

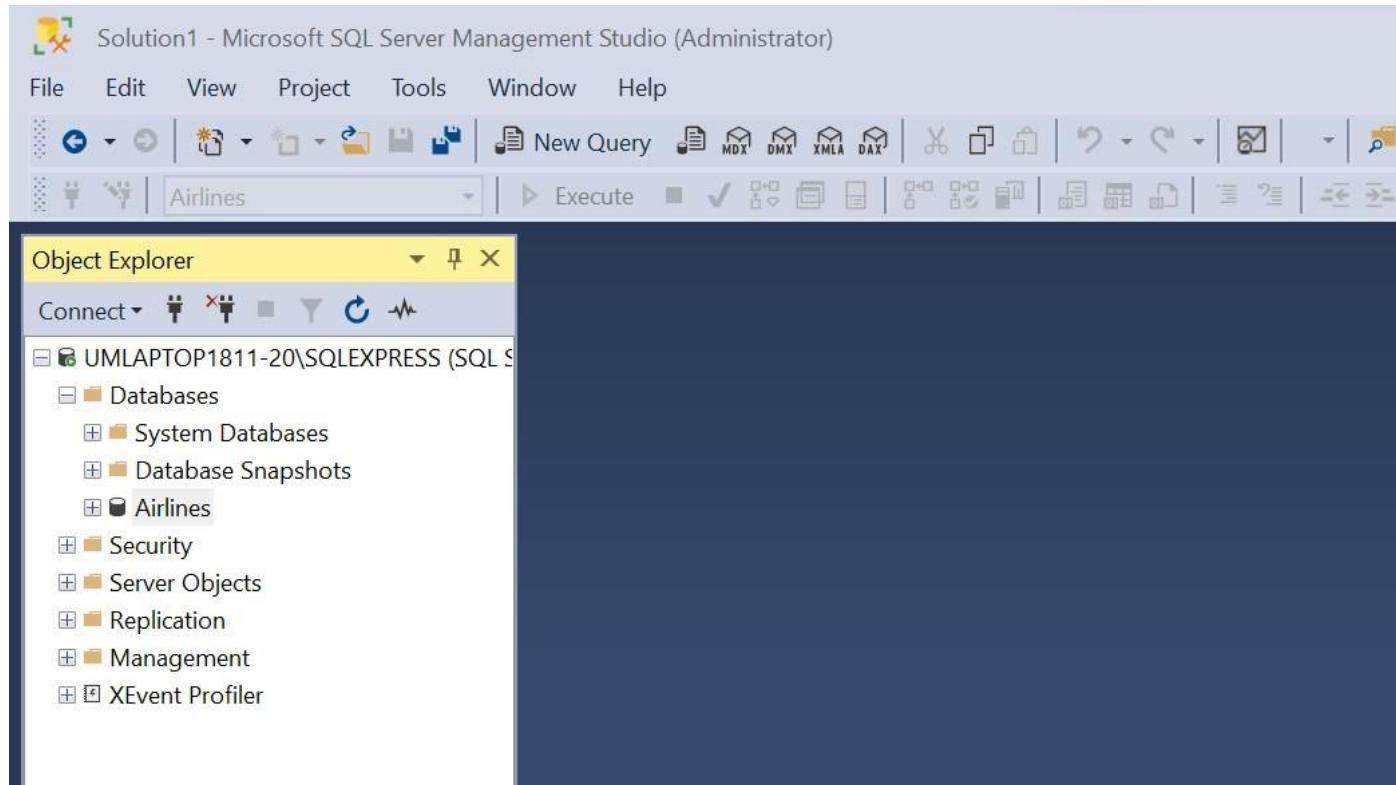
FUNDAMENTALS OF DATA WAREHOUSE

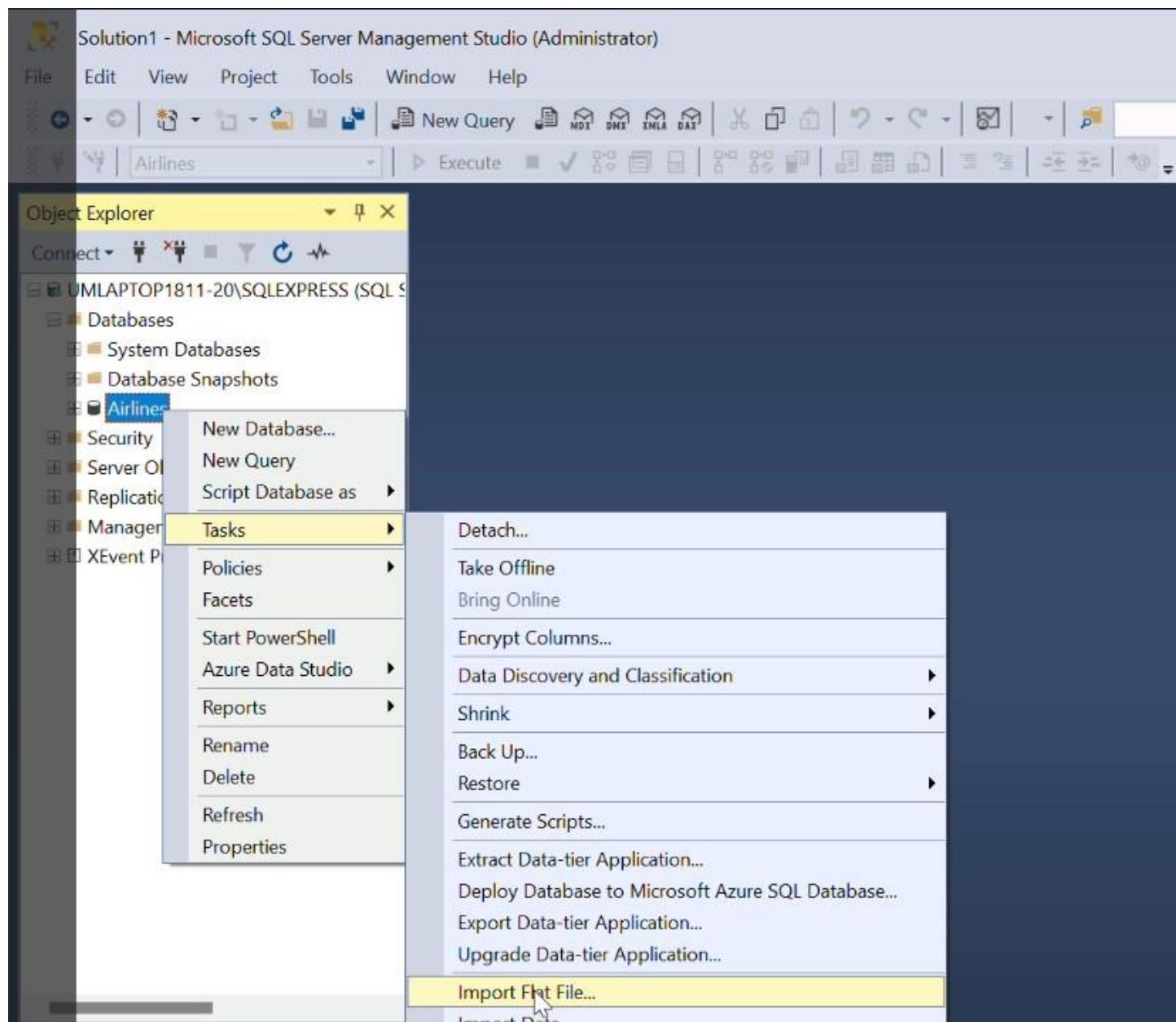
PROJECT

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Group 108158-1

Screenshots showing the process of importing a CSV file to Microsoft SSMS.





Microsoft SQL Server Management Studio

File Edit View Tools Window Help

Object Explorer

UMLAPTOP1811-20\SQLEXPRESS (SQL)

- Databases
 - System Databases
 - Database Snapshots
- Airlines
 - Database Diagrams
 - Tables
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 - dbo.CabinClass
 - dbo.Flight
 - dbo.Passenger
 - dbo.Services
 - Views
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 - Synonyms
 - Programmability
 - Query Store
 - Service Broker
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Import Flat File 'Airlines'

Introduction

Help

Introduction

Specify Input File

Preview Data

Modify Columns

Summary

Results

Import Flat File

This wizard will help you import the contents of a file into a new table in your database.

To import data, you must:

- Specify the input file containing the data.
- Preview the automatically generated table schema and optionally modify columns.

To begin importing your data, click Next.

Do not show this page again.

Microsoft SQL Server Management Studio

File Edit View Tools Window Help

Object Explorer

Connect ▾

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Specify Input File

Import Flat File 'Airlines'

Specify Input File

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Specify Input File

This operation will create a table from your input file.

Location of file to be imported

C:\Users\Umera\OneDrive\Documents\1. GTU Study Materials\Semester 5\Data\Airlines.txt

Browse...

New table name:

Price

Table schema:

dbo

Import Flat File 'Airlines'

Preview Data

Introduction Specify Input File Preview Data Modify Columns Summary Results

Help

Preview Data

This operation analyzed the input file structure to generate the preview below for up to the first 50 rows.

PRICE_ID	CURRENCY	BASE_PRICE	TAX_AMT	DISCOUNT_AMT	TOTAL_AMT
1001	USD	320.00	48.00	20.00	348.00
1002	EUR	250.00	37.50	15.00	272.50
1003	CAD	410.00	61.50	0.00	471.50
1004	AUD	280.00	42.00	0.00	322.00
1005	USD	450.00	67.50	10.50	507.00
1006	EUR	380.00	57.00	0.00	437.00
1007	CAD	520.00	78.00	0.00	598.00
1008	AUD	290.00	43.50	22.50	311.00
1009	USD	360.00	54.00	0.00	414.00
1010	EUR	410.00	61.50	0.00	471.50
1011	CAD	270.00	40.50	12.00	298.50
1012	AUD	510.00	76.50	0.00	586.50
1013	USD	380.00	57.00	0.00	437.00
1014	EUR	440.00	66.00	18.00	488.00
1015	CAD	320.00	48.00	0.00	368.00
1016	AUD	380.00	57.00	0.00	437.00

Use Rich Data Type Detection - may provide a closer type fit. However, cells with anomalous values may be dropped.

< Previous Next > Cancel

Microsoft SQL Server Management Studio

Import Flat File 'Airlines'

Object Explorer

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Ready

Import Flat File 'Airlines'

Modify Columns

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Specify Input File

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Modify Columns

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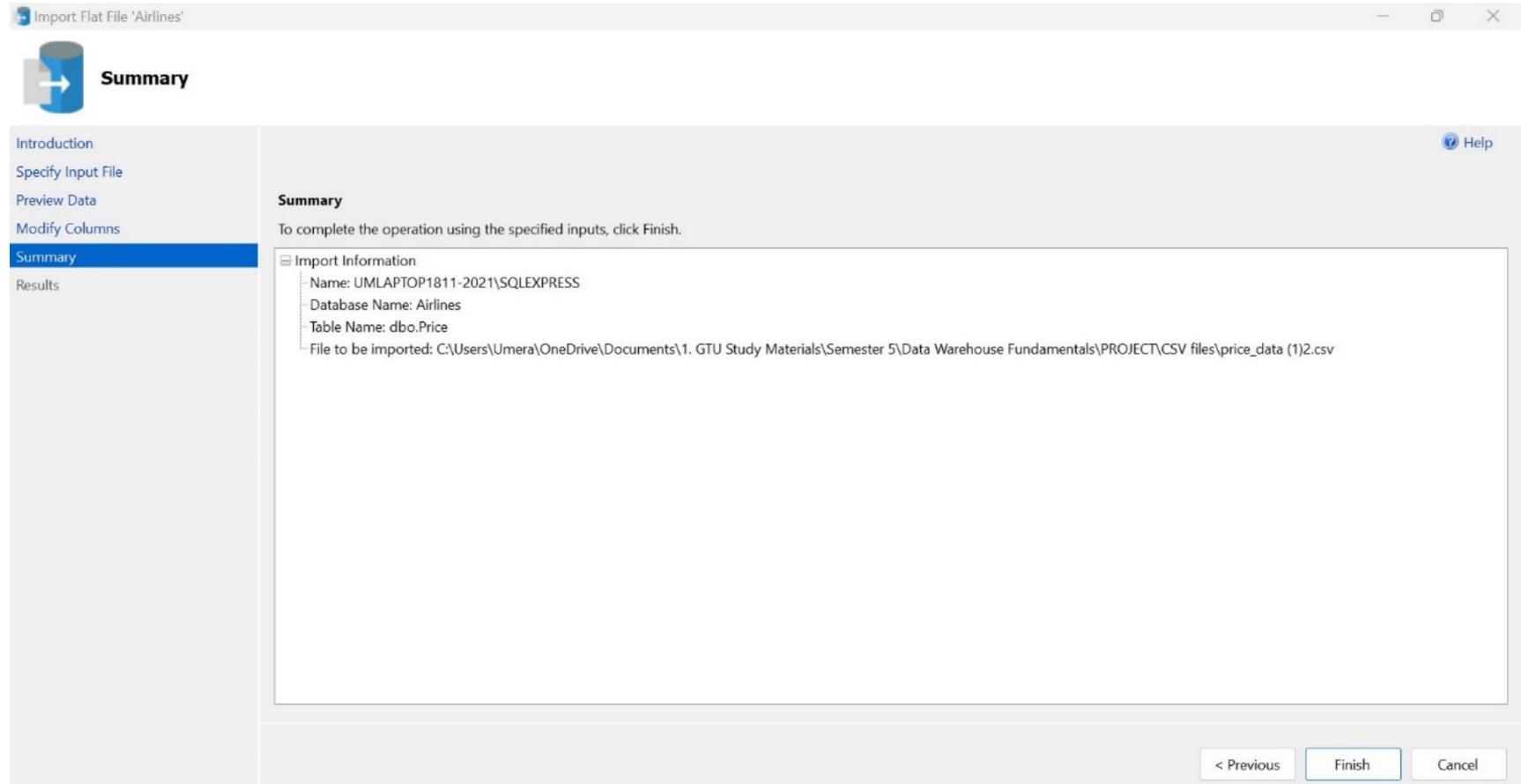
Help

Modify Columns

This operation generated the following table schema. Please verify if schema is accurate, and if not, please make any changes.

Column Name	Data Type	Primary Key	Allow Nulls
PRICE_ID	int	<input checked="" type="checkbox"/>	<input type="checkbox"/>
CURRENCY	char(3)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
BASE_PRICE	decimal(6, 2)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
TAX_AMT	decimal(6, 2)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
DISCOUNT_AMT	decimal(6, 2)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
TOTAL_AMT	decimal(6, 2)	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Row granularity of error reporting (performance impact with smaller ranges) No Range



Microsoft SQL Server Management Studio

File Edit View Tools Window Help

Object Explorer

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Ready

Import Flat File 'Airlines'

Results

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Operation Complete

Summary:

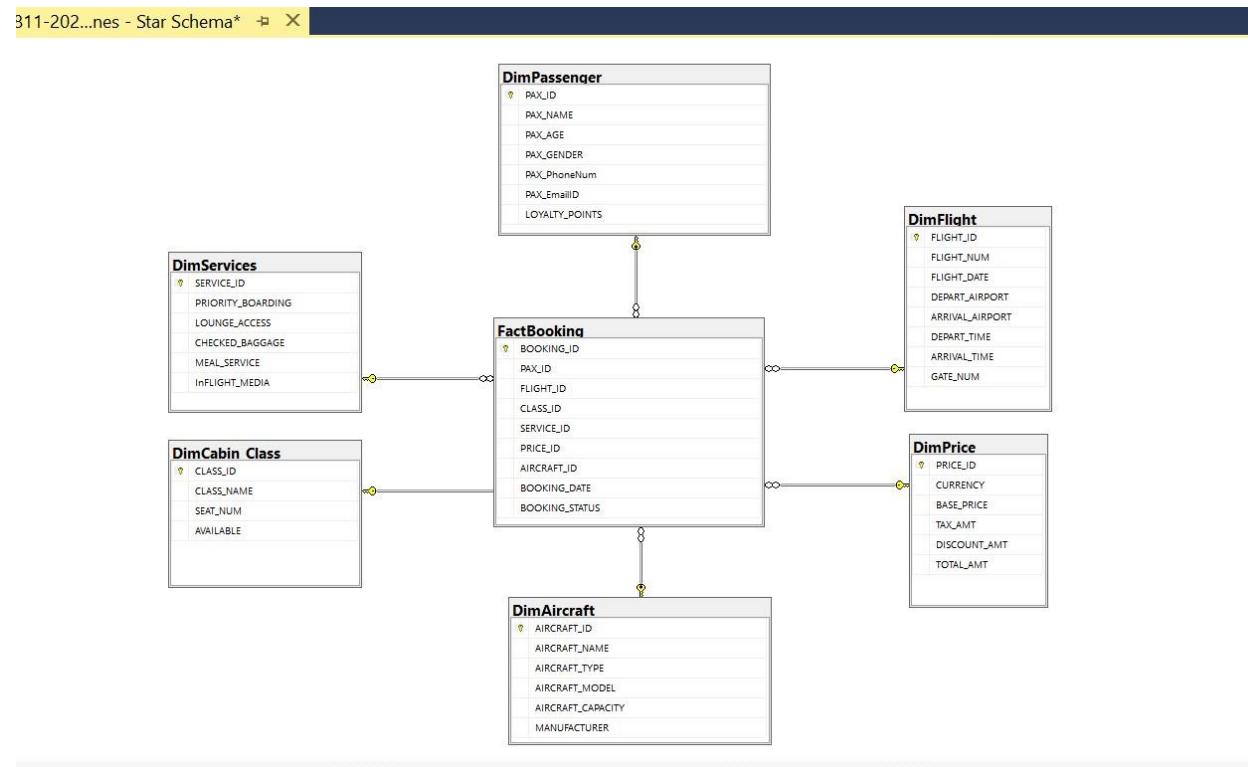
Name	Result
Insert Data	Success

This marks the end of the importing process.

Database Schema

The domain is Airlines Management.

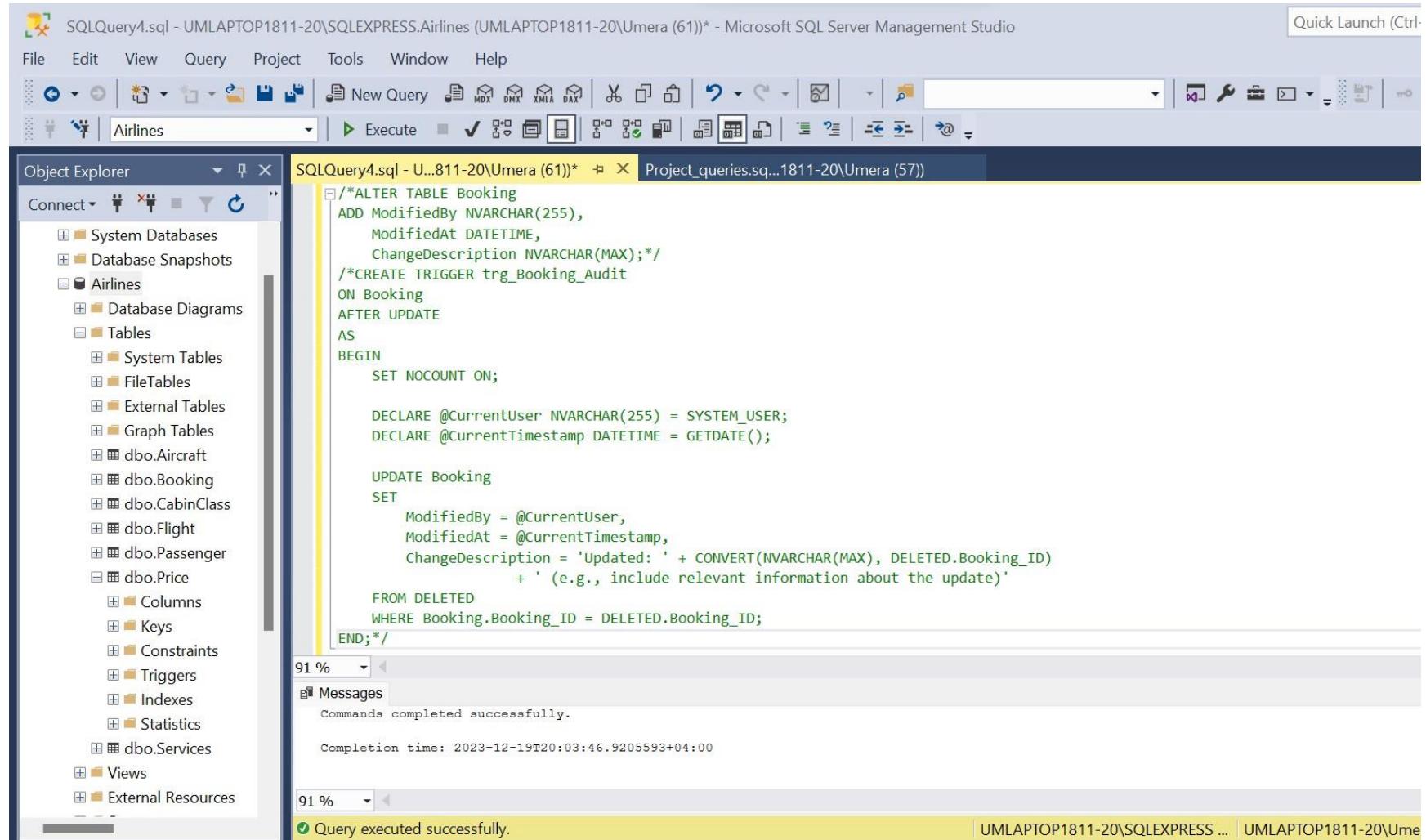
The schema is Star schema with the Fact table being the Booking table and the Dimensions include Passenger, Flight, CabinClass, Services, Price and Aircraft.



Below, the types and structure of data is depicted.

Passenger	Price	Booking	Flight
PAX_ID (int, PRIMARY KEY)	Price_ID (int, PRIMARY KEY)	Booking_ID (int, PRIMARY KEY)	Flight_ID (int, PRIMARY KEY)
PAX_Name (varchar)	Currency (varchar)	PAX_ID (FOREIGN KEY)	Flight_Num (varchar)
PAX_Age (int)	Base_Price (decimal)	Flight_ID (FOREIGN KEY)	Flight_Date (date)
PAX_Gender (varchar)	Tax_Amount (decimal)	Class_ID (FOREIGN KEY)	Depart_Airport (varchar)
PAX_phoneNum (int)	Discount_Amt (decimal)	Service_ID (FOREIGN KEY)	Arrival_Airport (varchar)
PAX_EmailID (varchar)	Total_Price (decimal)	Price_ID (FOREIGN KEY)	Depart_Time (time)
Loyalty_Points (int)		Aircraft_ID (FOREIGN KEY)	Arrival_Time (time)
		Booking_Date (datetime)	Gate_Num (varchar)
		Booking_Status (varchar)	
Services	Aircraft		Cabin_Class
Service_ID (int, PRIMARY KEY)	Aircraft_ID (int, PRIMARY KEY)		Class_ID (int, PRIMARY KEY)
Priority_Boarding (bit)	Aircraft_Name (varchar)		Class_Name (varchar)
Lounge_Access (bit)	Aircraft_Type (varchar)		Seat_Num (varchar)
Checked_Baggage (bit)	Aircraft_Model (varchar)		Availability_Status (BIT)
Meal_Service (bit)	Aircraft_Capacity (int)		
InFlight_Media (bit)	Manufacturer (varchar)		

Audit Trails and Triggers for all the tables



The screenshot shows the Microsoft SQL Server Management Studio interface. The title bar reads "SQLQuery4.sql - UMLAPTOP1811-20\SQLEXPRESS.Airlines (UMLAPTOP1811-20\Umera (61))* - Microsoft SQL Server Management Studio". The toolbar has various icons for file operations, queries, and database management. The Object Explorer on the left shows the database structure, including System Databases, Database Snapshots, the Airlines database, and its objects like Tables, Database Diagrams, and Views. The main window contains a query editor with the following T-SQL script:

```
/*ALTER TABLE Booking
ADD ModifiedBy NVARCHAR(255),
ModifiedAt DATETIME,
ChangeDescription NVARCHAR(MAX);*/
/*CREATE TRIGGER trg_Booking_Audit
ON Booking
AFTER UPDATE
AS
BEGIN
    SET NOCOUNT ON;

    DECLARE @CurrentUser NVARCHAR(255) = SYSTEM_USER;
    DECLARE @CurrentTimestamp DATETIME = GETDATE();

    UPDATE Booking
    SET
        ModifiedBy = @CurrentUser,
        ModifiedAt = @CurrentTimestamp,
        ChangeDescription = 'Updated: ' + CONVERT(NVARCHAR(MAX), DELETED.Booking_ID)
        + ' (e.g., include relevant information about the update)'
    FROM DELETED
    WHERE Booking.Booking_ID = DELETED.Booking_ID;
END;*/
```

The status bar at the bottom shows "91 %", "Messages", "Commands completed successfully.", "Completion time: 2023-12-19T20:03:46.9205593+04:00", and "Query executed successfully.".

SQLQuery4.sql - UMLAPTOP1811-20\SQLEXPRESS.Airlines (UMLAPTOP1811-20\Umera (61))* - Microsoft SQL Server Management Studio

File Edit View Query Project Tools Window Help

Airlines

Object Explorer

System Databases Database Snapshots Airlines Database Diagrams Tables System Tables FileTables External Tables Graph Tables dbo.Aircraft dbo.Booking dbo.CabinClass dbo.Flight dbo.Passenger dbo.Price dbo.Services Views External Resources Synonyms Programmability Query Store Service Broker Storage Security

SQLQuery4.sql - U...811-20\Umera (61)* Project_queries.sq...1811-20\Umera (57)

```
/*ALTER TABLE Aircraft
ADD ModifiedBy NVARCHAR(255),
ModifiedAt DATETIME,
ChangeDescription NVARCHAR(MAX);*/
CREATE TRIGGER trg_Aircraft_Audit
ON Aircraft
AFTER UPDATE
AS
BEGIN
SET NOCOUNT ON;

DECLARE @CurrentUser NVARCHAR(255) = SYSTEM_USER;
DECLARE @CurrentTimestamp DATETIME = GETDATE();

UPDATE Aircraft
SET
    ModifiedBy = @CurrentUser,
    ModifiedAt = @CurrentTimestamp,
    ChangeDescription = 'Updated: ' + CONVERT(NVARCHAR(MAX), DELETED.AIRCRAFT_ID)
    + ' (e.g., include relevant information about the update)'
FROM DELETED
WHERE Aircraft.AIRCRAFT_ID = DELETED.AIRCRAFT_ID;
END;
```

91 %

Messages

Commands completed successfully.

Completion time: 2023-12-19T20:08:21.5725507+04:00

91 %

Query executed successfully.

UMLAPTOP1811-20\SQLEXPRESS ... UMLAPTOP1811-20\Umera ... Airlines 00:00

SQLQuery4.sql - UMLAPTOP1811-20\SQLEXPRESS.Airlines (UMLAPTOP1811-20\Umera (61))* - Microsoft SQL Server Management Studio

File Edit View Query Project Tools Window Help

Airlines

Object Explorer

SQLQuery4.sql - U...811-20\Umera (61)* Project_queries.sq...1811-20\Umera (57)

```
/*ALTER TABLE CabinClass
ADD ModifiedBy NVARCHAR(255),
ModifiedAt DATETIME,
ChangeDescription NVARCHAR(MAX);*/
CREATE TRIGGER trg_CabinClass_Audit
ON CabinClass
AFTER UPDATE
AS
BEGIN
    SET NOCOUNT ON;

    DECLARE @CurrentUser NVARCHAR(255) = SYSTEM_USER;
    DECLARE @CurrentTimestamp DATETIME = GETDATE();

    UPDATE CabinClass
    SET
        ModifiedBy = @CurrentUser,
        ModifiedAt = @CurrentTimestamp,
        ChangeDescription = 'Updated: ' + CONVERT(NVARCHAR(MAX), DELETED.CLASS_ID)
        + ' (e.g., include relevant information about the update)'
    FROM DELETED
    WHERE CabinClass.CLASS_ID = DELETED.CLASS_ID;
END;
```

91 %

Messages

Commands completed successfully.

Completion time: 2023-12-19T20:10:35.6772678+04:00

91 %

Query executed successfully.

UMLAPTOP1811-20\SQLEXPRESS ... | UMLAPTOP1811-20\Umera ... | Ai

SQLQuery4.sql - UMLAPTOP1811-20\SQLEXPRESS.Airlines (UMLAPTOP1811-20\Umera (61)) - Microsoft SQL Server Management Studio

File Edit View Query Project Tools Window Help

New Query MDX DMX XML DAX

Airlines Execute

Object Explorer

System Databases Database Snapshots Airlines Database Diagrams Tables System Tables FileTables External Tables Graph Tables dbo.Aircraft dbo.Booking dbo.CabinClass dbo.Flight dbo.Passenger dbo.Price dbo.Services Views External Resources Synonyms Programmability Query Store Service Broker Storage Security

SQLQuery4.sql - U...811-20\Umera (61))*

```
/*ALTER TABLE Flight
ADD Modifiedby NVARCHAR(255),
    ModifiedAt DATETIME,
    ChangeDescription NVARCHAR(MAX);*/
/*CREATE TRIGGER trg_Flight_Audit
ON Flight
AFTER UPDATE
AS
BEGIN
    SET NOCOUNT ON;

    DECLARE @CurrentUser NVARCHAR(255) = SYSTEM_USER;
    DECLARE @CurrentTimestamp DATETIME = GETDATE();

    UPDATE Flight
    SET
        ModifiedBy = @CurrentUser,
        ModifiedAt = @CurrentTimestamp,
        ChangeDescription = 'Updated: ' + CONVERT(NVARCHAR(MAX), DELETED.FLIGHT_ID)
        + ' (e.g., include relevant information about the update)'
    FROM DELETED
    WHERE Flight.FLIGHT_ID= DELETED.FLIGHT_ID;
END;*/
```

91 %

Messages

Commands completed successfully.

Completion time: 2023-12-19T20:12:27.9104929+04:00

91 %

Query executed successfully.

UMLAPTOP1811-20\SQLEXPRESS ... UMLAPTOP1811-20\Umera ... Airlines

SQLQuery4.sql - UMLAPTOP1811-20\SQLEXPRESS.Airlines (UMLAPTOP1811-20\Umera (61)) - Microsoft SQL Server Management Studio

File Edit View Query Project Tools Window Help

Airlines

Execute

Object Explorer

SQLQuery4.sql - U...811-20\Umera (61)* | Project_queries.sq...1811-20\Umera (57)

```
/*ALTER TABLE Passenger
ADD ModifiedBy NVARCHAR(255),
ModifiedAt DATETIME,
ChangeDescription NVARCHAR(MAX);*/
CREATE TRIGGER trg_Passenger_Audit
ON Passenger
AFTER UPDATE
AS
BEGIN
SET NOCOUNT ON;

DECLARE @CurrentUser NVARCHAR(255) = SYSTEM_USER;
DECLARE @CurrentTimestamp DATETIME = GETDATE();

UPDATE Passenger
SET
    ModifiedBy = @CurrentUser,
    ModifiedAt = @CurrentTimestamp,
    ChangeDescription = 'Updated: ' + CONVERT(NVARCHAR(MAX), DELETED.PAX_ID)
    + ' (e.g., include relevant information about the update)'
FROM DELETED
WHERE Passenger.PAX_ID= DELETED.PAX_ID;
END;
```

91 %

Messages

Commands completed successfully.

Completion time: 2023-12-19T20:14:07.5731524+04:00

91 %

Query executed successfully.

UMLAPTOP1811-20\SQLEXPRESS ... | UMLAPTOP1811-20\Umera ... | Airlines | 0

SQLQuery4.sql - UMLAPTOP1811-20\SQLEXPRESS.Airlines (UMLAPTOP1811-20\Umera (61)) - Microsoft SQL Server Management Studio

File Edit View Query Project Tools Window Help

Airlines

SQLQuery4.sql - U...811-20\Umera (61)* Project_queries.sq...1811-20\Umera (57)

```
/*ALTER TABLE Price
ADD Modifiedby NVARCHAR(255),
ModifiedAt DATETIME,
ChangeDescription NVARCHAR(MAX);*/
CREATE TRIGGER trg_Price_Audit
ON Price
AFTER UPDATE
AS
BEGIN
    SET NOCOUNT ON;

    DECLARE @CurrentUser NVARCHAR(255) = SYSTEM_USER;
    DECLARE @CurrentTimestamp DATETIME = GETDATE();

    UPDATE Price
    SET
        ModifiedBy = @CurrentUser,
        ModifiedAt = @CurrentTimestamp,
        ChangeDescription = 'Updated: ' + CONVERT(NVARCHAR(MAX), DELETED.PRICE_ID)
        + '(e.g., include relevant information about the update)'
    FROM DELETED
    WHERE Price.PRICE_ID= DELETED.PRICE_ID;
END;
```

91 %

Messages

Commands completed successfully.

Completion time: 2023-12-19T20:16:02.9871969+04:00

91 %

Query executed successfully.

UMLAPTOP1811-20\SQLEXPRESS ... UMLAPTOP1811-20\Umera ... Air

Object Explorer

- System Databases
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 - FileTables
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SQLQuery4.sql - UMLAPTOP1811-20\SQLEXPRESS.Airlines (UMLAPTOP1811-20\Umera (61))* - Microsoft SQL Server Management Studio

File Edit View Query Project Tools Window Help

Airlines Execute

Object Explorer

SQLQuery4.sql - U...811-20\Umera (61)* Project_queries.sq...1811-20\Umera (57)

```
/*ALTER TABLE Services
ADD ModifiedBy NVARCHAR(255),
ModifiedAt DATETIME,
ChangeDescription NVARCHAR(MAX);*/
CREATE TRIGGER trg_Services_Audit
ON Services
AFTER UPDATE
AS
BEGIN
    SET NOCOUNT ON;

    DECLARE @CurrentUser NVARCHAR(255) = SYSTEM_USER;
    DECLARE @CurrentTimestamp DATETIME = GETDATE();

    UPDATE Services
    SET
        ModifiedBy = @CurrentUser,
        ModifiedAt = @CurrentTimestamp,
        ChangeDescription = 'Updated: ' + CONVERT(NVARCHAR(MAX), DELETED.SERVICE_ID)
        + ' (e.g., include relevant information about the update)'
    FROM DELETED
    WHERE Services.SERVICE_ID= DELETED.SERVICE_ID;
END;
```

91 %

Messages

Commands completed successfully.

Completion time: 2023-12-19T20:17:34.2683395+04:00

91 %

Query executed successfully.

UMLAPTOP1811-20\SQLEXPRESS ... UMLAPTOP1811-20\Umera .

SQL Queries

❖ Information of all passengers

The screenshot shows the Microsoft SQL Server Management Studio interface. The title bar reads "SQLQuery4.sql - UMLAPTOP1811-20\SQLEXPRESS.Airlines (UMLAPTOP1811-20\Umera (61)) - Microsoft SQL Server Management Studio". The main window displays a query results grid titled "Results" for the "Passenger" table. The results show 24 rows of passenger information, including columns such as PAX_ID, PAX_NAME, PAX_AGE, PAX_GENDER, PAX_PhoneNum, PAX_EmailID, LOYALTY_POINTS, ModifiedBy, ModifiedAt, and ChangeDescription. The "Object Explorer" pane on the left shows the database structure, including the "Airlines" database and its tables like Aircraft, Booking, CabinClass, Flight, Passenger, Price, Services, and many others. The status bar at the bottom indicates "Query executed successfully." and provides system information like the date and time.

PAX_ID	PAX_NAME	PAX_AGE	PAX_GENDER	PAX_PhoneNum	PAX_EmailID	LOYALTY_POINTS	ModifiedBy	ModifiedAt	ChangeDescription
1	John Smith	35	M	2233556677	johnsmith@email.com	0	NULL	NULL	NULL
2	Emily Thompson	28	F	9988776655	emilythompson@email.com	250	NULL	NULL	NULL
3	Michael Johnson	42	M	8877665544	michaeljohnson@email.com	500	NULL	NULL	NULL
4	Sarah Lee	31	F	3322114455	sarahlee@email.com	100	NULL	NULL	NULL
5	David Wang	45	M	5544332211	davidwang@email.com	0	NULL	NULL	NULL
6	Jessica Garcia	24	F	6655443322	jessicagarcia@email.com	0	NULL	NULL	NULL
7	Christopher Br...	39	M	7788990011	christopherbrown@email....	750	NULL	NULL	NULL
8	Olivia Martinez	19	F	1122334455	oliviamarinez@email.com	0	NULL	NULL	NULL
9	Matthew Davis	56	M	5566778899	matthewdavis@email.com	1000	NULL	NULL	NULL
10	Elizabeth Clark	50	F	9988776655	elizabethclark@email.com	500	NULL	NULL	NULL
11	Andrew Rodriguez	32	M	3322114455	andrewrodriguez@email.c...	250	NULL	NULL	NULL
12	Grace Hernandez	27	F	8877665544	gracehernandez@email.c...	0	NULL	NULL	NULL
13	Daniel Wilson	36	M	6655443322	danielwilson@email.com	500	NULL	NULL	NULL
14	Ashley Lee	29	F	7788990011	ashleylee@email.com	0	NULL	NULL	NULL
15	Ryan Martinez	46	M	1122334455	ryanmartinez@email.com	100	NULL	NULL	NULL
16	Chloe Johnson	21	F	5566778899	chloejohnson@email.com	0	NULL	NULL	NULL
17	Benjamin Davis	34	M	9988776655	benjamindavis@email.com	750	NULL	NULL	NULL
18	Stephanie Jones	25	F	3322114455	stephaniejones@email.com	0	NULL	NULL	NULL
19	Samuel White	52	M	8877665544	samuelwhite@email.com	200	NULL	NULL	NULL
20	Sophia Smith	41	F	6655443322	sophiasmith@email.com	0	NULL	NULL	NULL
21	William Johnson	33	M	7788990011	williamjohnson@email.com	100	NULL	NULL	NULL
22	Isabella Martinez	26	F	1122334455	isabellamartinez@email.c...	500	NULL	NULL	NULL
23	Joseph Davis	61	M	5566778899	josephdavis@email.com	0	NULL	NULL	NULL
24	Mia Clark	30	F	9988776655	mialark@email.com	250	NULL	NULL	NULL

❖ Information about flight schedules

The screenshot shows the Microsoft SQL Server Management Studio interface. The title bar reads "SQLQuery4.sql - UMLAPTOP1811-20\SQLEXPRESS.Airlines (UMLAPTOP1811-20\Umera (61))* - Microsoft SQL Server Management Studio". The Object Explorer on the left shows the database structure, including the "Airlines" database and its tables. The main window displays the results of a query against the "Flight" table:

```
SELECT * FROM Flight
```

FLIGHT_ID	FLIGHT_NUM	FLIGHT_DATE	DEPART_AIRPORT	ARRIVAL_AIRPORT	DEPART_TIME	ARRIVAL_TIME	GATE_NUM	ModifiedBy	ModifiedAt	ChangeDescription
1	LH456	2021-12-15	New York	London	08:00:00	20:00:00	12B	NULL	NULL	NULL
2	BA789	2021-12-15	London	Paris	09:30:00	11:30:00	16A	NULL	NULL	NULL
3	AF123	2021-12-16	Paris	Rome	12:45:00	15:30:00	09D	NULL	NULL	NULL
4	LH789	2021-12-16	Rome	Madrid	17:10:00	19:00:00	21C	NULL	NULL	NULL
5	BA456	2021-12-17	Madrid	Barcelona	09:15:00	10:30:00	08B	NULL	NULL	NULL
6	AF234	2021-12-17	Barcelona	Amsterdam	11:45:00	14:30:00	15A	NULL	NULL	NULL
7	LH567	2021-12-18	Amsterdam	Frankfurt	08:30:00	09:45:00	10C	NULL	NULL	NULL
8	BA678	2021-12-18	Frankfurt	Dubai	10:30:00	17:00:00	19D	NULL	NULL	NULL
9	AF345	2021-12-19	Dubai	Istanbul	13:00:00	15:00:00	22B	NULL	NULL	NULL
10	LH890	2021-12-19	Istanbul	Moscow	17:30:00	20:15:00	11A	NULL	NULL	NULL
11	BA345	2021-12-20	Moscow	Beijing	09:45:00	17:30:00	18C	NULL	NULL	NULL
12	AF567	2021-12-20	Beijing	Tokyo	18:00:00	23:30:00	09B	NULL	NULL	NULL
13	LH123	2021-12-21	Tokyo	Sydney	11:00:00	21:00:00	20A	NULL	NULL	NULL
14	BA678	2021-12-21	Sydney	Auckland	08:15:00	12:30:00	13D	NULL	NULL	NULL
15	AF345	2021-12-22	Auckland	Los Angeles	13:45:00	09:00:00	16B	NULL	NULL	NULL
16	LH678	2021-12-22	Los Angeles	San Francisco	10:30:00	11:45:00	09C	NULL	NULL	NULL
17	BA234	2021-12-23	San Francisco	Chicago	13:15:00	19:30:00	17A	NULL	NULL	NULL
18	AF456	2021-12-23	Chicago	Toronto	22:00:00	00:30:00	14B	NULL	NULL	NULL
19	LH567	2021-12-24	Toronto	Montreal	07:30:00	09:00:00	12C	NULL	NULL	NULL
20	BA789	2021-12-24	Montreal	Vancouver	10:15:00	14:30:00	09A	NULL	NULL	NULL
21	AF123	2021-12-25	Vancouver	Mexico City	13:45:00	19:00:00	11B	NULL	NULL	NULL
22	LH789	2021-12-25	Mexico City	Rio de Janeiro	20:30:00	00:45:00	19C	NULL	NULL	NULL
23	BA456	2021-12-26	Rio de Janeiro	Buenos Aires	08:45:00	11:30:00	08A	NULL	NULL	NULL
24	AF234	2021-12-26	Buenos Aires	Lima	12:30:00	16:15:00	15D	NULL	NULL	NULL

Query executed successfully.

LN 1 Col 21 Ch 21 INS

8:19 PM 19-Dec-23

- ❖ Information of cabin classes with seat numbers. To show that the audit trail works, I made a change and as we see, the details regarding the update is visible in row 1.

SQLQuery4.sql - UMLAPTOP1811-20\SQLEXPRESS.Airlines (UMLAPTOP1811-20\Umera (61))* - Microsoft SQL Server Management Studio

File Edit View Query Project Tools Window Help

Airlines

Object Explorer

SQLQuery4.sql - U...811-20\Umera (61)* Project_queries.sq...1811-20\Umera (57)

```
SELECT * FROM CabinClass
```

Results Messages

	CLASS_ID	CLASS_NAME	SEAT_NUM	AVAILABLE	ModifiedBy	ModifiedAt	ChangeDescrip...
1	1001	Business	01B	0	UMLAPTOP1811-20\Umera	2023-12-19 20:21:01.140	Updated: 1001...
2	1002	Economy	22A	1	NULL	NULL	NULL
3	1003	Business	03C	1	NULL	NULL	NULL
4	1004	Economy	43E	0	NULL	NULL	NULL
5	1005	Business	16F	1	NULL	NULL	NULL
6	1006	Economy	28F	1	NULL	NULL	NULL
7	1007	Business	04G	0	NULL	NULL	NULL
8	1008	Economy	50H	1	NULL	NULL	NULL
9	1009	Business	09J	1	NULL	NULL	NULL
10	1010	Economy	39K	0	NULL	NULL	NULL
11	1011	Business	11A	1	NULL	NULL	NULL
12	1012	Economy	27E	1	NULL	NULL	NULL
13	1013	Business	13F	0	NULL	NULL	NULL
14	1014	Economy	24G	1	NULL	NULL	NULL
15	1015	Business	06H	1	NULL	NULL	NULL
16	1016	Economy	48J	0	NULL	NULL	NULL
17	1017	Business	18A	1	NULL	NULL	NULL
18	1018	Economy	21B	1	NULL	NULL	NULL
19	1019	Business	02D	0	NULL	NULL	NULL
20	1020	Economy	34F	1	NULL	NULL	NULL
21	1021	Business	07G	1	NULL	NULL	NULL
22	1022	Economy	42H	0	NULL	NULL	NULL
23	1023	Business	14J	1	NULL	NULL	NULL
24	1024	Economy	28K	1	NULL	NULL	NULL

Query executed successfully. | UMLAPTOP1811-20\SQLEXPRESS ... | UMLAPTOP1811-20\Umera ... | Airlines | 00:00:00 | 100 rows

Item(s) Saved Ln 1 Col 1 INS

Search

8:21 PM 19-Dec-23

- ❖ Information about services offered to passengers. As we see here, the details about an update is mentioned in row 23

SQlQuery4.sql - UMLAPTOP1811-20\SQLEXPRESS.Airlines (UMLAPTOP1811-20\Umera (61)) - Microsoft SQL Server Management Studio

File Edit View Query Project Tools Window Help

New Query MDX DML XML DAX

Airlines Execute

Object Explorer

SQLQuery4.sql - U...811-20\Umera (61)* Project_queries.sq...1811-20\Umera (57)

SELECT * FROM Services

SERVICE_ID	PRIORITY_BOARDING	LOUNGE_ACCESS	CHECKED_BAGGAGE	MEAL_SERVICE	InFLIGHT_MEDIA	ModifiedBy	ModifiedAt	ChangeDescri...
101	0	1	1	0	1	NULL	NULL	NULL
102	1	0	1	1	0	NULL	NULL	NULL
103	1	1	0	0	1	NULL	NULL	NULL
104	1	1	0	1	1	NULL	NULL	NULL
105	0	0	0	0	1	NULL	NULL	NULL
106	1	1	1	1	0	NULL	NULL	NULL
107	0	1	0	0	1	NULL	NULL	NULL
108	1	0	1	0	1	NULL	NULL	NULL
109	1	0	1	1	1	NULL	NULL	NULL
110	0	1	0	0	1	NULL	NULL	NULL
111	0	0	0	1	1	NULL	NULL	NULL
112	1	1	1	1	1	NULL	NULL	NULL
113	0	1	0	0	1	NULL	NULL	NULL
114	0	0	0	1	1	NULL	NULL	NULL
115	1	0	1	1	0	NULL	NULL	NULL
116	1	0	0	0	1	NULL	NULL	NULL
117	0	0	1	0	1	NULL	NULL	NULL
118	1	1	0	1	1	NULL	NULL	NULL
119	0	0	0	0	1	NULL	NULL	NULL
120	1	1	1	0	1	NULL	NULL	NULL
121	0	1	0	1	0	NULL	NULL	NULL
122	1	0	1	0	1	NULL	NULL	NULL
123	1	0	1	0	1	UMLAPTOP1811-20\Umera	2023-12-19 20:22:52.620	Updated: 123 ...
124	1	0	0	1	1	NULL	NULL	NULL
...

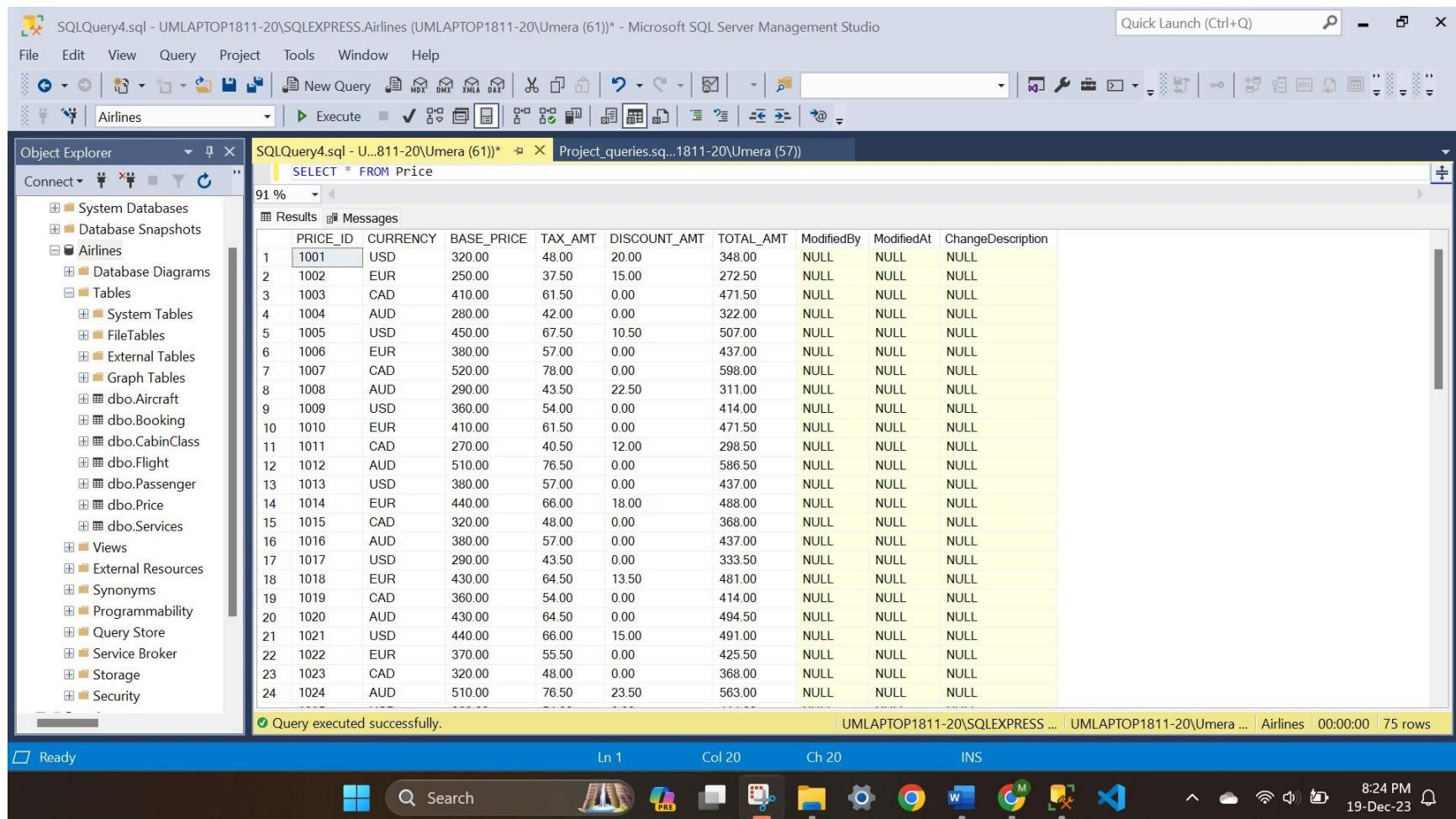
Query executed successfully.

UMLAPTOP1811-20\SQLEXPRESS ... UMLAPTOP1811-20\Umera ... Airlines 00:00:00 | 80 rows

Ready Ln 1 Col 1 INS 8:23 PM 19-Dec-23

Search

❖ Details of pricing breakdown



The screenshot shows the Microsoft SQL Server Management Studio interface. The title bar reads "SQLQuery4.sql - UMLAPTOP1811-20\SQLEXPRESS.Airlines (UMLAPTOP1811-20\Umera (61))* - Microsoft SQL Server Management Studio". The menu bar includes File, Edit, View, Query, Project, Tools, Window, and Help. The toolbar has various icons for database management tasks. The Object Explorer on the left shows the database structure, including the "Airlines" database with its tables like Aircraft, Booking, CabinClass, Flight, Passenger, Price, Services, Views, and more. The main window displays a query results grid for the "Price" table. The query is:

```
SELECT * FROM Price
```

The results grid shows 24 rows of data with the following columns:

	PRICE_ID	CURRENCY	BASE_PRICE	TAX_AMT	DISCOUNT_AMT	TOTAL_AMT	ModifiedBy	ModifiedAt	ChangeDescription
1	1001	USD	320.00	48.00	20.00	348.00	NULL	NULL	NULL
2	1002	EUR	250.00	37.50	15.00	272.50	NULL	NULL	NULL
3	1003	CAD	410.00	61.50	0.00	471.50	NULL	NULL	NULL
4	1004	AUD	280.00	42.00	0.00	322.00	NULL	NULL	NULL
5	1005	USD	450.00	67.50	10.50	507.00	NULL	NULL	NULL
6	1006	EUR	380.00	57.00	0.00	437.00	NULL	NULL	NULL
7	1007	CAD	520.00	78.00	0.00	598.00	NULL	NULL	NULL
8	1008	AUD	290.00	43.50	22.50	311.00	NULL	NULL	NULL
9	1009	USD	360.00	54.00	0.00	414.00	NULL	NULL	NULL
10	1010	EUR	410.00	61.50	0.00	471.50	NULL	NULL	NULL
11	1011	CAD	270.00	40.50	12.00	298.50	NULL	NULL	NULL
12	1012	AUD	510.00	76.50	0.00	586.50	NULL	NULL	NULL
13	1013	USD	380.00	57.00	0.00	437.00	NULL	NULL	NULL
14	1014	EUR	440.00	66.00	18.00	488.00	NULL	NULL	NULL
15	1015	CAD	320.00	48.00	0.00	368.00	NULL	NULL	NULL
16	1016	AUD	380.00	57.00	0.00	437.00	NULL	NULL	NULL
17	1017	USD	290.00	43.50	0.00	333.50	NULL	NULL	NULL
18	1018	EUR	430.00	64.50	13.50	481.00	NULL	NULL	NULL
19	1019	CAD	360.00	54.00	0.00	414.00	NULL	NULL	NULL
20	1020	AUD	430.00	64.50	0.00	494.50	NULL	NULL	NULL
21	1021	USD	440.00	66.00	15.00	491.00	NULL	NULL	NULL
22	1022	EUR	370.00	55.50	0.00	425.50	NULL	NULL	NULL
23	1023	CAD	320.00	48.00	0.00	368.00	NULL	NULL	NULL
24	1024	AUD	510.00	76.50	23.50	563.00	NULL	NULL	NULL

At the bottom of the results grid, a message says "Query executed successfully." and indicates "75 rows". The status bar at the bottom shows "Ln 1 Col 20 Ch 20 INS" and the system tray shows the date and time as "8:24 PM 19-Dec-23".

❖ Information about commercial aircrafts

The screenshot shows the Microsoft SQL Server Management Studio interface. The title bar reads "SQLQuery4.sql - UMLAPTOP1811-20\SQLEXPRESS.Airlines (UMLAPTOP1811-20\Umera (61)) - Microsoft SQL Server Management Studio". The menu bar includes File, Edit, View, Query, Project, Tools, Window, and Help. The toolbar has various icons for database management tasks. The Object Explorer on the left shows the database structure, including System Databases, Database Snapshots, and the Airlines database which contains Tables, Views, and other objects. The main window displays a query results grid for the "Aircraft" table. The query is:

```
SELECT * FROM Aircraft
```

The results grid shows 24 rows of data with the following columns:

AIRCRAFT_ID	AIRCRAFT_NAME	AIRCRAFT_TYPE	AIRCRAFT_MODEL	AIRCRAFT_CAPACITY	MANUFACTURER	ModifiedBy	ModifiedAt	ChangeDescription
10001	Airbus A320	Narrow-body jet airliner	A320-200	180	Airbus	NULL	NULL	NULL
10002	Boeing 737	Narrow-body jet airliner	737-800	189	Boeing	NULL	NULL	NULL
10003	Bombardier CRJ900	Regional jet	CRJ900	90	Bombardier	NULL	NULL	NULL
10004	Embraer E190	Narrow-body jet airliner	E190	114	Embraer	NULL	NULL	NULL
10005	Airbus A350	Wide-body twinjet airliner	A350-900	440	Airbus	NULL	NULL	NULL
10006	Boeing 777	Wide-body twinjet airliner	777-300ER	396	Boeing	NULL	NULL	NULL
10007	Bombardier Q400	Turboprop airliner	Q400	90	Bombardier	NULL	NULL	NULL
10008	ATR 72	Turboprop airliner	ATR 72-600	78	ATR	NULL	NULL	NULL
10009	Boeing 747	Wide-body quadjet airliner	747-400	416	Boeing	NULL	NULL	NULL
10010	Airbus A380	Wide-body double-deck jet airliner	A380-800	853	Airbus	NULL	NULL	NULL
10011	Embraer E195	Narrow-body jet airliner	E195	124	Embraer	NULL	NULL	NULL
10012	Airbus A321	Narrow-body jet airliner	A321-200	195	Airbus	NULL	NULL	NULL
10013	Boeing 787	Wide-body twinjet airliner	787-9	296	Boeing	NULL	NULL	NULL
10014	Bombardier CRJ700	Regional jet	CRJ700	70	Bombardier	NULL	NULL	NULL
10015	Embraer E170	Narrow-body jet airliner	E170	76	Embraer	NULL	NULL	NULL
10016	Airbus A330	Wide-body twinjet airliner	A330-300	440	Airbus	NULL	NULL	NULL
10017	Boeing 767	Wide-body twinjet airliner	767-300ER	350	Boeing	NULL	NULL	NULL
10018	Bombardier Q300	Turboprop airliner	Q300	56	Bombardier	NULL	NULL	NULL
10019	ATR 42	Turboprop airliner	ATR 42-600	50	ATR	NULL	NULL	NULL
10020	Boeing 757	Narrow-body twinjet airliner	757-300	243	Boeing	NULL	NULL	NULL
10021	Airbus A319	Narrow-body jet airliner	A319-100	160	Airbus	NULL	NULL	NULL
10022	Embraer E175	Narrow-body jet airliner	E175	76	Embraer	NULL	NULL	NULL
10023	Airbus A340	Wide-body quadjet airliner	A340-600	419	Airbus	NULL	NULL	NULL
10024	Boeing 737 MAX	Narrow-body jet airliner	737 MAX 8	210	Boeing	NULL	NULL	NULL

At the bottom of the results grid, a message says "Query executed successfully." and shows the execution details: "UMLAPTOP1811-20\SQLEXPRESS ... UMLAPTOP1811-20\Umera ... Airlines 00:00:00 | 65 rows". The status bar at the bottom indicates "Ready", "Ln 1", "Col 23", "Ch 23", and "INS". The taskbar at the very bottom shows various application icons.

❖ Details of central table Booking

The screenshot shows the Microsoft SQL Server Management Studio interface. The Object Explorer on the left shows the database structure, including the 'Airlines' database. The central pane displays the results of a query against the 'Booking' table. The query is:

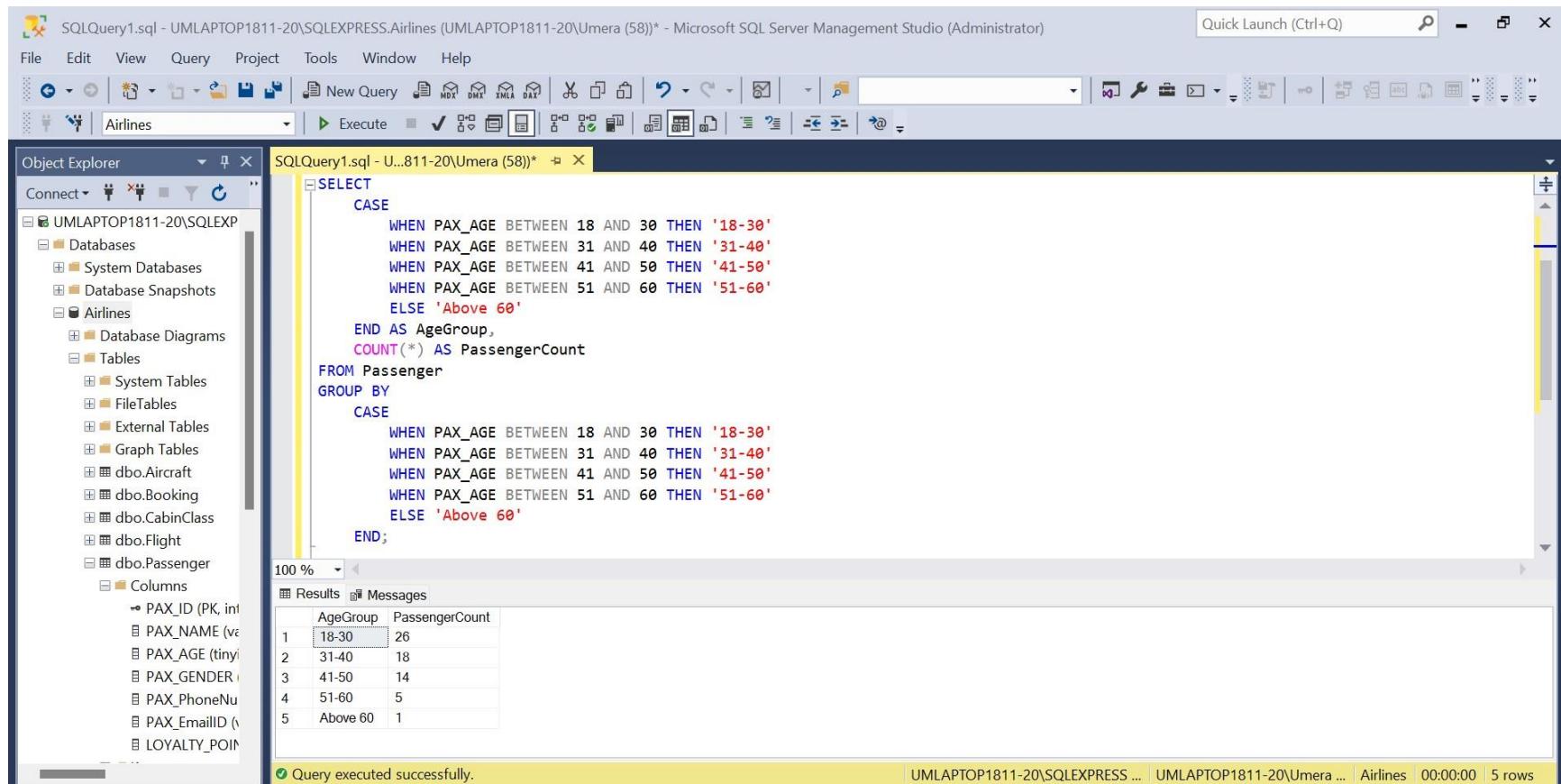
```
SELECT * FROM Booking
```

The results show 64 rows of data with the following columns:

BOOKING_ID	PAX_ID	FLIGHT_ID	CLASS_ID	SERVICE_ID	PRICE_ID	AIRCRAFT_ID	BOOKING_DATE	BOOKING_STATUS	ModifiedBy	ModifiedAt	ChangeDescription
1	18	105	1006	109	1013	10004	2021-01-02 10:15:35	Confirmed	NULL	NULL	NULL
2	64	112	1064	102	1029	10018	2021-04-05 14:30:20	Confirmed	NULL	NULL	NULL
3	45	153	1014	106	1052	10037	2021-05-10 09:45:48	Pending	NULL	NULL	NULL
4	10	129	1010	120	1064	10003	2021-05-15 16:20:55	Confirmed	NULL	NULL	NULL
5	29	142	1057	103	1005	10064	2021-05-20 18:05:40	Pending	NULL	NULL	NULL
6	12	124	1022	145	1048	10044	2021-03-25 12:40:10	Pending	NULL	NULL	NULL
7	37	101	1015	109	1024	10046	2021-03-04 08:55:17	Confirmed	NULL	NULL	NULL
8	2	145	1061	152	1003	10002	2021-02-07 17:30:30	Pending	NULL	NULL	NULL
9	61	134	1047	125	1015	10033	2021-01-12 13:25:50	Confirmed	NULL	NULL	NULL
10	23	119	1044	121	1061	10031	2021-04-18 15:50:05	Confirmed	NULL	NULL	NULL
11	43	116	1020	145	1022	10059	2021-05-25 19:35:55	Confirmed	NULL	NULL	NULL
12	40	107	1064	136	1004	10047	2021-02-28 21:45:02	Pending	NULL	NULL	NULL
13	17	111	1055	154	1053	10058	2021-06-03 11:30:15	Confirmed	NULL	NULL	NULL
14	14	139	1053	128	1008	10045	2021-02-01 06:20:25	Confirmed	NULL	NULL	NULL
15	30	106	1009	148	1062	10011	2021-05-06 16:15:30	Pending	NULL	NULL	NULL
16	49	121	1025	136	1039	10040	2021-05-11 11:10:17	Confirmed	NULL	NULL	NULL
17	19	148	1012	141	1021	10035	2021-04-26 13:55:28	Confirmed	NULL	NULL	NULL
18	1	110	1017	103	1063	10019	2021-03-31 19:40:45	Pending	NULL	NULL	NULL
19	33	135	1058	118	1041	10057	2021-02-04 09:25:50	Confirmed	NULL	NULL	NULL
20	28	130	1030	162	1026	10050	2021-04-09 22:35:10	Pending	NULL	NULL	NULL
21	50	132	1050	113	1002	10048	2021-01-14 07:50:28	Confirmed	NULL	NULL	NULL
22	36	129	1011	143	1060	10023	2021-04-19 16:05:05	Pending	NULL	NULL	NULL
23	25	154	1032	151	1007	10007	2021-03-15 18:30:15	Confirmed	NULL	NULL	NULL
24	48	144	1062	109	1036	10004	2021-05-23 08:45:35	Confirmed	NULL	NULL	NULL

Query executed successfully.

- ❖ Number of passengers in various age groups



The screenshot shows the Microsoft SQL Server Management Studio interface. The title bar reads "SQLQuery1.sql - UMLAPTOP1811-20\SQLEXPRESS.Airlines (UMLAPTOP1811-20\Umera (58)) - Microsoft SQL Server Management Studio (Administrator)". The left pane is the Object Explorer, showing the database structure for "UMLAPTOP1811-20\SQLEXPRESS.Airlines", including databases, system databases, database snapshots, and tables like "Airlines", "Passenger", and "Flight". The right pane is the SQL Query Editor window titled "SQLQuery1.sql - U...811-20(Umera (58))*". It contains the following T-SQL code:

```

SELECT
    CASE
        WHEN PAX_AGE BETWEEN 18 AND 30 THEN '18-30'
        WHEN PAX_AGE BETWEEN 31 AND 40 THEN '31-40'
        WHEN PAX_AGE BETWEEN 41 AND 50 THEN '41-50'
        WHEN PAX_AGE BETWEEN 51 AND 60 THEN '51-60'
        ELSE 'Above 60'
    END AS AgeGroup,
    COUNT(*) AS PassengerCount
FROM Passenger
GROUP BY
    CASE
        WHEN PAX_AGE BETWEEN 18 AND 30 THEN '18-30'
        WHEN PAX_AGE BETWEEN 31 AND 40 THEN '31-40'
        WHEN PAX_AGE BETWEEN 41 AND 50 THEN '41-50'
        WHEN PAX_AGE BETWEEN 51 AND 60 THEN '51-60'
        ELSE 'Above 60'
    END;
  
```

The results pane displays the output of the query:

AgeGroup	PassengerCount
18-30	26
31-40	18
41-50	14
51-60	5
Above 60	1

At the bottom, a message bar says "Query executed successfully." and shows the execution details: "UMLAPTOP1811-20\SQLEXPRESS ... | UMLAPTOP1811-20\Umera ... | Airlines | 00:00:00 | 5 rows".

- ❖ Average age of male passengers and average age of female passengers
- ❖ Passengers with loyalty points categorized by gender

SQLQuery1.sql - UMLAPTOP1811-20\SQLEXPRESS.Airlines (UMLAPTOP1811-20\Umera (58)) - Microsoft SQL Server Management Studio (Administrator)

File Edit View Query Project Tools Window Help

New Query MDX DML XML DAX

Airlines

Execute

Object Explorer

SQLQuery1.sql - U...811-20\Umera (58)*

```

SELECT
    PAX_GENDER,
    AVG(PAX_AGE) AS Average_Age
FROM Passenger
GROUP BY PAX_GENDER;

SELECT
    PAX_GENDER,
    SUM(CASE WHEN LOYALTY_POINTS > 0 THEN 1 ELSE 0 END) AS PassengersWithLoyaltyPoints
FROM Passenger
GROUP BY PAX_GENDER;

```

100 %

Results Messages

PAX_GENDER	Average_Age
F	27
M	42

PAX_GENDER	PassengersWithLoyaltyPoints
F	14
M	21

Query executed successfully.

UMLAPTOP1811-20\SQLEXPRESS ... | UMLAPTOP1811-20\Umera ... | Airlines | 00:00:00 | 4 rows

- ❖ Number of flights scheduled in the period 15 Dec 2021 to 31 Dec 2021
- ❖ Top 5 most popular destinations for passengers

The screenshot shows the Microsoft SQL Server Management Studio (SSMS) interface. The title bar reads "SQLQuery1.sql - UMLAPTOP1811-20\SQLEXPRESS.Airlines (UMLAPTOP1811-20\Umera (58)) - Microsoft SQL Server Management Studio (Administrator)". The menu bar includes File, Edit, View, Query, Project, Tools, Window, and Help. The toolbar has various icons for database management tasks.

The Object Explorer on the left shows the database structure for "UMLAPTOP1811-20\SQLEXPRESS.Airlines". It includes Databases, Database Snapshots, the "Airlines" database, and its tables: Aircraft, Booking, CabinClass, Flight, and Passenger, along with their columns like PAX_ID, PAX_NAME, PAX_AGE, PAX_GENDER, PAX_PhoneNumber, PAX_EmailID, and LOYALTY_POINTS.

The main pane displays two queries:

```

SELECT COUNT(*) AS Number_Of_Flights
FROM Flight
WHERE FLIGHT_DATE BETWEEN '2021-12-15' AND '2021-12-31';

SELECT TOP 5
    ARRIVAL_AIRPORT
FROM Flight
GROUP BY ARRIVAL_AIRPORT
ORDER BY COUNT(*) DESC;

```

The "Results" pane shows the output of the first query:

Number_Of_Flights
34

And the output of the second query:

ARRIVAL_AIRPORT
Lima
Buenos Aires
Bogota
Beijing
Barcelona

At the bottom, a status bar indicates "Query executed successfully." and the session details: "UMLAPTOP1811-20\SQLEXPRESS ... | UMLAPTOP1811-20\Umera ... | Airlines | 00:00:00 | 6 rows".

- ❖ Number of flights to be displayed along with the departure airports whose names of departure airports begin with the letter ‘B’ ‘M’ and ‘S’

SQLQuery1.sql - UMLAPTOP1811-20\SQLEXPRESS.Airlines (UMLAPTOP1811-20\Umera (58)) - Microsoft SQL Server Management Studio (Administrator)

File Edit View Query Project Tools Window Help

New Query MDX DMX XMLA DAX

Airlines Execute

Object Explorer

SQLQuery1.sql - U...811-20\Umera (58)*

```

SELECT
    DEPART_AIRPORT,
    COUNT(*) AS FlightCount
FROM
    Flight
WHERE
    LEFT(DEPART_AIRPORT, 1) IN ('B', 'M', 'S')
GROUP BY
    DEPART_AIRPORT;

```

Results Messages

	DEPART_AIRPORT	FlightCount
1	Barcelona	2
2	Beijing	2
3	Bogota	2
4	Buenos Aires	2
5	Madrid	2
6	Mexico City	2
7	Miami	1
8	Montreal	2
9	Moscow	2
10	San Francisco	2
11	Santiago	1
12	Sydney	2

Query executed successfully.

UMLAPTOP1811-20\SQLEXPRESS ... | UMLAPTOP1811-20\Umera ... | Airlines | 00:00:00 | 12 rows

- ❖ Display the flight number, departure and arrival airport along with the departing and arriving time of those flights whose journey duration is more than 5 hours or 300 minutes

SQlQuery1.sql - UMLAPTOP1811-20\SQLEXPRESS.Airlines (UMLAPTOP1811-20\Umera (58)) - Microsoft SQL Server Management Studio (Administrator)

File Edit View Query Project Tools Window Help

New Query MDX DMX XMLE DAX

Airlines Execute

```
SELECT
    FLIGHT_NUM,
    DEPART_AIRPORT,
    ARRIVAL_AIRPORT,
    DEPART_TIME,
    ARRIVAL_TIME,
    DATEDIFF(MINUTE, DEPART_TIME, ARRIVAL_TIME) AS Flight_Duration_in_Minutes
FROM Flight
WHERE DATEDIFF(MINUTE, DEPART_TIME, ARRIVAL_TIME) > 300;
```

100 %

Results Messages

FLIGHT_NUM	DEPART_AIRPORT	ARRIVAL_AIRPORT	DEPART_TIME	ARRIVAL_TIME	Flight_Duration_in_Minutes
1 LH456	New York	London	08:00:00	20:00:00	720
2 BA678	Frankfurt	Dubai	10:30:00	17:00:00	390
3 BA345	Moscow	Beijing	09:45:00	17:30:00	465
4 AF567	Beijing	Tokyo	18:00:00	23:30:00	330
5 LH123	Tokyo	Sydney	11:00:00	21:00:00	600
6 BA234	San Francisco	Chicago	13:15:00	19:30:00	375
7 AF123	Vancouver	Mexico City	13:45:00	19:00:00	315
8 BA678	Bogota	Santiago	13:00:00	18:30:00	330
9 AF234	Frankfurt	Dubai	16:45:00	22:00:00	315
10 AF345	Moscow	Beijing	08:15:00	16:00:00	465
11 LH890	Beijing	Tokyo	17:00:00	22:30:00	330
12 BA345	Tokyo	Sydney	09:30:00	19:30:00	600
13 AF345	San Francisco	Chicago	11:45:00	18:00:00	375
14 LH567	Vancouver	Mexico City	10:30:00	16:45:00	375

Query executed successfully.

Ln 61 Col 56 Ch 56 INS

Ready

- ❖ Display the highest amount paid for a flight in each of the accepted currencies
- ❖ Calculate the average tax amount to be paid by a passenger in each of the accepted currencies

SQLQuery1.sql - UMLAPTOP1811-20\SQLEXPRESS.Airlines (UMLAPTOP1811-20\Umera (58)) - Microsoft SQL Server Management Studio (Administrator)

File Edit View Query Project Tools Window Help

New Query MDX DMX XMA DAX Execute

Object Explorer

```

SELECT
    CURRENCY,
    ROUND(MAX(TOTAL_AMT), 2) AS Highest_Price
FROM Price
GROUP BY CURRENCY;

SELECT
    CURRENCY,
    CAST(AVG(TAX_AMT) AS DECIMAL(10, 2)) AS Average_Tax_Amount
FROM Price
GROUP BY CURRENCY;

```

Results

CURRENCY	Highest_Price
AUD	586.50
CAD	598.00
EUR	561.00
USD	632.50

CURRENCY	Average_Tax_Amount
AUD	58.92
CAD	56.76
EUR	53.84
USD	58.89

Query executed successfully.

UMLAPTOP1811-20\SQLEXPRESS ... UMLAPTOP1811-20\Umera ... Airlines 00:00:00 | 8 rows

- ❖ Total revenue generated categorized by currency

The screenshot shows the Microsoft SQL Server Management Studio interface. The title bar reads "SQLQuery3.sql - UMLAPTOP1811-20\SQLEXPRESS.Airlines (UMLAPTOP1811-20\Umera (60))* - Microsoft SQL Server Management Studio". The menu bar includes File, Edit, View, Query, Project, Tools, Window, and Help. The toolbar has various icons for database management tasks. The Object Explorer on the left shows the database structure, with "Airlines" selected. The main area displays a query window titled "SQLQuery3.sql" containing the following SQL code:

```
SELECT SUM(TOTAL_AMT) AS 'SUM IN USD' FROM PRICE WHERE CURRENCY = 'USD'  
SELECT SUM(TOTAL_AMT) AS 'SUM IN EUR' FROM PRICE WHERE CURRENCY = 'EUR'  
SELECT SUM(TOTAL_AMT) AS 'SUM IN CAD' FROM PRICE WHERE CURRENCY = 'CAD'  
SELECT SUM(TOTAL_AMT) AS 'SUM IN AUD' FROM PRICE WHERE CURRENCY = 'AUD'
```

Below the code, the Results pane shows the output for each currency:

Currency	Total Amount
SUM IN USD	8533.50
SUM IN EUR	7688.50
SUM IN CAD	8162.00
SUM IN AUD	8050.00

- ❖ Number of passengers who were eligible to avail some sort of discount
- ❖ Display the average cost of the ticket categorized by different currencies

SQLQuery1.sql - UMLAPTOP1811-20\SQLEXPRESS.Airlines (UMLAPTOP1811-20\Umera (58)) - Microsoft SQL Server Management Studio (Administrator)

File Edit View Query Project Tools Window Help

New Query MDX DMX XMAX DAX Execute

Object Explorer

```

SELECT COUNT(*) AS Passengers_with_Discount
FROM Price
WHERE DISCOUNT_AMT > 0;

SELECT
    Currency,
    CAST(AVG(TOTAL_AMT) AS DECIMAL(10,2)) AS AveragePrice
FROM Price
GROUP BY Currency;

```

Results Messages

	Passenger	Passenger with Discount
1		23

	Currency	AveragePrice
1	AUD	447.22
2	CAD	429.58
3	EUR	404.66
4	USD	449.13

Query executed successfully.

UMLAPTOP1811-20\SQLEXPRESS ... UMLAPTOP1811-20\Umera ... Airlines 00:00:00 | 5 rows

- ❖ Number of aircrafts categorized by different manufacturers
- ❖ Number of aircrafts categorized by different types of aircraft

SQLQuery1.sql - UMLAPTOP1811-20\SQLEXPRESS.Airlines (UMLAPTOP1811-20\Umera (58))* - Microsoft SQL Server Management Studio (Administrator)

File Edit View Query Project Tools Window Help

Airlines Execute

```

SELECT MANUFACTURER, COUNT(*) AS AircraftCount
FROM Aircraft
GROUP BY MANUFACTURER;

SELECT
    AIRCRAFT_TYPE,
    COUNT(*) AS AircraftCount
FROM Aircraft
GROUP BY AIRCRAFT_TYPE;

```

Results Messages

MANUFACTURER	AircraftCount
1 Airbus	17
2 ATR	4
3 Boeing	19
4 Bombardier	13
5 Embraer	12

AIRCRAFT_TYPE	AircraftCount
1 Narrow-body jet airliner	25
2 Narrow-body twinjet airliner	2
3 Regional jet	9
4 Turboprop airliner	9
5 Wide-body double-deck jet airliner	2
6 Wide-body quadjet airliner	4
7 Wide-body twinjet airliner	14

Query executed successfully.

Ln 93 Col 1 Ch 1 INS

- ❖ Display the average seating capacity of different types of aircraft
- ❖ Display the highest seating capacity of different types of aircraft present in the fleet

SQLQuery1.sql - UMLAPTOP1811-20\SQLEXPRESS.Airlines (UMLAPTOP1811-20\Umera (58))* - Microsoft SQL Server Management Studio (Administrator)

File Edit View Query Project Tools Window Help

Airlines Execute

```

SELECT
    AIRCRAFT_TYPE,
    AVG(AIRCRAFT_CAPACITY) AS Average_Seating_Capacity
FROM Aircraft GROUP BY AIRCRAFT_TYPE;

SELECT
    AIRCRAFT_TYPE,
    MAX(AIRCRAFT_CAPACITY) AS Highest_Capacity
FROM Aircraft GROUP BY AIRCRAFT_TYPE;

```

100 %

Results Messages

AIRCRAFT_TYPE	Average_Seating_Capacity
1 Narrow-body jet airliner	150
2 Narrow-body twinjet airliner	241
3 Regional jet	69
4 Turboprop airliner	58
5 Wide-body double-deck jet airliner	714
6 Wide-body quadjet airliner	491
7 Wide-body twinjet airliner	374

AIRCRAFT_TYPE	HighestCapacity
1 Narrow-body jet airliner	240
2 Narrow-body twinjet airliner	243
3 Regional jet	104
4 Turboprop airliner	90
5 Wide-body double-deck jet airliner	853
6 Wide-body quadjet airliner	605
7 Wide-body twinjet airliner	440

Query executed successfully.

Ln 110 Col 43 Ch 43 INS

- ❖ Display the total number of seats and the number of available and unavailable seats for Business class as well as Economy class (this result is cumulative)

SQLQuery1.sql - UMLAPTOP1811-20\SQLEXPRESS.Airlines (UMLAPTOP1811-20\Umera (58))* - Microsoft SQL Server Management Studio (Administrator)

File Edit View Query Project Tools Window Help

Airlines Execute

```

SELECT
    Class_Name,
    SUM(CAST(SUBSTRING(SEAT_NUM, 1, LEN(SEAT_NUM) - 1) AS INT)) AS TotalSeats,
    SUM(CASE WHEN Available = 0 THEN CAST(SUBSTRING(SEAT_NUM, 1, LEN(SEAT_NUM) - 1) AS INT) ELSE 0 END) AS UnavailableSeats,
    SUM(CASE WHEN Available = 1 THEN CAST(SUBSTRING(SEAT_NUM, 1, LEN(SEAT_NUM) - 1) AS INT) ELSE 0 END) AS AvailableSeats
FROM CabinClass
GROUP BY Class_Name;

```

Results Messages

	Class_Name	TotalSeats	UnavailableSeats	AvailableSeats
1	Business	546	158	388
2	Economy	1657	670	987

Query executed successfully.

Ln 1 Col 1 INS

- ❖ As per the table Services, there are 5 services/amenities offered to passengers. Display the percentage of passengers opting each of these services

SQLQuery1.sql - UMLAPTOP1811-20\SQLEXPRESS.Airlines (UMLAPTOP1811-20\Umera (58)) - Microsoft SQL Server Management Studio (Administrator)

File Edit View Query Project Tools Window Help

New Query MDX DMX XML DAX

Airlines Execute

```
SELECT
    CAST(SUM(CAST(PRIORITY_BOARDING AS INT)) * 100.0 / COUNT(*) AS DECIMAL(10, 2)) AS Percentage_Priority_boarding,
    CAST(SUM(CAST LOUNGE_ACCESS AS INT)) * 100.0 / COUNT(*) AS DECIMAL(10, 2)) AS Percentage_Lounge_access,
    CAST(SUM(CAST CHECKED_BAGGAGE AS INT)) * 100.0 / COUNT(*) AS DECIMAL(10, 2)) AS Percentage_Checked_Baggage,
    CAST(SUM(CAST MEAL_SERVICE AS INT)) * 100.0 / COUNT(*) AS DECIMAL(10, 2)) AS Percentage_Meal_Service,
    CAST(SUM(CAST InFLIGHT_MEDIA AS INT)) * 100.0 / COUNT(*) AS DECIMAL(10, 2)) AS Percentage_Inflight_media
FROM Services;
```

Results Messages

	Percentage_Priority_boarding	Percentage_Lounge_access	Percentage_Checked_Baggage	Percentage_Meal_Service	Percentage_Inflight_media
1	51.25	38.75	43.75	43.75	80.00

Query executed successfully. | UMLAPTOP1811-20\SQLEXPRESS ... | UMLAPTOP1811-20\Umera ... | Airlines | 00:00:00 | 1 rows

Object Explorer

- Graph Tables
- dbo.Aircraft
- dbo.Booking
- dbo.CabinClass
- dbo.Flight
- dbo.Passenger
- dbo.Price
- dbo.Services
 - Columns
 - Keys
 - Constraints
 - Triggers
 - Indexes
 - Statistics
- Views
- External Resources
- Synonyms
- Programmability

- ❖ Number of confirmed booking statuses and pending booking statuses
- ❖ Top 5 flights in regards to highest price in USD to be displayed along with necessary details

SQLQuery1.sql - UMLAPTOP1811-20\SQLEXPRESS.Airlines (UMLAPTOP1811-20\Umera (58))* - Microsoft SQL Server Management Studio (Administrator)

File Edit View Query Project Tools Window Help

New Query MDX DMX XMA DAX Execute

Object Explorer

Graph Tables
dbo.Aircraft
dbo.Booking
dbo.CabinClass
dbo.Flight
dbo.Passenger
dbo.Price
dbo.Services
Columns
Keys
Constraints
Triggers
Indexes
Statistics
Views
External Resources
Synonyms
Programmability

Airlines

SQLQuery1.sql - U...811-20(Umera (58))*

```

SELECT
    BOOKING_STATUS,
    COUNT(*) AS StatusCount
FROM Booking
GROUP BY BOOKING_STATUS;

SELECT TOP 5
    F.FLIGHT_NUM, F.DEPART_AIRPORT, F.ARRIVAL_AIRPORT, P. TOTAL_AMT, P.CURRENCY
FROM Booking AS B
INNER JOIN Price AS P ON B.PRICE_ID = P.PRICE_ID
INNER JOIN Flight AS F ON B.FLIGHT_ID = F.FLIGHT_ID
WHERE P.CURRENCY IN ('USD') ORDER BY P.TOTAL_AMT DESC;

```

Results Messages

BOOKING_STATUS	StatusCount
Confirmed	39
Pending	25

FLIGHT_NUM	DEPART_AIRPORT	ARRIVAL_AIRPORT	TOTAL_AMT	CURRENCY
BA234	New York	London	586.50	USD
AF234	Frankfurt	Dubai	507.00	USD
LH678	Chicago	Toronto	494.50	USD
BA345	Moscow	Beijing	494.50	USD
AF567	Sydney	Auckland	491.00	USD

Query executed successfully.

UMLAPTOP1811-20\SQLEXPRESS ... UMLAPTOP1811-20\Umera ... Airlines 00:00:00 | 7 rows

- ❖ Top 3 flights in regards to highest price in EUR to be displayed along with necessary details
- ❖ Display 2 types of aircrafts with the highest number of bookings

SQLQuery1.sql - UMLAPTOP1811-20\SQLEXPRESS.Airlines (UMLAPTOP1811-20\Umera (58)) - Microsoft SQL Server Management Studio (Administrator)

File Edit View Query Project Tools Window Help

New Query MDX DMX XML DAX

Airlines

Execute

Object Explorer

Graph Tables
dbo.Aircraft
dbo.Booking
dbo.CabinClass
dbo.Flight
dbo.Passenger
dbo.Price
dbo.Services
Columns
SERVICE_ID (PI)
PRIORITY_BOA
LOUNGE_ACCE
CHECKED_BAG
MEAL_SERVICE
InFLIGHT_MED
Keys
Constraints
Triggers
Indexes
Statistics
Views
External Resources
Synonyms
Programmability

SQLQuery1.sql - U...811-20(Umera (58))*

```

SELECT TOP 3
    F.FLIGHT_NUM, F.DEPART_AIRPORT, F.ARRIVAL_AIRPORT, P. TOTAL_AMT, P.CURRENCY
    FROM Booking AS B
    INNER JOIN Price AS P ON B.PRICE_ID = P.PRICE_ID
    INNER JOIN Flight AS F ON B.FLIGHT_ID = F.FLIGHT_ID
    WHERE P.CURRENCY IN ('EUR') ORDER BY P.TOTAL_AMT DESC;

SELECT TOP 2
    A.AIRCRAFT_TYPE AS AircraftType,
    COUNT(B.Booking_ID) AS BookedSeats
    FROM Aircraft AS A
    LEFT JOIN Booking AS B ON A.Aircraft_ID = B.Aircraft_ID
    GROUP BY A.AIRCRAFT_TYPE
    ORDER BY BookedSeats DESC;

```

Results Messages

FLIGHT_NUM	DEPART_AIRPORT	ARRIVAL_AIRPORT	TOTAL_AMT	CURRENCY
AF123	Paris	Rome	561.00	EUR
AF234	Barcelona	Amsterdam	494.50	EUR
BA456	Madrid	Barcelona	488.00	EUR

AircraftType	BookedSeats
Narrow-body jet airliner	26
Wide-body twinjet airliner	15

Query executed successfully.

UMLAPTOP1811-20\SQLEXPRESS ... | UMLAPTOP1811-20\Umera ... | Airlines | 00:00:00 | 5 rows

- ❖ Display the names of 15 passengers along with their flight routes, selected cabin class and payment currency who have spent the most on their flights

SQlQuery1.sql - UMLAPTOP1811-20\SQLEXPRESS.Airlines (UMLAPTOP1811-20\Umera (58))* - Microsoft SQL Server Management Studio (Administrator)

File Edit View Query Project Tools Window Help

New Query MDX DML XMLE DAX

Airlines Execute

```
SELECT TOP 15
    P.PAX_Name, F.DEPART_AIRPORT, F.ARRIVAL_AIRPORT, CC.CLASS_NAME, Pr.CURRENCY,
    SUM(Pr.TOTAL_AMT) AS Total_Spending
FROM BOOKING AS B
JOIN Passenger AS P ON P.PAX_ID = B.PAX_ID
JOIN Price AS Pr ON B.Price_ID = Pr.Price_ID
JOIN Flight AS F ON B.FLIGHT_ID = F.FLIGHT_ID
JOIN CabinClass AS CC ON B.CLASS_ID = CC.CLASS_ID
GROUP BY P.PAX_Name, F.DEPART_AIRPORT, F.ARRIVAL_AIRPORT, Pr.CURRENCY, CC.CLASS_NAME
ORDER BY Total_Spending DESC;
```

Results Messages

PAX_Name	DEPART_AIRPORT	ARRIVAL_AIRPORT	CLASS_NAME	CURRENCY	Total_Spending
1 James Rodriguez	Montreal	Vancouver	Economy	CAD	598.00
2 Christopher Anderson	Montreal	Vancouver	Economy	AUD	586.50
3 Natalie Anderson	Lima	Quito	Business	AUD	586.50
4 Samuel Wilson	New York	London	Economy	USD	586.50
5 William Jones	Vancouver	Mexico City	Business	CAD	586.50
6 Joshua Davis	New York	London	Business	AUD	563.00
7 Abigail Hernandez	Paris	Rome	Business	EUR	561.00
8 Elizabeth Clark	Lima	Quito	Economy	AUD	540.50
9 Aria Smith	Buenos Aires	Lima	Economy	CAD	517.50
10 Alexander Lee	Frankfurt	Dubai	Business	USD	507.00
11 Noah Martinez	Toronto	Montreal	Economy	AUD	505.50
12 Ryan Martinez	Bogota	Santiago	Business	CAD	505.50
13 Joseph Martinez	Sydney	Auckland	Business	AUD	495.00
14 Benjamin Davis	Moscow	Beijing	Business	USD	494.50
15 Avery Lee	Chicago	Toronto	Business	USD	494.50

Query executed successfully. UMLAPTOP1811-20\SQLEXPRESS ... UMLAPTOP1811-20\Umera ... Airlines 00:00:00 | 15 rows

- ❖ Display the average age of passengers in Business class as well as Economy class
- ❖ Top 5 departure airports to be displayed along with their booking count

SQLQuery1.sql - UMLAPTOP1811-20\SQLEXPRESS.Airlines (UMLAPTOP1811-20\Umera (58))* - Microsoft SQL Server Management Studio (Administrator)

File Edit View Query Project Tools Window Help

New Query MDX DML XMLE DAX

Airlines Execute

```

SELECT
    CC.CLASS_NAME,
    AVG(P.PAX_AGE) AS Average_Age
FROM BOOKING AS B
JOIN CabinClass AS CC ON B.Class_ID = CC.Class_ID
JOIN Passenger AS P ON B.PAX_ID = P.PAX_ID
GROUP BY CC.CLASS_NAME;

SELECT TOP 5
    F.DEPART_AIRPORT,
    COUNT(B.Booking_ID) AS BookingCount
FROM BOOKING AS B
JOIN Flight AS F ON B.FLIGHT_ID = F.FLIGHT_ID
GROUP BY F.DEPART_AIRPORT
ORDER BY BookingCount DESC;

```

100 %

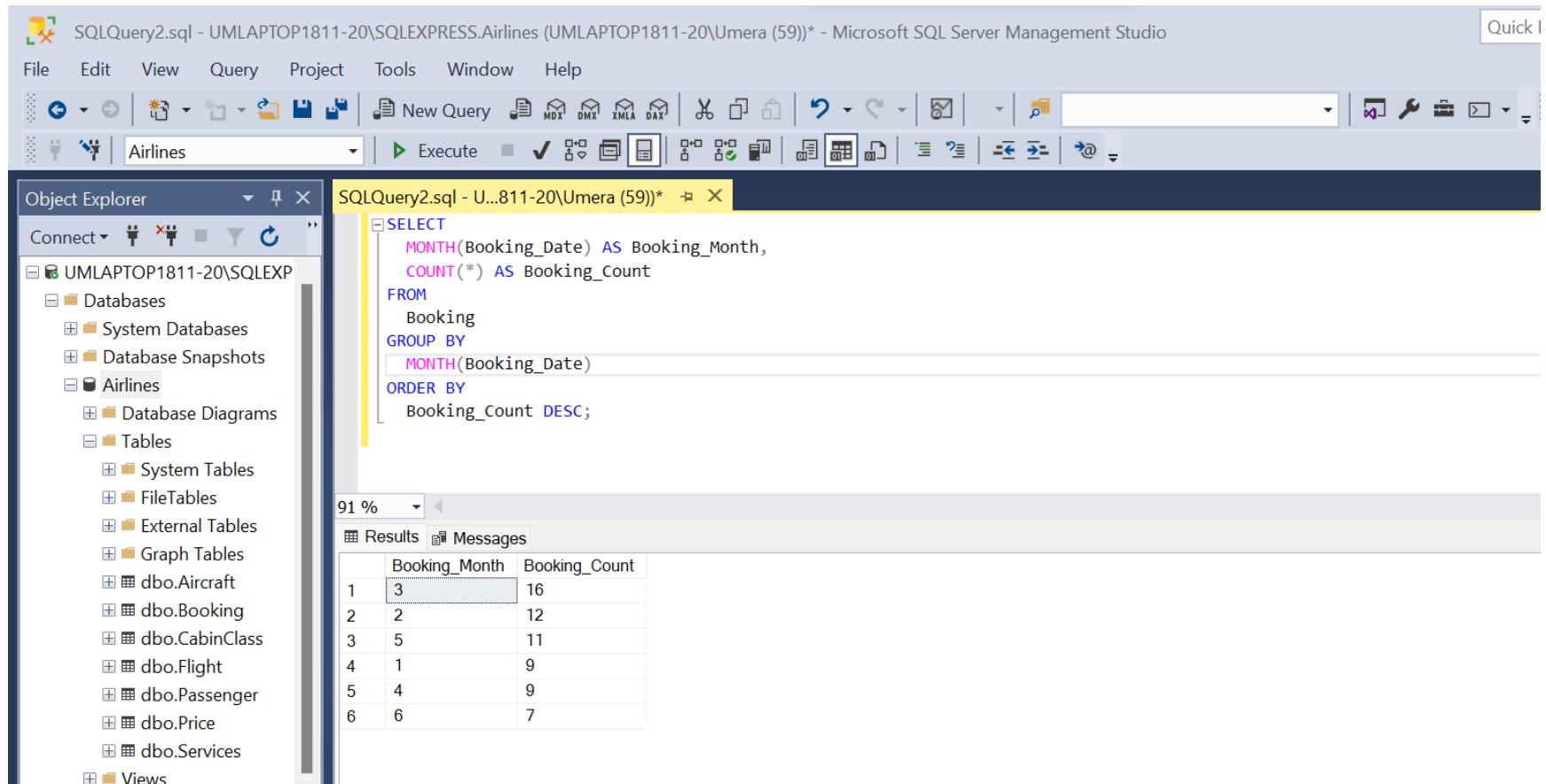
Results Messages

CLASS_NAME	Average_Age
Business	34
Economy	35

DEPART_AIRPORT	BookingCount
Buenos Aires	4
Lima	4
Amsterdam	3
Beijing	3
Los Angeles	3

Query executed successfully. UMLAPTOP1811-20\SQLEXPRESS ... UMLAPTOP1811-20\Umera ... Airlines 00:00:00 | 7 rows

- ❖ Popular months for booking to be displayed along with their number of bookings



The screenshot shows the Microsoft SQL Server Management Studio interface. The title bar reads "SQLQuery2.sql - UMLAPTOP1811-20\SQLEXPRESS.Airlines (UMLAPTOP1811-20\Umera (59))* - Microsoft SQL Server Management Studio". The menu bar includes File, Edit, View, Query, Project, Tools, Window, and Help. The toolbar has various icons for database management tasks. The Object Explorer on the left shows the database structure under "UMLAPTOP1811-20\SQLEXP". The main window displays a query results grid. The query in the results pane is:

```
SELECT
    MONTH(Booking_Date) AS Booking_Month,
    COUNT(*) AS Booking_Count
FROM
    Booking
GROUP BY
    MONTH(Booking_Date)
ORDER BY
    Booking_Count DESC;
```

The results grid shows the following data:

	Booking_Month	Booking_Count
1	3	16
2	2	12
3	5	11
4	1	9
5	4	9
6	6	7

CONCLUSIONS

- Average age of female passengers is 27 while average age of male passengers is 42
- The ratio of male passengers and female passengers are almost equal
- 54.7 % of total passengers are frequent flyers of our airline
- Most of the flights are short haul flights (duration is 1 to 3 hours)
- There are at least 2 flights operating per day.
- Lima, Buenos Aires, Amsterdam and Los Angeles are some of the popular destinations
- USD, EUR, CAD, AUD are the most preferred currencies
- The average tax amount in each currency category is in the range 50-60
- Average prices
 - AUD 447.22
 - CAD 429.58
 - EUR 404.66
 - USD 449.13
- Boeing is the most preferred manufacturer of our airline, followed by Airbus and Bombardier
- Our fleet has aircrafts with higher than average seating capacities.
- 51.25 % of total passengers opted for Priority Boarding
- 38.75 % opted for Lounge Access
- 43.75% opted for Checked Baggage
- 43.75% opted for Meal Service
- 80% opted for In-Flight Media
- Number of confirmed bookings stand at 39 while pending bookings stand at 25
- Most popular months for booking are March and February, followed by May, January, April and lastly June.
- This means most travelers prefer the winter and spring seasons as compared to summer.