_ID, TRAVELLER\_FNAME, TRAVELLER\_LNAME, GENDER, MEAL\_PREFERENCE, TICKET\_PRICE, and TAXES\_FEES. The Properties pane on the right shows connection details like connection time and SPID.

TRAVELLER_ID	TRAVELLER_FNAME	TRAVELLER_LNAME	GENDER	MEAL_PREFERENCE	TICKET_PRICE	TAXES_FEES
111	Andrew	Smith	Male	Vegetarian	1200	182
112	Marium	Daoud	Female	Halal	1353	182
113	Yasmine	Ch	Female	Vegetarian	1142	180
114	Hasan	Ch	Male	Halal	1142	180

(4 row(s) affected)

Query executed successfully.

LAPTOP-HI85QVMM\SQLEXPRESS ... | sa (51) | BTD210\_Asg2\_Group3 | 00:00:00 | 4 rows

Properties

Current connection parameters

Aggregate Status

Connecti

Elapsed 1 00:00:00.028

Finish tim 11-12-2022

Name LAPTOP-HI85

Rows reti 4

Start tim 11-12-2022

State Open

Connection

Connecti LAPTOP-HI85

Connection Details

Connecti 00:00:00.028

Connecti 11-12-2022

Connecti 4

Connecti 11-12-2022

Connecti Open

Display r LAPTOP-HI85

Login na sa

Server na LAPTOP-HI85

Server ve 11.0.6020

Session 1

SPID 51

Name

The name of the conn...

For table BOOK\_INFORMATION:-

## BTD210 - Database Design Principles

The screenshot shows the Microsoft SQL Server Management Studio interface. The title bar reads "SQLQuery2.sql - LAPTOP-HI85QVMM\SQLEXPRESS.BTD210\_Asg2\_Group3 (sa (51))\* - Microsoft SQL Server Management Studio". The menu bar includes File, Edit, View, Query, Project, Debug, Tools, Window, and Help. The toolbar contains various icons for file operations, queries, and database management. A tab bar at the top has three tabs: "SQLQuery2.sql - LA...2\_Group3 (sa (51))\*" (selected), "Object Explorer", and "SQLQuery1.sql - LA...2\_Group3 (sa (52))". Below the tabs is a query window containing the SQL command: "SELECT\*FROM BOOK\_INFORMATION;". The results pane shows the output of the query:

BOOKING_ID	BOOKED_ON
56753365	2019-01-28
56753936	2019-01-25

(2 row(s) affected)

The status bar at the bottom left says "Query executed successfully." and the bottom right shows connection details: "LAPTOP-HI85QVMM\SQLEXPRESS ... | sa (51) | BTD210\_Asg2\_Group3 | 00:00:00 | 2 rows". The Properties pane on the right displays connection information, including the current connection parameters, aggregate status, connection details, and session information.

For table AIRCRAFT:-

## BTD210 - Database Design Principles

The screenshot shows the Microsoft SQL Server Management Studio interface. The title bar reads "SQLQuery2.sql - LAPTOP-HI85QVMM\SQLEXPRESS.BTD210\_Asg2\_Group3 (sa (51))\* - Microsoft SQL Server Management Studio". The menu bar includes File, Edit, View, Query, Project, Debug, Tools, Window, and Help. The toolbar contains various icons for file operations, queries, and database management. The object explorer shows a connection to "BTD210\_Asg2\_Group3". There are two tabs open in the main pane: "SQLQuery2.sql - LA...2\_Group3 (sa (51))\*" containing the query "SELECT \* FROM AIRCRAFT;" and "SQLQuery1.sql - LA...2\_Group3 (sa (52))". The results pane displays the output of the query:

AIRCRAFT_CODE	OPERATED_BY
332	MEA
772	AF

(2 row(s) affected)

The status bar at the bottom left says "Query executed successfully." and the bottom right shows connection details: "LAPTOP-HI85QVMM\SQLEXPRESS ... | sa (51) | BTD210\_Asg2\_Group3 | 00:00:00 | 2 rows". A properties window on the right side shows connection statistics:

- Current connection parameters
- Aggregate Status
  - Connecti
  - Elapsed time 00:00:00.015
  - Finish time 11-12-2022
  - Name LAPTOP-HI85
  - Rows returned 2
  - Start time 11-12-2022
  - State Open
- Connection
  - Connecti LAPTOP-HI85
- Connection Details
  - Connecti 00:00:00.015
  - Connecti 11-12-2022
  - Connecti 2
  - Connecti 11-12-2022
  - Connecti Open
  - Display name LAPTOP-HI85
  - Login name sa
  - Server name LAPTOP-HI85
  - Server version 11.0.6020
  - Session 1
  - SPID 51
- Name

For table DEPARTURE:-

## BTD210 - Database Design Principles

The screenshot shows the Microsoft SQL Server Management Studio interface. A query window titled 'SQLQuery2.sql' is open, displaying the following SQL code:

```
SELECT * FROM DEPARTURE;
```

The results pane shows the output of the query:

DEP_AIRPORT_CODE	DEP_AIRPORT_NAME	DEP_CITY
CDG	Charles de Gaul	Paris
YYZ	Toronto Pearson Intl	Toronto

(2 row(s) affected)

The status bar at the bottom indicates: 'Query executed successfully.' and 'LAPTOP-HI85QVMM\SQLEXPRESS ... | sa (51) | BTD210\_Asg2\_Group3 | 00:00:00 | 2 rows'.

The Properties pane on the right shows connection details:

- Current connection parameters
- Aggregate Status
  - Connect
  - Elapsed time: 00:00:00.020
  - Finish time: 11-12-2022
  - Name: LAPTOP-HI85
  - Rows returned: 2
  - Start time: 11-12-2022
  - State: Open
- Connection
  - Connect to: LAPTOP-HI85
- Connection Details
  - Connect to: 00:00:00.020
  - Connect to: 11-12-2022
  - Connect to: 2
  - Connect to: 11-12-2022
  - Connect to: Open
  - Display name: LAPTOP-HI85
  - Login name: sa
  - Server name: LAPTOP-HI85
  - Server version: 11.0.6020
  - Session ID: 1
  - SPID: 51

For table AIRLINE\_INFO:-

## BTD210 - Database Design Principles

The screenshot shows the Microsoft SQL Server Management Studio interface. The title bar reads "SQLQuery2.sql - LAPTOP-HI85QVMM\SQLEXPRESS.BTD210\_Asg2\_Group3 (sa (51))\* - Microsoft SQL Server Management Studio". The menu bar includes File, Edit, View, Query, Project, Debug, Tools, Window, and Help. The toolbar has various icons for file operations, queries, and database management. The left pane shows "Object Explorer" and "SQLQuery1.sql - LA...2\_Group3 (sa (52))". The main query window contains the following SQL code:

```
SELECT*FROM AIRLINE_INFO;
```

The results pane displays the output of the query:

AIRLINE_CODE	AIRLINE_NAME
AF	Air France

(1 row(s) affected)

The status bar at the bottom indicates "Query executed successfully." and provides connection information: "LAPTOP-HI85QVMM\SQLEXPRESS ... | sa (51) | BTD210\_Asg2\_Group3 | 00:00:00 | 1 rows". The Properties pane on the right shows connection details for the current session, including the connection name, state, and server information.

For table ARRIVAL:-

## BTD210 - Database Design Principles

The screenshot shows the Microsoft SQL Server Management Studio interface. The title bar reads "SQLQuery2.sql - LAPTOP-HI85QVMM\SQLEXPRESS.BTD210\_Asg2\_Group3 (sa (51))\* - Microsoft SQL Server Management Studio". The toolbar has various icons for file operations, queries, and database management. The menu bar includes File, Edit, View, Query, Project, Debug, Tools, Window, and Help. The ribbon tabs show "BTD210\_Asg2\_Group3", "Execute", and "Debug". The main area displays a query result set:

```
SELECT*FROM ARRIVAL;
```

ARR_AIRPORT_CODE	ARR_AIRPORT_NAME	ARR_CITY
BEY	NULL	Beirut
CDG	Charles de Gaul	Paris
YYZ	Toronto Pearson Intl, Ontario	Toronto

(3 row(s) affected)

The status bar at the bottom indicates "Query executed successfully." and provides connection information: "LAPTOP-HI85QVMM\SQLEXPRESS ... | sa (51) | BTD210\_Asg2\_Group3 | 00:00:00 | 3 rows". The properties pane on the right shows connection details for session 51.

For table DEPARTURE\_TIME:-

## BTD210 - Database Design Principles

The screenshot shows the Microsoft SQL Server Management Studio interface. The title bar reads "SQLQuery2.sql - LAPTOP-HI85QVMM\SQLEXPRESS.BTD210\_Asg2\_Group3 (sa (51))\* - Microsoft SQL Server Management Studio". The menu bar includes File, Edit, View, Query, Project, Debug, Tools, Window, and Help. The toolbar has various icons for file operations, queries, and database management. The object Explorer shows a connection to "BTD210\_Asg2\_Group3". The main query window contains the following SQL code:

```
SELECT*FROM DEPARTURE_TIME;
```

The results pane displays the output of the query:

DEP_DATE	DEP_TIME
2019-06-22	9:20 PM
2019-06-23	1:40 PM
2019-07-17	5:00 PM

(3 row(s) affected)

The status bar at the bottom left says "Query executed successfully." and the bottom right shows connection details: "LAPTOP-HI85QVMM\SQLEXPRESS ... | sa (51) | BTD210\_Asg2\_Group3 | 00:00:00 | 3 rows". A Properties panel on the right shows connection statistics like "Elapsed time 00:00:00.013", "Finish time 11-12-2022", and "State Open".

For table TICKET:-

## BTD210 - Database Design Principles

The screenshot shows the Microsoft SQL Server Management Studio interface. The title bar reads "SQLQuery2.sql - LAPTOP-HI85QVMM\SQLEXPRESS.BTD210\_Asg2\_Group3 (sa (51))\* - Microsoft SQL Server Management Studio". The menu bar includes File, Edit, View, Query, Project, Debug, Tools, Window, and Help. The toolbar has various icons for file operations, queries, and database management. The left pane shows "Object Explorer" and "SQLQuery1.sql - LA...2\_Group3 (sa (52))". The main query window contains the following SQL code:

```
SELECT*FROM TICKET;
```

The results pane displays the following data:

ETICKET_NUM	BOOKING_ID	TRAVELLER_ID
0573480996621	56753365	114
573480996619	56753365	112
573480996620	56753365	113
573480996631	56753936	111

(4 row(s) affected)

The status bar at the bottom indicates "Query executed successfully." and provides connection details: "LAPTOP-HI85QVMM\SQLEXPRESS ... | sa (51) | BTD210\_Asg2\_Group3 | 00:00:00 | 4 rows". The Properties pane on the right shows connection statistics.

For table FLIGHT\_INFO:-

## BTD210 - Database Design Principles

The screenshot shows the Microsoft SQL Server Management Studio interface. A query window titled 'SQLQuery2.sql' is open, displaying the following SQL code:

```
SELECT * FROM FLIGHT_INFO;
```

The results pane shows the output of the query:

FLIGHT_NUM	AIRCRAFT_DESC	DEP_DATE	ARR_AIRPORT_CODE	ARR_TIME
AF386	BOEING 77 285-305 STD SEATS	2019-07-17	YYZ	7:20 PM
AF393	BOEING 777 285-305 STD	2019-06-22	CDG	10:50 AM
AF5106	AIRBUS INDUSTRIE JET 200-345 STD	2019-06-23	BEY	6:55 PM

(3 row(s) affected)

The status bar at the bottom indicates: 'Query executed successfully.' and 'LAPTOP-HI85QVMM\SQLEXPRESS ... | sa (51) | BTD210\_Asg2\_Group3 | 00:00:00 | 3 rows'.

The Properties pane on the right shows connection details:

- Current connection parameters
- Aggregate Status: Connected, Elapsed time 00:00:00.015, Finish time 11-12-2022, Name LAPTOP-HI85, Rows returned 3, Start time 11-12-2022, State Open.
- Connection: Connect to LAPTOP-HI85.
- Connection Details: Connect at 00:00:00.015, Connect at 11-12-2022, Connect 3, Connect at 11-12-2022, Connect Open, Display name LAPTOP-HI85, Login name sa, Server name LAPTOP-HI85, Server version 11.0.6020, Session 1, SPID 51.
- Name: The name of the connection.

For table RECORD:-

## BTD210 - Database Design Principles

The screenshot shows the Microsoft SQL Server Management Studio interface. The title bar reads "SQLQuery2.sql - LAPTOP-HI85QVMM\SQLEXPRESS.BTD210\_Asg2\_Group3 (sa (51))\* - Microsoft SQL Server Management Studio". The menu bar includes File, Edit, View, Query, Project, Debug, Tools, Window, and Help. The toolbar has various icons for file operations, queries, and database management. The left pane shows "Object Explorer" and "SQLQuery1.sql - LA...2\_Group3 (sa (52))". The main query window contains the following SQL code:

```
SELECT*FROM RECORD;
```

The results pane displays the output of the query:

FLIGHT_NUM	BOOKING_ID	AIRLINE_CODE	AIRCRAFT_CODE	DEP_AIRPORT_CODE	ARR_DATE
AF386	56753936	AF	772	CDG	2019-07-17
AF393	56753365	AF	772	YYZ	2019-06-23
AF393	56753936	AF	772	YYZ	2019-06-23
AF5106	56753365	AF	332	CDG	2019-06-23

(4 row(s) affected)

The status bar at the bottom indicates "Query executed successfully." and provides connection details: "LAPTOP-HI85QVMM\SQLEXPRESS ... | sa (51) | BTD210\_Asg2\_Group3 | 00:00:00 | 4 rows". The Properties pane on the right shows connection statistics:

- Current connection parameters
- Aggregate Status: Connecti, Elapsed 1 00:00:00.013, Finish tin 11-12-2022, Name LAPTOP-HI85, Rows reti 4, Start timi 11-12-2022, State Open
- Connection: Connecti LAPTOP-HI85
- Connection Details: Connecti 00:00:00.013, Connecti 11-12-2022, Connecti 4, Connecti 11-12-2022, Connecti Open, Display r LAPTOP-HI85, Login na sa, Server ne LAPTOP-HI85, Server ve 11.0.6020, Session 1, SPID 51
- Name: The name of the conn...

### Part III. Data Manipulation (40%)

For the following questions, include in your assignment document file,

(a) The SQL command (both in the SQL file and the document file)

(b) The output in text format,

(c) The number of rows affected.

- 1- List the airline, aircraft and airport details for flight number AF393. Display the flight number, airline code and name, aircraft code and description, departure airport code and name and arrival airport code and name.

```
a)SELECT R.FLIGHT_NUM AS 'Flight Number',A.AIRLINE_CODE,AIRLINE_NAME,  
AIRCRAFT_CODE, AIRCRAFT_DESC AS 'Aircraft Description', D.DEP_AIRPORT_CODE  
AS 'DEPARTURE AIRPORT CODE', DEP_AIRPORT_NAME AS 'DEPARTURE AIRPORT NAME',  
E.ARR_AIRPORT_CODE AS 'ARRIVAL AIRPORT CODE', ARR_AIRPORT_NAME AS 'ARRIVAL AIRPORT NAME'  
FROM RECORD R JOIN AIRLINE_INFO A  
ON R.AIRLINE_CODE = A.AIRLINE_CODE  
JOIN FLIGHT_INFO C  
ON R.FLIGHT_NUM = C.FLIGHT_NUM  
JOIN DEPARTURE D  
ON R.DEP_AIRPORT_CODE = D.DEP_AIRPORT_CODE  
JOIN ARRIVAL E  
ON C.ARR_AIRPORT_CODE = E.ARR_AIRPORT_CODE  
WHERE R.FLIGHT_NUM='AF393';
```

Flight Number	AIRLINE_CODE	AIRLINE_NAME	AIRCRAFT_CODE	Aircraft Description	DEPARTURE AIRPORT CODE	DEPARTURE AIRPORT NAME	ARRIVAL AIRPORT CODE	ARRIVAL AIRPORT NAME
AF393	AF	Air France	772	BOEING 777 285-305 STD	YYZ	Toronto Pearson Intl	CDG	Charles de Gaul
AF393	AF	Air France	772	BOEING 777 285-305 STD	YYZ	Toronto Pearson Intl	CDG	Charles de Gaul

(2 row(s) affected)

b) Query executed successfully.

| (local)\SQLEXPRESS (11.0 SP3) | sa (52) | BTD210\_Asg2\_Group3 | 00:00:00 | 2 rows

c) 2 rows affected

- 2- List the flight details for bookingId 56753365. Display booking id, booking date, the flight number (there should show several flight records for this booking), departure airport code, departure date and time, arrival airport code, arrival date and time. Order the rows by departure date and time.

a)SELECT A.BOOKING\_ID AS 'Booking ID',BOOKED\_ON AS 'Booking Date',  
R.FLIGHT\_NUM AS 'Flight Number',DEP\_AIRPORT\_CODE AS 'DEPARTURE AIRPORT CODE',  
B.DEP\_DATE AS 'DEPARTURE DATE', DEP\_TIME AS 'DEPARTURE TIME',ARR\_DATE AS  
'ARRIVAL TIME', ARR\_TIME AS 'ARRIVAL TIME'  
FROM BOOK\_INFORMATION A JOIN RECORD R  
ON A.BOOKING\_ID = R.BOOKING\_ID  
JOIN FLIGHT\_INFO B

```
ON R.FLIGHT_NUM = B.FLIGHT_NUM  
JOIN DEPARTURE_TIME D  
ON B.DEP_DATE = D.DEP_DATE  
WHERE A.BOOKING_ID=56753365;
```

b)

Booking ID	Booking Date	Flight Number	DEPARTURE AIRPORT CODE	DEPARTURE DATE	DEPARTURE TIME	ARRIVAL TIME	ARRIVAL TIME
56753365	2019-01-28	AF393	YYZ	2019-06-22	9:20 PM	2019-06-23	10:50 AM
56753365	2019-01-28	AF5106	CDG	2019-06-23	1:40 PM	2019-06-23	6:55 PM

(2 row(s) affected)

121 % < > (local)\SQLEXPRESS (11.0 SP3) | sa (52) | BTD210.Asg2\_Group3 | 00:00:00 | 2 rows

c) 2 rows affected

- 3- List all passengers for bookingID 56753365. Display the bookingID, eticket number, traveler first and last name. This should show 3 passengers with 3 different etickets.

```
a)SELECT BOOKING_ID,ETICKET_NUM,TR.TRAVELLER_FNAME,TR.TRAVELLER_LNAME  
FROM TICKET T JOIN TRAVELLER TR ON T.TRAVELLER_ID=TR.TRAVELLER_ID  
WHERE BOOKING_ID=56753365;
```

b)

BOOKING_ID	ETICKET_NUM	TRAVELLER_FNAME	TRAVELLER_LNAME
56753365	0573480996621	Hasan	Ch
56753365	573480996619	Marium	Daoud
56753365	573480996620	Yasmine	Ch

(3 row(s) affected)

c)3 rows affected.

- 4- Calculate the total fees for bookingID 56753365. This should be the sum of ticket price and tax fees for the three tickets associated with this booking. (Hint: this does not need a group by). Use a where clause to select only the tickets for that booking and use the sum() function.

a)SELECT SUM(TICKET\_PRICE + TAXES\_FEES) AS 'TOTAL FEES'

```
FROM TRAVELLER TR JOIN TICKET T ON TR.TRAVELLER_ID=T.TRAVELLER_ID WHERE T.BOOKING_ID= 56753365;
```

b)

TOTAL FEES
4179

(1 row(s) affected)

c) 1 row affected.

- 5- Show the list of all bookings and the number of tickets associated with each.

a)SELECT BOOKING\_ID AS 'BOOKINGS',COUNT(ETICKET\_NUM) AS 'Number of tickets'

```
FROM TICKET
```

```
GROUP BY BOOKING_ID
```

```
ORDER BY BOOKING_ID;
```

Results	
BOOKINGS	Number of tickets
56753365	3
56753936	1
(2 row(s) affected)	

b) 2 rows affected.

- 6- Show the list of all bookings and the corresponding total fees. The result set should show the bookingID and the total fees.

```
a)SELECT BOOKING_ID AS 'bookingID',SUM(TICKET_PRICE + TAXES_FEES) AS 'total fees'  
FROM TRAVELLER TR JOIN TICKET T ON TR.TRAVELLER_ID=T.TRAVELLER_ID  
GROUP BY T.BOOKING_ID;
```

bookingID	total fees
56753365	4179
56753936	1382

c) 2 rows affected

- 7- Show the list of all booking whose total fees is larger than \$1000.

```
a)SELECT BOOKING_ID AS 'bookingID',SUM(TICKET_PRICE + TAXES_FEES) AS 'total_fees'  
FROM TRAVELLER TR JOIN TICKET T ON TR.TRAVELLER_ID=T.TRAVELLER_ID  
GROUP BY T.BOOKING_ID  
HAVING SUM(TICKET_PRICE + TAXES_FEES)>1000;
```

b)

bookingID	total_fees
56753365	4179
56753936	1382
(2 row(s) affected)	

c) 2 rows affected

- 8- Create a view named “bookingFees” that saves the query in question 6.

a)CREATE VIEW bookingFees AS SELECT BOOKING\_ID AS 'bookingID',SUM(TICKET\_PRICE + TAXES\_FEES) AS 'total fees'  
FROM TRAVELLER TR JOIN TICKET T ON TR.TRAVELLER\_ID=T.TRAVELLER\_ID  
GROUP BY T.BOOKING\_ID;

b)

Messages	Command(s) completed successfully.
100 %	< >
Query executed successfully.	(local)\SQLEXPRESS (11.0 SP3)   sa (52)   BTD210_Asg2_Group3   00:00:00   0 rows

c) 0 rows affected

- 9- Write a query that uses view bookingFees and to answer question 7.

a)SELECT \* FROM bookingFees

WHERE 'total fees'>'1000';

Booking Details	
bookingID	total fees
56753365	4179
56753936	1382
(2 row(s) affected)	

b) 2 rows affected

#### Part IV: Group Work

- 1- Add this declaration on the top of your file.

We, Apeksha Nanda, Tanishk Singh Bisht, Fawaz Sapa, declare that the attached assignment is our own work in accordance with the Seneca Academic Policy. No part of this assignment has been copied manually or electronically from any other source (including web sites) **or distributed to other students.**

- 2- Specify what each member has done towards the completion of this work:

	Name	Task(s)
1	Apeksha Nanda	Part 1,2,3
2	Fawaz Sapa	Part 1,2,3
3	Tanishk Singh Bisht	Part 1,2,3