Sri Lanka Institute of Information Technology

Data Warehousing and Business Intelligence

Assignment I

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Step 1: Data Set Selection

This data set contains Airplanes Satisfaction Details given by an airline organization. Their goal is to get an understanding of passenger preferences and to improve their facilities. Also to know on which aspect of the services offered by them have to be emphasized more to generate more satisfied customers.

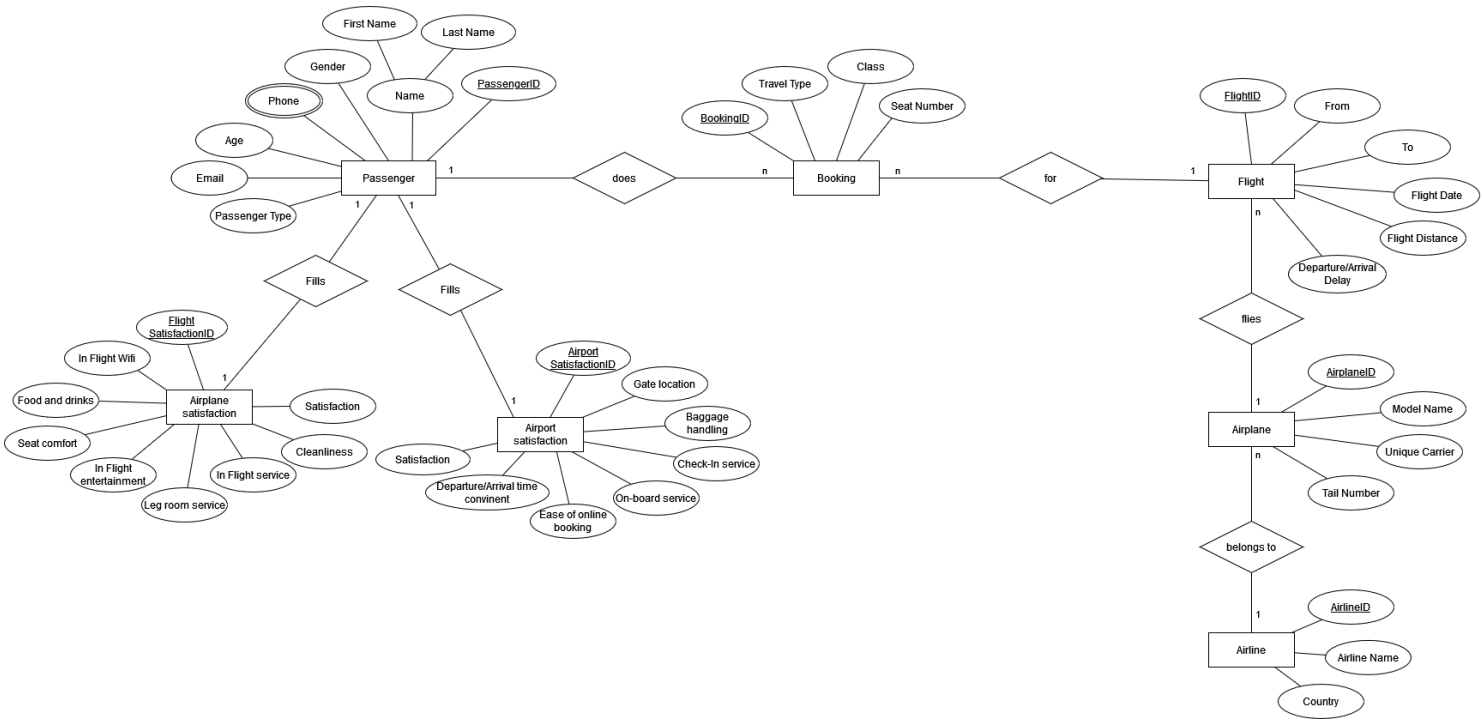
The dataset consists of the details of passengers, their booking details, flights details, feedback on their flight experience on various context. After conducting surveys for about 2 years, data was collected from 15,000 passengers of all customer types travelling in different classes.

This dataset contains,

- Passenger Details
- Passenger Address Details
- Flight details
- Booking Details
- Airplane Details
- Airline Details
- Flight Satisfaction Details
- Airport Satisfaction Details

The link to the source data set: https://www.kaggle.com/datasets/teejmahal20/airline-passenger-satisfaction

Following ER- diagram will describe the scenario of the selected dataset.



Step 2: Preparation of Data Sources

The data set was in ‘csv’ file type. As there were only flight satisfactory details in the data set passenger data and airplane data sets were added and they were separated into Database, Text, Excel and csv files. And they were used to create the following.

1.Database(.bak)

Passenger Details.csv, Passenger Address.csv and Flight.csv file was imported to the Airline Satisfaction Database and were used as the DB source data.

2.Text(.txt)

Booking.txt was used.

3.Excel(.xls)

Flight Satisfaction Details.xls and Airport Satisfaction Details.xls was used.

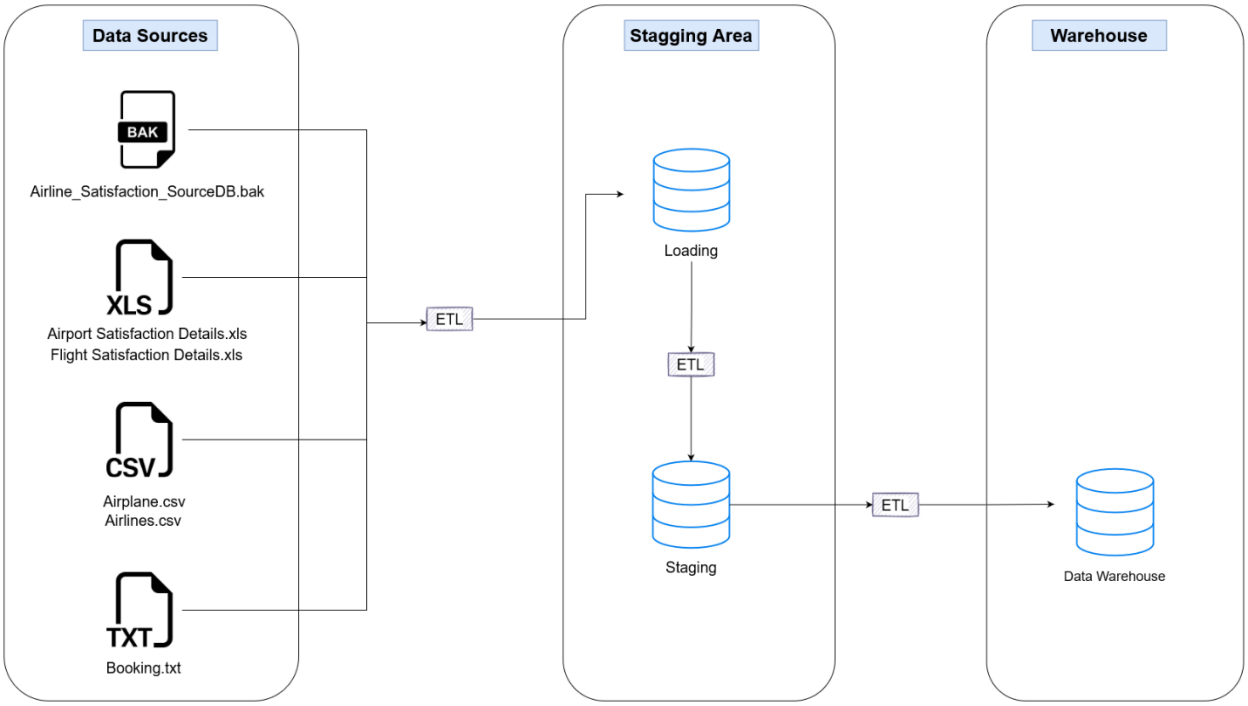
4.Comma Separated Values (.csv)

Airplane.csv and Airlines.csv was used.

Data Source Type	Source Name	Column Name	Data Type	Description
Database File (.bak)	dbo.Passenger	PassengerID	int	Passenger Unique ID
		FirstName	nvarchar(50)	Passenger First Name
		LastName	nvarchar(50)	Passenger Last Name
		Gender	nvarchar(50)	Gender of the passengers (Female, Male)
		Age	int	Age
		PassengerType	nvarchar(50)	The passenger type (Loyal Passenger/Disloyal Passenger)
		Email	nvarchar(50)	Email Address
		PhoneNumber	nvarchar(50)	Phone Number
	dbo.Passenger Address	PassengerID	int	Passenger Unique ID
		Address	nvarchar(50)	Passenger's Address
		City	nvarchar(50)	Passenger's City
		State	nvarchar(50)	Passenger's State
		ZIP	int	Zip Code of the Passenger
		Country	nvarchar(50)	Passenger's Country
	dbo.Flight	FlightID	int	Flight Unique ID
		From	nvarchar(100)	Journey starting location
		To	nvarchar(100)	Journey ending location
		FlightDate	date	Date of the flight
		FlightDistance	int	The flight distance of the journey
		Depature_Arrival_Delay_in_Minutes	int	Minutes delayed when departure/Arrival
		AirplaneID	int	Unique ID of the airplane used for the flight
Excel File	Airport Satisfaction Details.xls	Airport SatisfactionID	int	Airport Satisfaction Unique ID
		PassengerID	int	Unique ID of the passenger
		Date	date	Date of filling satisfactry form
		Departure/Arrival time convenient	int	Rating Departure/Arrival time convenient
		Ease of Online booking	int	Rating Ease of Online booking
		Gate location	int	Rating Gate location
		On-board service	int	Rating On-board service
		Baggage handling	int	Rating Baggage handling
		Checkin service	int	Rating Checkin service
		Satisfaction	nvarchar(255)	Stating whether the passenger is satisfied or not
	Flight Satisfaction Details.xls	Flight SatisfactionID	int	Flight Satisfaction Unique ID
		PassengerID	int	Unique ID of the passenger
		Date	date	Date of filling satisfactry form

		Inflight wifi service	int	Rating Inflight wifi service
		Food and drink	int	Rating Food and drink
		Seat comfort	int	Rating Seat comfort
		Inflight entertainment	int	Rating Inflight entertainment
		Leg room service	int	Rating Leg room service
		Inflight service	int	Rating Inflight service
		Cleanliness	int	Rating Cleanliness
		Satisfaction	nvarchar(255)	Stating whether the passenger is satisfied or not
CSV File	Airplane.csv	AirplaneID	int	Airplane Unique ID
		Unique Carrier	nvarchar(50)	Unique carrier code
		Model Name	nvarchar(50)	Plane model number
		Tail Number	nvarchar(50)	Plane tail number
		AirlineID	int	Unique ID of the airline that the plane belongs to
	Airlines.csv	AirlineID	int	Unique ID of the airline
		Name	nvarchar(60)	Name of the airline
		Country	nvarchar(50)	Country that airline belongs to
Text File	Booking.txt	BookingID	int	Unique ID for the flight booking
		PassengerID	int	Unique ID of the passenger
		FlightID	int	Flight Unique ID
		Class	nvarchar(50)	Travel class in the plane of the passengers (Business, Eco)
		Travel Type	nvarchar(50)	Purpose of the flight of the passengers (Personal Travel, Business Travel)
		Seat Number	int	Seat Number assingned for a passenger

Step 3: Solution Architecture



Data Sources

The '.txt' component represents text files, the '.xls' component represents Excel files, the '.csv' component displays comma separated files, and the '.bak' component represents database files.

Staging Area

The process of creating database tables is represented by the Loading DB component.The files were imported into the database and are being used to create the tables.

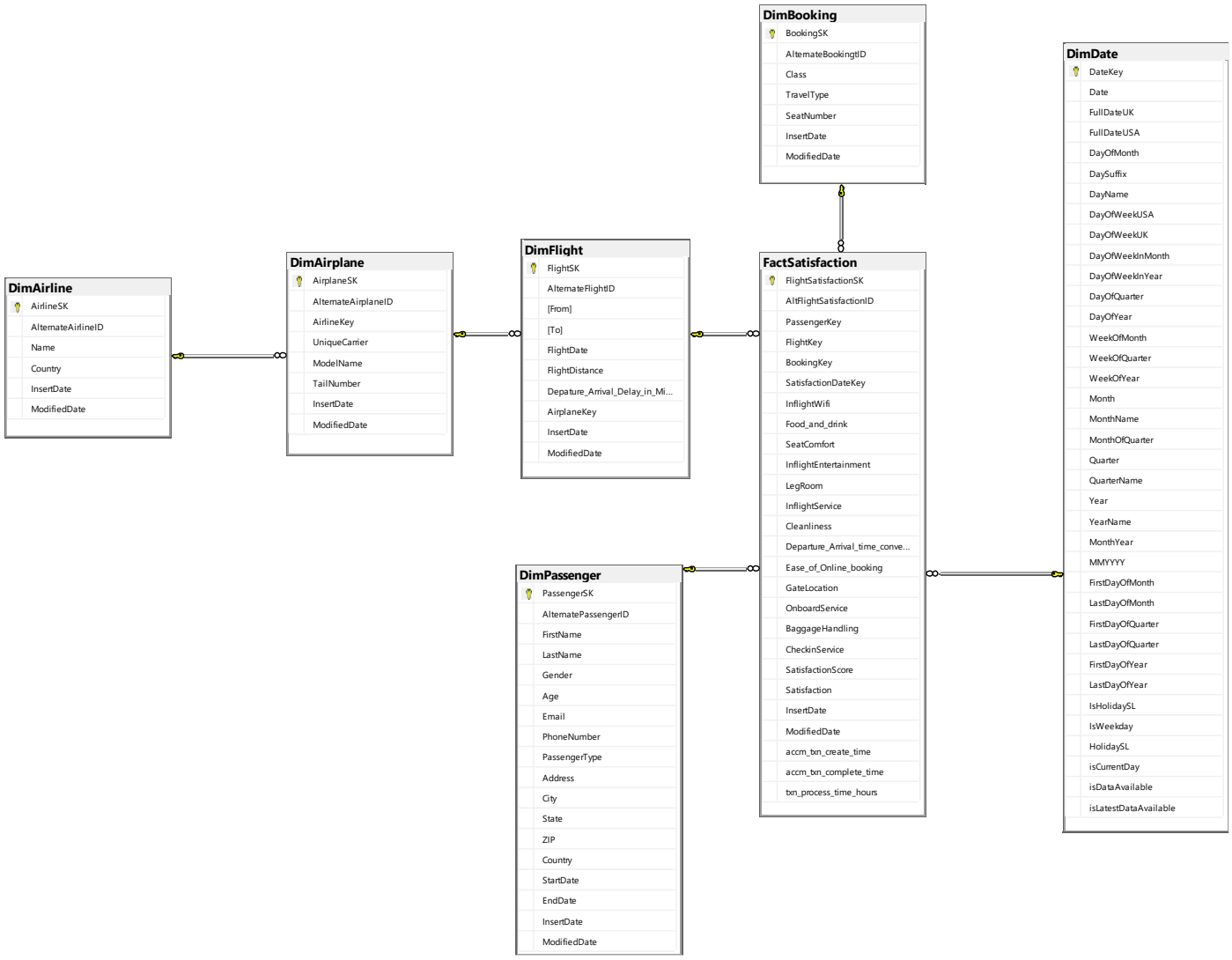
The Staging DB component represents the creation of staging level tables via the 'Extract'.

Data Warehouse

Using 'Transform' and 'Load,' the data warehouse DB component is used to display the cratering dimension tables in the warehouse.

Step 4: Data Warehouse Design and Development

Following figure will show how the fact table and dimension tables was combined.



Schema Type

For this scenario snowflake schema type was used.

Dimension Type

Hierarchical Dimension

Passenger – Country → State → City → ZIP → Address

Airplane – Unique Carrier → Model → Tail Number → Airplane ID

Date – All hierarchies in date

Slowly Changing Dimensions

In passenger table following columns were set as changing attributes.

Phone Number

Email

Assumptions

Passenger dimension was considered as a slowly changing dimension.

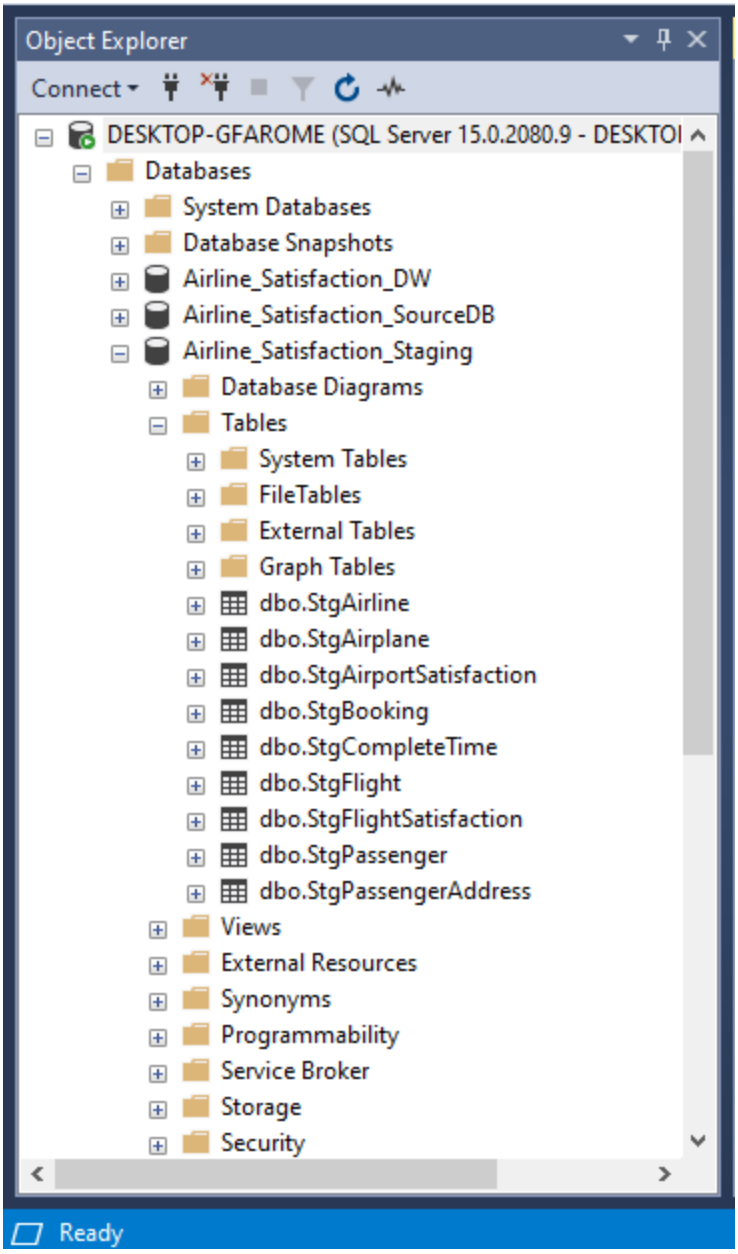
Step 5: ETL Development

Extract

Using the appropriate Data connection, all data sources were imported to the staging tables in this step.
For text and csv files, flat file connections were used, Excel file connections for excel files, and DB source connections for DB files.
All of the tables were imported into the Airline Satisfaction Staging database, which contains the tables listed below,

1) StgAirline
2) StgAirplane
3) StgAirportSatisfaction
4) StgBooking
5) StgCompleteTime
6) StgFlight
7) StgFlightSatisfaction
8) StgPassenger
9) StgPassengerAddress

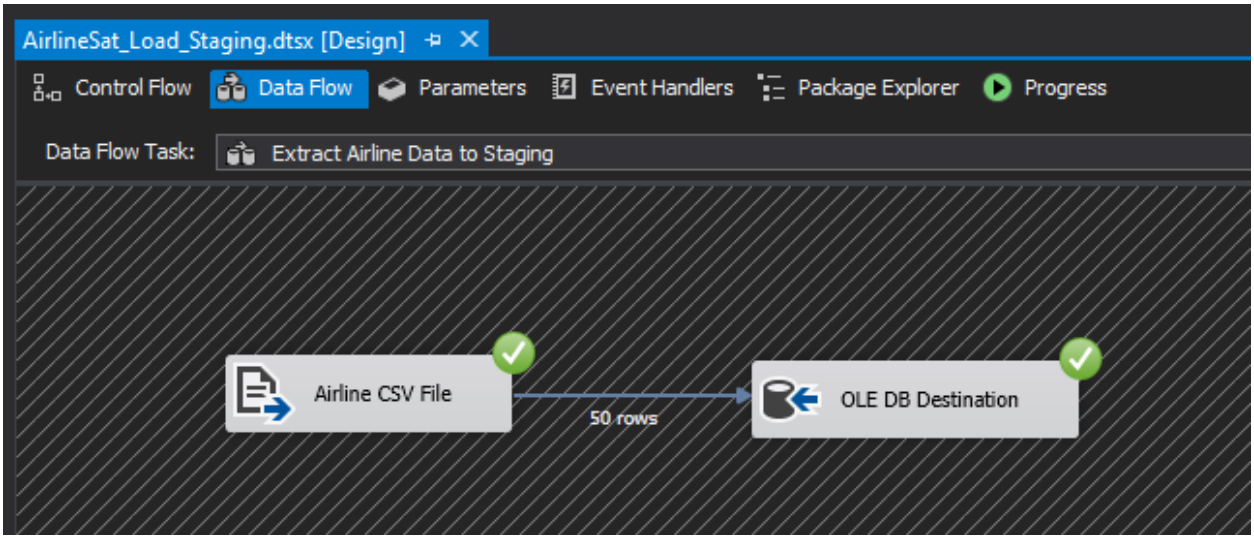
Snapshot of SSMS Staging Database



Snapshot of Visual Studio Control Flow of Extract

Snapshot of several data types of data flow

Extracting Airline data from CSV file-




```
SELECT *
  FROM StgAirline
```

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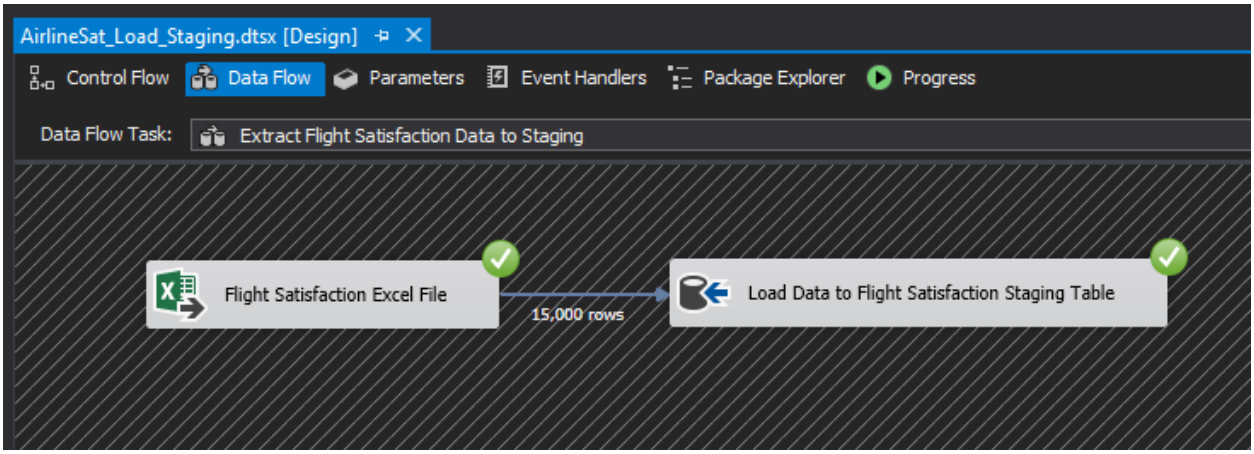
Results | Messages

	AirlineID	Name	Country
1	4139	Private flight	United States
2	4206	135 Airways	South Africa
3	558	1Time Airline	United Kingdom
4	4828	2 Sqn No 1 Elementary Flying Training School	Russia
5	1808	213 Flight Unit	Thailand
6	3160	223 Flight Unit State Airline	Canada
7	2245	224th Flight Unit	Australia
8	4354	247 Jet Ltd	Singapore
9	1076	3D Aviation	Belgium
10	4890	40-Mile Air	Mexico
11	479	4D Air	Spain
12	4023	611897 Alberta Limited	France

Extracting Flight satisfaction data from Excel file-




```
SELECT *
  FROM StgFlightSatisfaction
```

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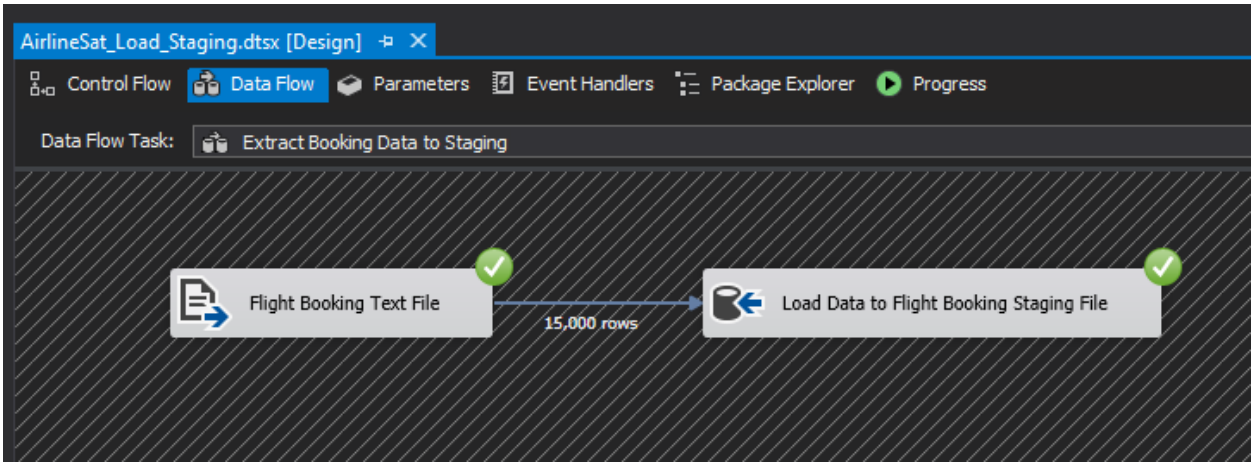
Results | Messages

	Flight SatisfactionID	PassengerID	Date	Inflight wifi service	Food and drink	Seat comfort	Inflight entertainment	Leg room service	Inflight service	Cleanliness	Satisfaction
1	1	19556	2020-01-22 00:00:00.000	5	3	3	5	5	5	5	satisfied
2	2	90035	2020-01-23 00:00:00.000	1	5	5	4	4	4	5	satisfied
3	3	12360	2020-01-24 00:00:00.000	2	2	2	2	1	2	2	neutral or dissatisfied
4	4	77959	2020-01-25 00:00:00.000	0	3	4	1	1	1	4	satisfied
5	5	36875	2020-01-26 00:00:00.000	2	4	2	2	2	2	4	satisfied
6	6	39177	2020-01-27 00:00:00.000	3	5	3	5	3	2	5	satisfied
7	7	79433	2020-01-28 00:00:00.000	5	3	5	5	5	5	3	satisfied
8	8	97286	2020-01-29 00:00:00.000	2	4	5	4	4	4	3	satisfied
9	9	27508	2020-01-30 00:00:00.000	5	5	5	5	2	3	5	satisfied
10	10	62482	2020-01-31 00:00:00.000	2	3	4	4	4	4	4	satisfied
11	11	47583	2020-02-01 00:00:00.000	4	5	5	3	4	3	4	satisfied
12	12	115550	2020-02-02 00:00:00.000	2	1	4	2	2	2	4	neutral or dissatisfied
13	13	119987	2020-02-03 00:00:00.000	5	4	5	5	5	5	3	satisfied
14	14	42141	2020-02-04 00:00:00.000	1	5	4	5	5	5	5	satisfied
15	15	2274	2020-02-05 00:00:00.000	2	5	4	4	4	4	5	satisfied

Extracting Booking data from Text file-



```
SELECT *
  FROM StgBooking
```

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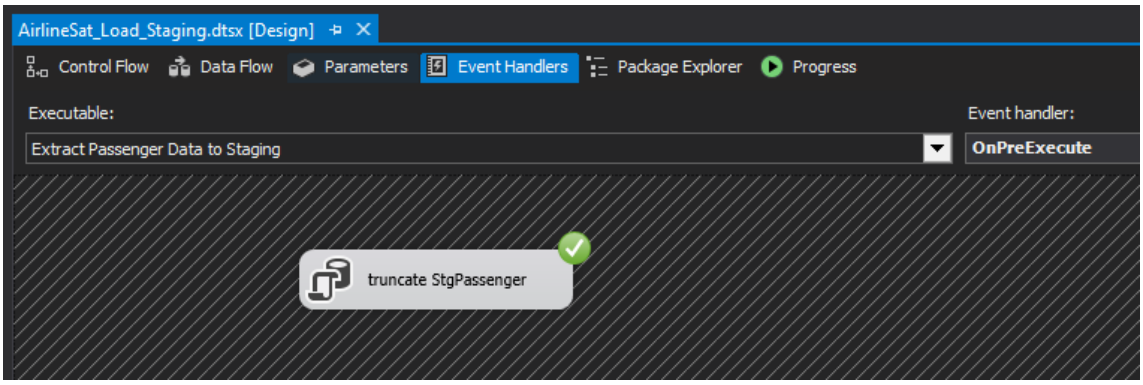
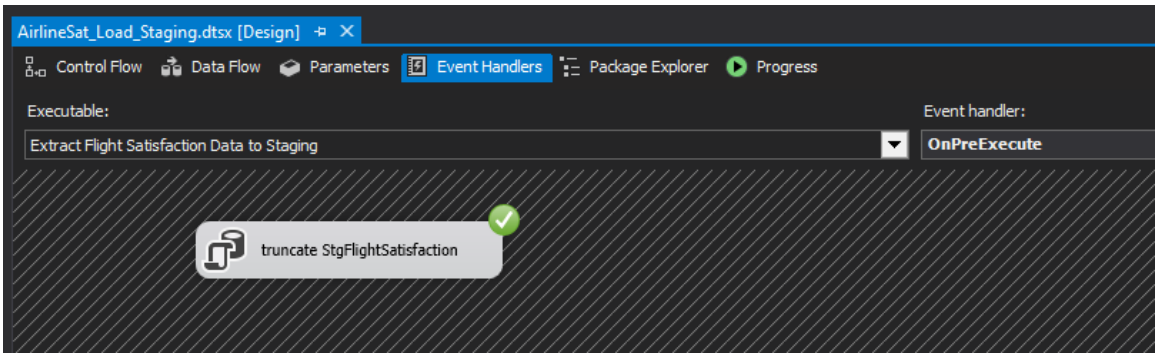
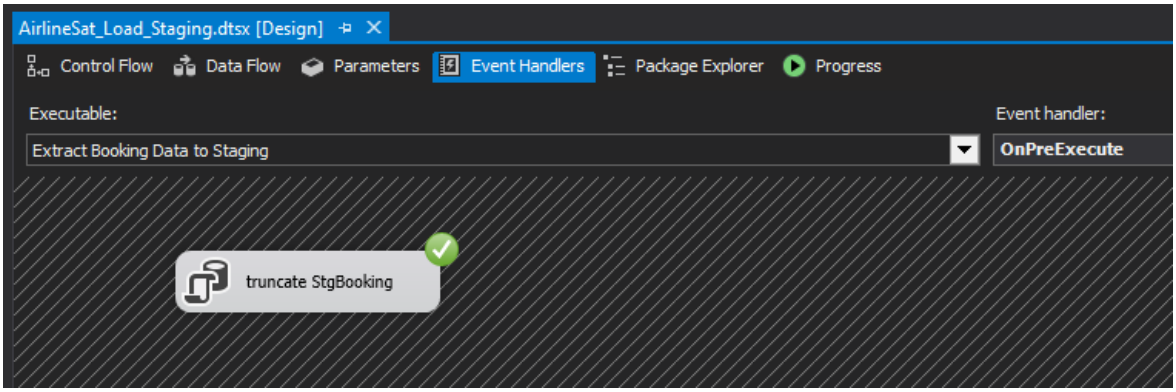
Results | Messages

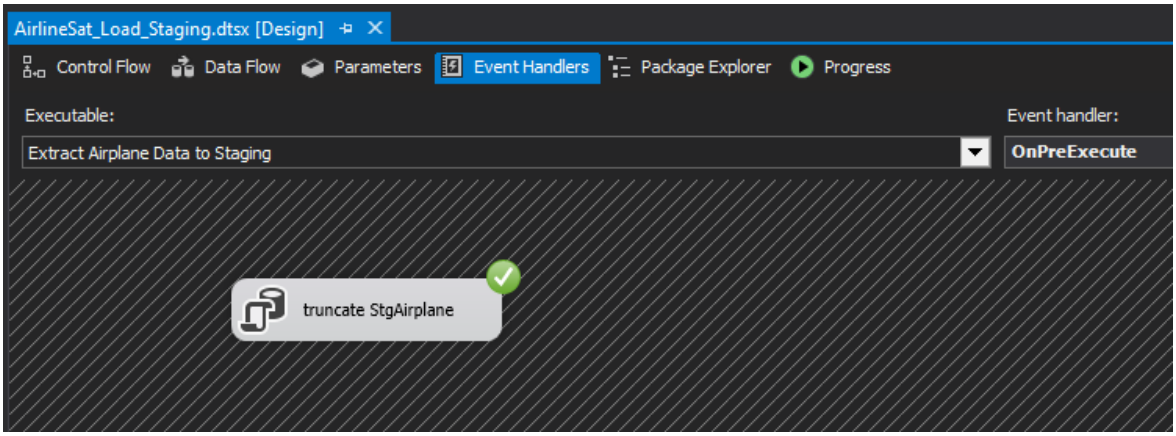
	BookingID	PassengerID	FlightID	Class	Travel Type	Seat Number
1	23899	19556	56318	Eco	Business travel	30
2	22458	90035	26056	Business	Business travel	396
3	21058	12360	32937	Eco	Business travel	342
4	26871	77959	86854	Business	Business travel	72
5	24676	36875	47744	Eco	Business travel	18
6	17740	39177	13202	Eco	Business travel	18
7	15017	79433	90592	Business	Business travel	72
8	20553	97286	121218	Business	Business travel	18
9	12649	27508	25057	Eco	Business travel	36
10	12632	62482	106603	Business	Business travel	18
11	12639	47583	60935	Eco	Business travel	3128
12	12718	115550	102825	Business	Business travel	2720

Event Handling (Truncate Staging Data)

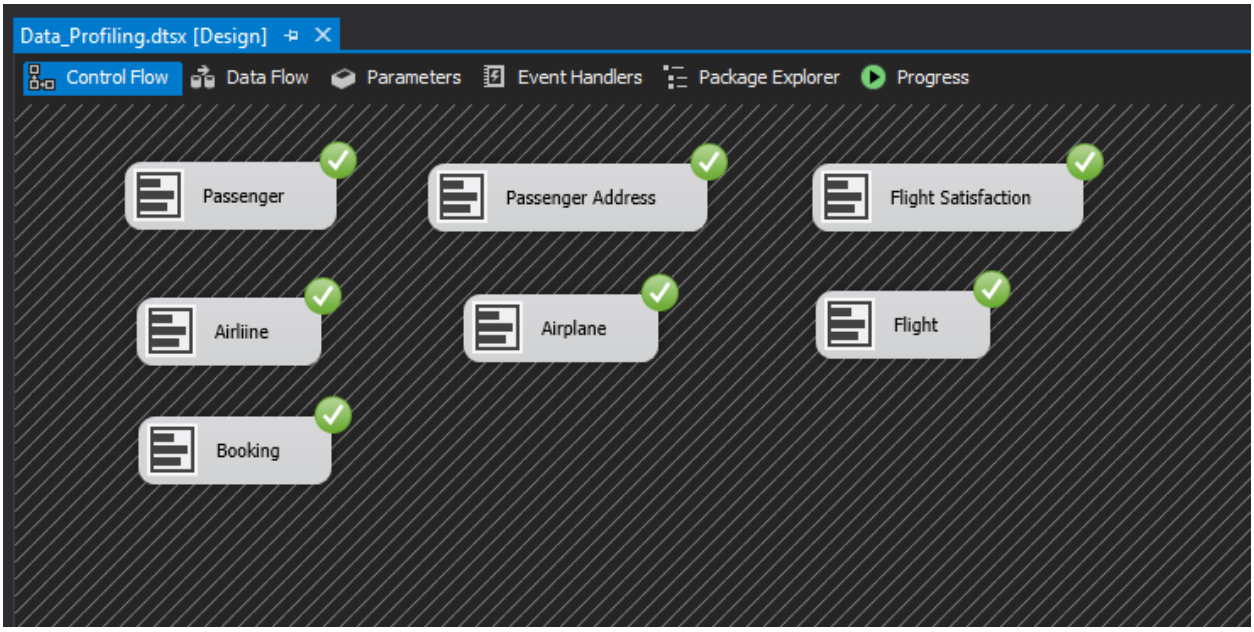








Data Profiling



Transform and Load

Both the 'Transform' and 'Load' steps are completed in this step. First, Dimension tables were created in the Datawarehouse DB data. The data from the staging tables was then loaded into the warehouse tables, Airline_Satisfaction_DW, which contains the following tables, using the relevant components.

1) DimAirline
2) DimAirplane
3) DimBooking
4) DimDate
5) DimFlight
6) DimPassenger
7) FactSatisfaction

Used Transformation Tasks

Lookup
Derived Columns
Union
Sort and Merge

Update Function

UpdateDimAirline....AROME\Ushani (52))

```
CREATE PROCEDURE dbo.UpdateDimAirline
@AirlineID int,
@Name nvarchar(60),
@Country nvarchar(50)

AS
BEGIN
if not exists (
select AirlineSK
from dbo.DimAirline
where AlternateAirlineID = @AirlineID)
BEGIN
insert into dbo.DimAirline
(AlternateAirlineID, [Name], Country, InsertDate, ModifiedDate)
values
(@AirlineID, @Name, @Country, GETDATE(), GETDATE())
END;
if exists (
select AirlineSK
from dbo.DimAirline
where AlternateAirlineID = @AirlineID)
BEGIN
update dbo.DimAirline
set [Name] = @Name, Country = @Country, ModifiedDate = GETDATE()
where AlternateAirlineID = @AirlineID
END;
END;
```

UpdateDimAirplane...ROME\Ushani (55))

```
CREATE PROCEDURE dbo.UpdateDimAirplane
@AirplaneID int,
@AirlineKey int,
@UniqueCarrier nvarchar(50),
@ModelName nvarchar(50),
@TailNumber nvarchar(50)

AS
BEGIN
if not exists (
select AirplaneSK
from dbo.DimAirplane
where AlternateAirplaneID = @AirplaneID)
BEGIN
insert into dbo.DimAirplane
(AlternateAirplaneID, AirlineKey, UniqueCarrier, ModelName, TailNumber, InsertDate, ModifiedDate)
values
(@AirplaneID, @AirlineKey, @UniqueCarrier, @ModelName, @TailNumber, GETDATE(), GETDATE())
END;
if exists (
select AirplaneSK
from dbo.DimAirplane
where AlternateAirplaneID = @AirplaneID)
BEGIN
update dbo.DimAirplane
set AirlineKey = @AirlineKey, UniqueCarrier = @UniqueCarrier, ModelName = @ModelName, TailNumber = @TailNumber, ModifiedDate = GETDATE()
where AlternateAirplaneID = @AirplaneID
END;
END;
```

UpdateDimBooking...ROME\Ushani (52))

```
CREATE PROCEDURE dbo.UpdateDimBooking
@BookingID int,
@Class varchar(50),
@TravelType nvarchar(50),
@SeatNumber int

AS
BEGIN
if not exists (
select BookingSK
from dbo.DimBooking
where AlternateBookingtID = @BookingID)
BEGIN
insert into dbo.DimBooking
(AlternateBookingtID, Class, TravelType, SeatNumber, InsertDate, ModifiedDate)
values(@BookingID, @Class, @TravelType, @SeatNumber, GETDATE(), GETDATE())
END;
if exists (
select BookingSK
from dbo.DimBooking
where AlternateBookingtID = @BookingID)
BEGIN
update dbo.DimBooking
set Class = @Class, TravelType = @TravelType, SeatNumber = @SeatNumber, ModifiedDate = GETDATE()
where AlternateBookingtID = @BookingID
END;
END;
```

UpdateDimFlight.s...ROME\Ushani (52))*

```
CREATE PROCEDURE dbo.UpdateDimFlight
@FlightID int,
@From nvarchar(100),
@To nvarchar(100),
@FlightDate datetime,
@FlightDistance int,
@Depature_Arrival_Delay_in_Minutes int,
@AirplaneKey int

AS
BEGIN
if not exists (
select FlightSK
from dbo.DimFlight
where AlternateFlightID = @FlightID)
BEGIN
insert into dbo.DimFlight
(AlternateFlightID, [From], [To], FlightDate, FlightDistance, Depature_Arrival_Delay_in_Minutes, AirplaneKey, InsertDate, ModifiedDate)
values(@FlightID, @From, @To, @FlightDate, @FlightDistance, @Depature_Arrival_Delay_in_Minutes, @AirplaneKey, GETDATE(), GETDATE())
END;
if exists (
select FlightSK
from dbo.DimFlight
where AlternateFlightID = @FlightID)
BEGIN
update dbo.DimFlight
set [From] = @From, [To] = @To, FlightDate = @FlightDate, FlightDistance = @FlightDistance, Depature_Arrival_Delay_in_Minutes = @Depature_Arrival_Delay_in_Minutes,
AirplaneKey = @AirplaneKey, ModifiedDate = GETDATE()
where AlternateFlightID = @FlightID
END;
END;
```

UpdateFactProcess...ROME\Ushani (65))

```
CREATE PROCEDURE dbo.UpdateFactProcessTime
@FlightSatisfactionID int,
@txn_process_time_hours float

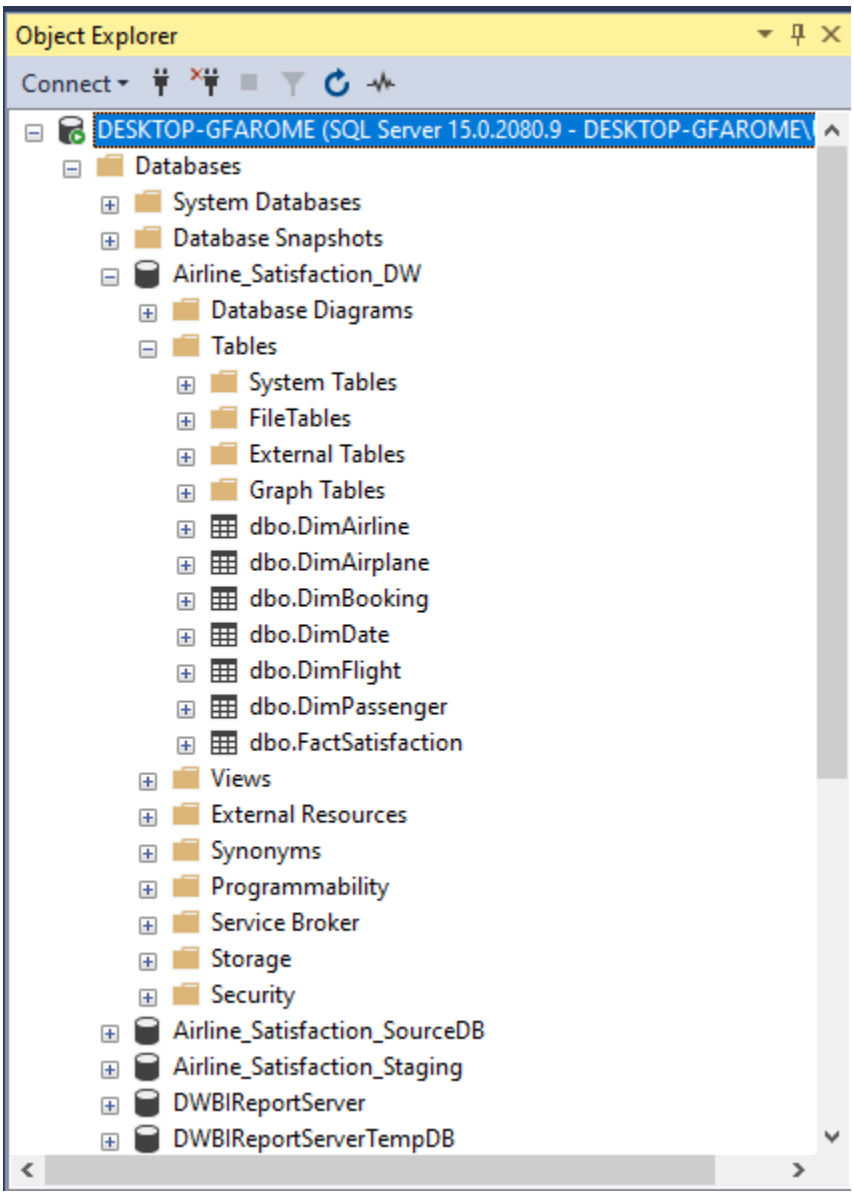
AS
BEGIN
if not exists (
select FlightSatisfactionSK
from dbo.FactSatisfaction
where AltFlightSatisfactionID = @FlightSatisfactionID)
BEGIN
insert into dbo.FactSatisfaction
(AltFlightSatisfactionID, txn_process_time_hours, InsertDate, ModifiedDate)
values
(@FlightSatisfactionID, @txn_process_time_hours, GETDATE(), GETDATE())
END;
if exists (
select FlightSatisfactionSK
from dbo.FactSatisfaction
where AltFlightSatisfactionID = @FlightSatisfactionID)
BEGIN
update dbo.FactSatisfaction
set txn_process_time_hours = @txn_process_time_hours, ModifiedDate = GETDATE()
where AltFlightSatisfactionID = @FlightSatisfactionID
END;
END;
```

UpdateFactComple...ROME\Ushani (52))

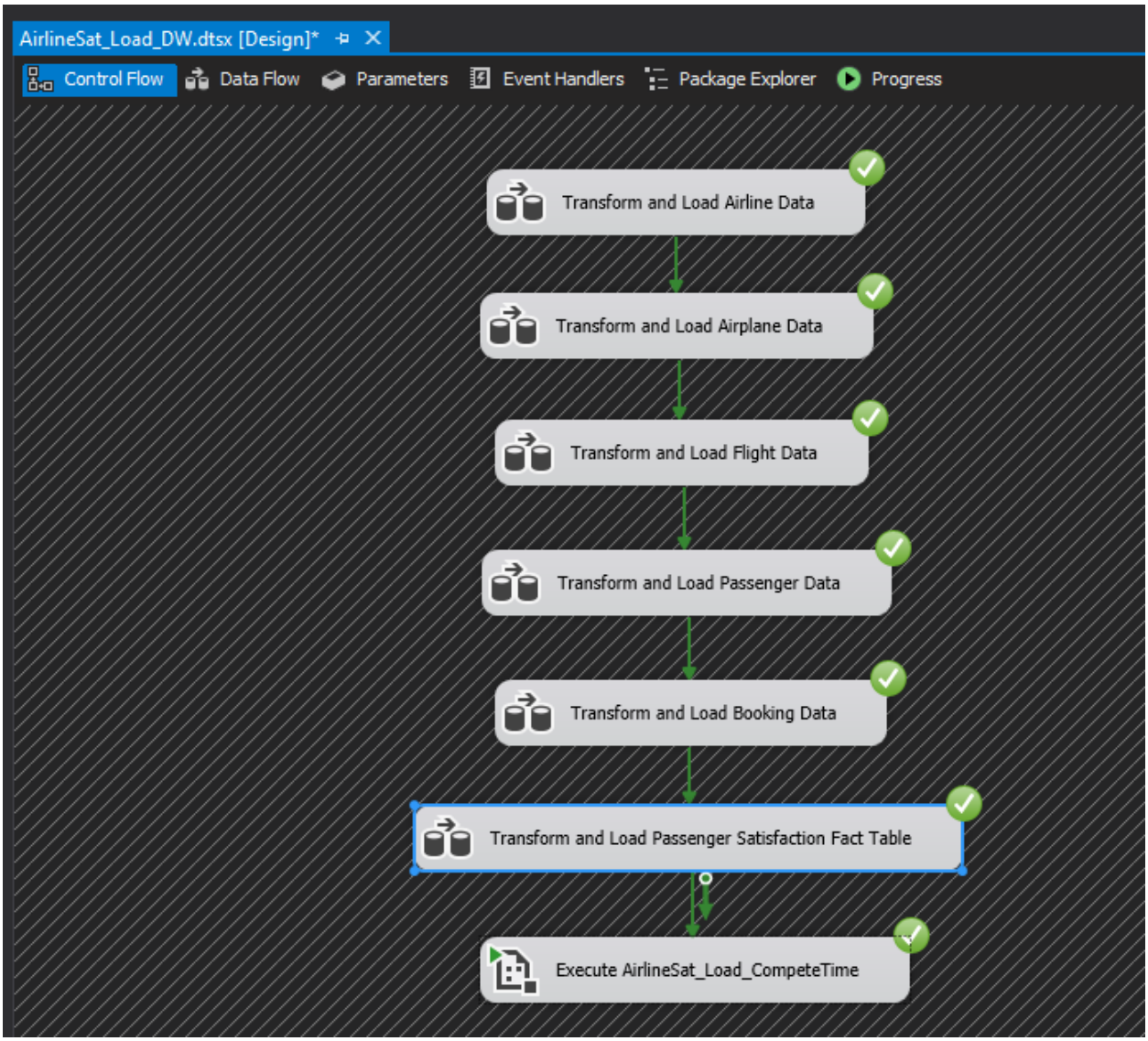
```
CREATE PROCEDURE dbo.UpdateFactCompleteTime
@FlightSatisfactionID int,
@accm_txn_complete_time datetime

AS
BEGIN
if not exists (
select FlightSatisfactionSK
from dbo.FactSatisfaction
where AltFlightSatisfactionID = @FlightSatisfactionID)
BEGIN
insert into dbo.FactSatisfaction
(AltFlightSatisfactionID, accm_txn_complete_time, InsertDate, ModifiedDate)
values
(@FlightSatisfactionID, @accm_txn_complete_time, GETDATE(), GETDATE())
END;
if exists (
select FlightSatisfactionSK
from dbo.FactSatisfaction
where AltFlightSatisfactionID = @FlightSatisfactionID)
BEGIN
update dbo.FactSatisfaction
set accm_txn_complete_time = @accm_txn_complete_time, ModifiedDate = GETDATE()
where AltFlightSatisfactionID = @FlightSatisfactionID
END;
END;
```

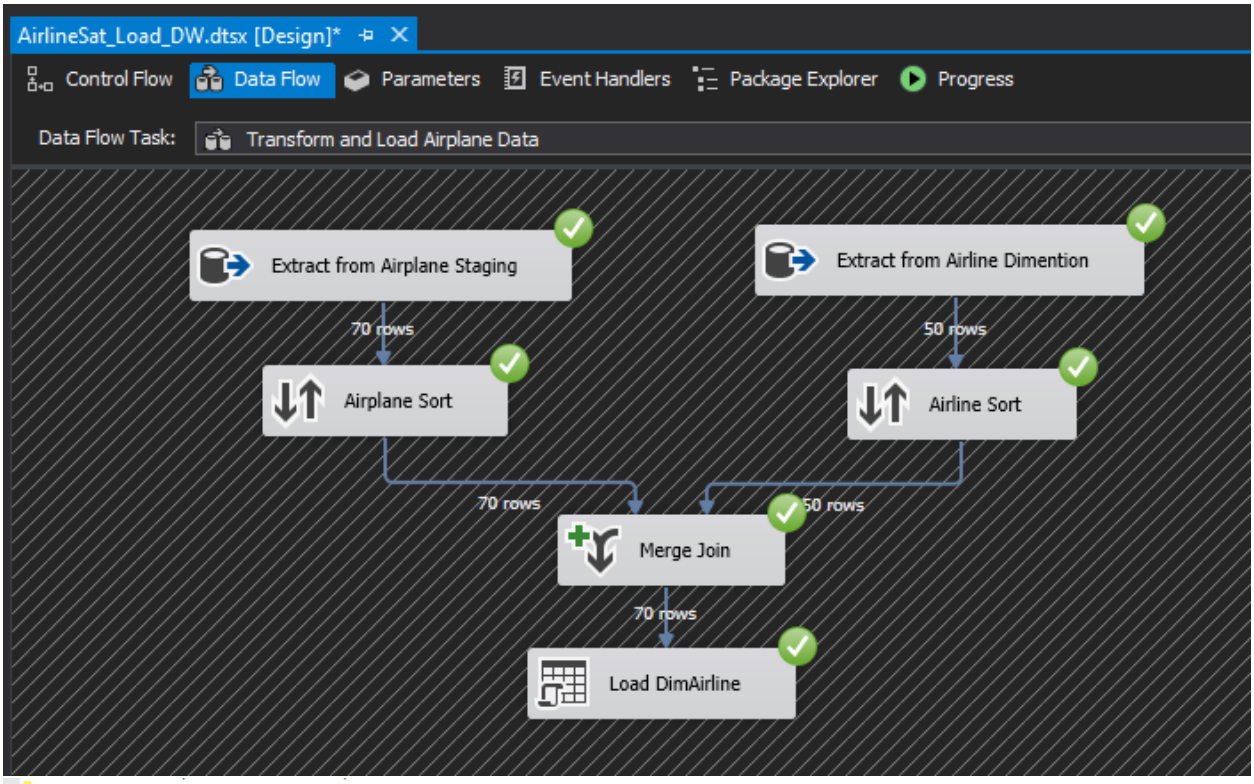
Snapshot of SQL Server Data Warehouse Database



Snapshot of Visual Studio Control Flow of Extraction



Transform and load Airplane data-




```
SELECT *
  FROM DimAirplane
```

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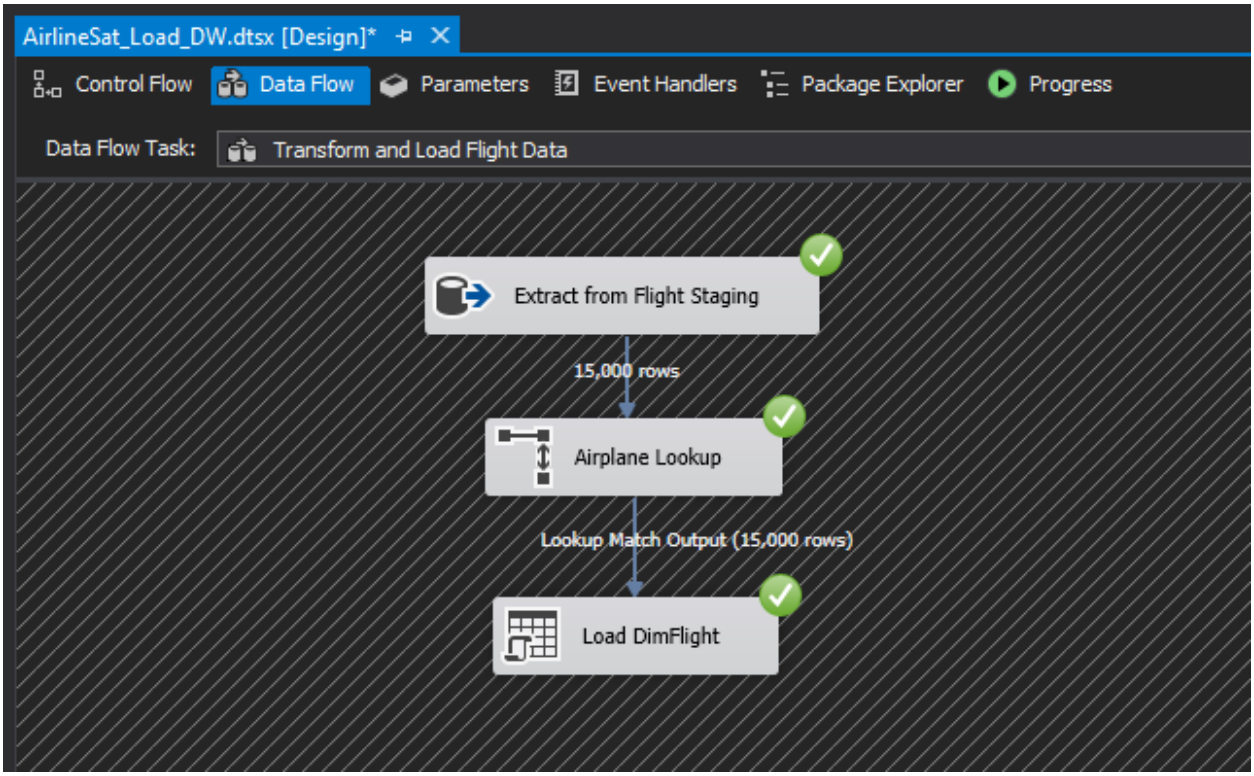
Results | Messages

	AirplaneSK	AlternateAirplaneID	AirlineKey	UniqueCarrier	ModelName	TailNumber	InsertDate	ModifiedDate
1	1	13303	45	OO	SPn G180	N495CA	2022-05-06 08:38:27.190	2022-05-17 19:15:06.373
2	2	11433	18	MQ	Let 410 UVP E	N521MQ	2022-05-06 08:38:27.193	2022-05-17 19:15:06.373
3	3	14635	18	FL	DC-9-15	N996AT	2022-05-06 08:38:27.193	2022-05-17 19:15:06.377
4	4	10397	21	OO	P-3 Orion	N494CA	2022-05-06 08:38:27.197	2022-05-17 19:15:06.377
5	5	10821	11	MQ	DHC-CS2F	N655MQ	2022-05-06 08:38:27.197	2022-05-17 19:15:06.380
6	6	14307	11	MQ	757-200 PF	N655MQ	2022-05-06 08:38:27.197	2022-05-17 19:15:06.380
7	7	14730	3	YV	A380	N77331	2022-05-06 08:38:27.197	2022-05-17 19:15:06.380
8	8	14747	3	EV	An-32	N978EV	2022-05-06 08:38:27.197	2022-05-17 19:15:06.383
9	9	13851	13	MQ	146-200	N724MQ	2022-05-06 08:38:27.197	2022-05-17 19:15:06.383
10	10	14107	13	MQ	DC-3	N664MQ	2022-05-06 08:38:27.200	2022-05-17 19:15:06.387
11	11	12892	9	OO	208 Caravan	N710BR	2022-05-06 08:38:27.200	2022-05-17 19:15:06.387
12	12	12451	9	EV	737-800	N680BR	2022-05-06 08:38:27.200	2022-05-17 19:15:06.390
13	13	11278	48	OO	Mig 39 UB	N568SW	2022-05-06 08:38:27.200	2022-05-17 19:15:06.390
14	14	13232	37	MQ	E-3A Sentry Awacs	N908MQ	2022-05-06 08:38:27.200	2022-05-17 19:15:06.390
15	15	14843	40	YV	CRJ 700	N77195	2022-05-06 08:38:27.200	2022-05-17 19:15:06.393
16	16	13830	40	OO	MD-90-30	N959SW	2022-05-06 08:38:27.200	2022-05-17 19:15:06.393

Transform and load Flight data




```
SELECT *
  FROM DimFlight
```

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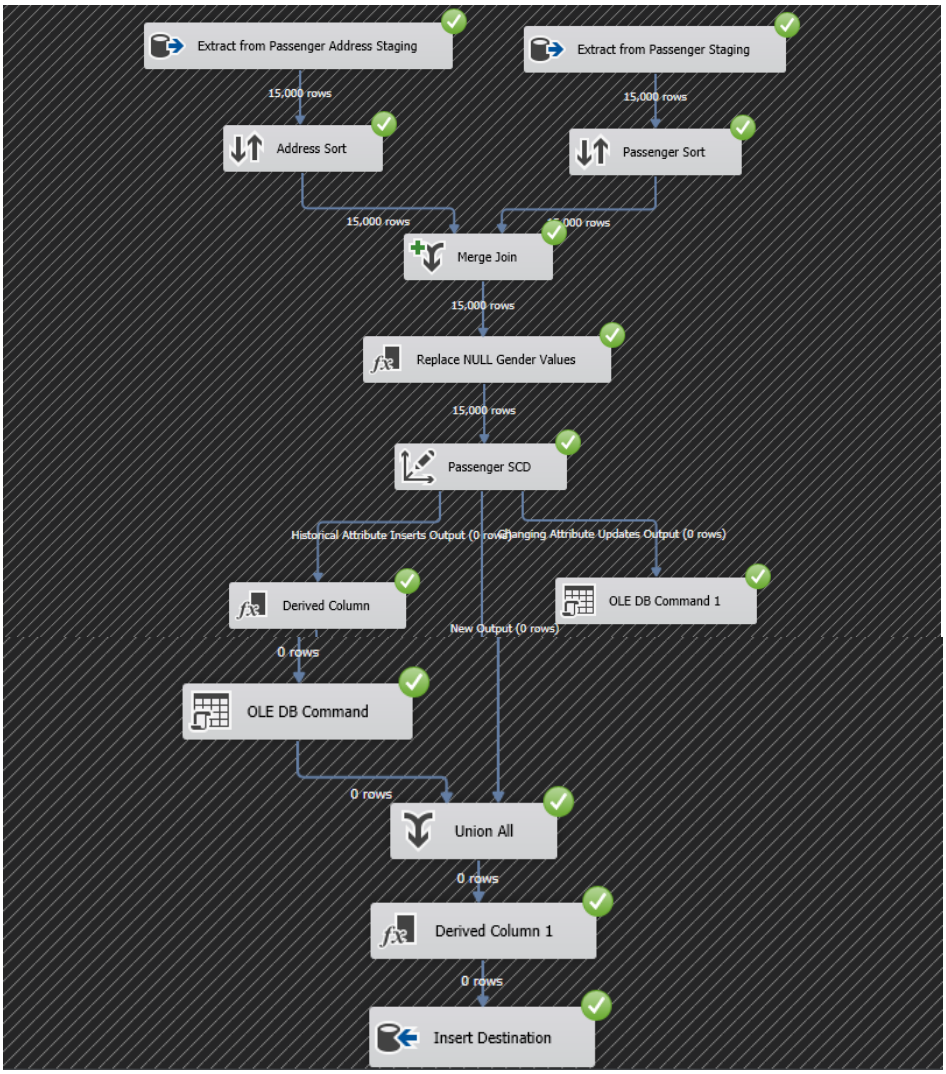
Results | Messages

	FlightSK	AlternateFlightID	From	To	FlightDate	FlightDistance	Depature_Arrival_Delay_in_Minutes	AirplaneKey	InsertDate	ModifiedDate
1	1	1	Austin - Bergstrom International	John F. Kennedy International	2020-01-21 00:00:00.000	674	53	48	2022-05-06 09:04:45.777	2022-05-17 1
2	2	4	Washington Dulles International	Sacramento International	2020-06-09 00:00:00.000	101	0	62	2022-05-06 09:04:45.783	2022-05-17 1
3	3	39	Los Angeles International	William P Hobby	2020-07-31 00:00:00.000	475	0	37	2022-05-06 09:04:45.783	2022-05-17 1
4	4	56	Los Angeles International	San Diego International	2020-07-02 00:00:00.000	2828	0	14	2022-05-06 09:04:45.787	2022-05-17 1
5	5	64	Hartsfield-Jackson Atlanta International	Cleveland-Hopkins International	2020-05-18 00:00:00.000	580	0	46	2022-05-06 09:04:45.787	2022-05-17 1
6	6	83	Phoenix Sky Harbor International	John Wayne Airport-Orange County	2020-08-29 00:00:00.000	2152	0	5	2022-05-06 09:04:45.787	2022-05-17 1
7	7	88	Dallas/Fort Worth International	Salt Lake City International	2020-06-19 00:00:00.000	533	0	49	2022-05-06 09:04:45.787	2022-05-17 1
8	8	92	Chicago O'Hare International	Los Angeles International	2020-05-16 00:00:00.000	3656	0	16	2022-05-06 09:04:45.787	2022-05-17 1
9	9	96	San Francisco International	Salt Lake City International	2020-01-10 00:00:00.000	834	0	60	2022-05-06 09:04:45.787	2022-05-17 1
10	10	98	Jacksonville International	Logan International	2020-05-07 00:00:00.000	1132	0	30	2022-05-06 09:04:45.787	2022-05-17 1
11	11	131	Miami International	Dallas/Fort Worth International	2020-05-29 00:00:00.000	1438	71	49	2022-05-06 09:04:45.790	2022-05-17 1
12	12	133	Chicago Midway International	Tampa International	2020-07-30 00:00:00.000	102	50	13	2022-05-06 09:04:45.790	2022-05-17 1
13	13	145	Hartsfield-Jackson Atlanta International	Louis Armstrong New Orleans International	2020-06-08 00:00:00.000	447	0	65	2022-05-06 09:04:45.790	2022-05-17 1
14	14	153	Hartsfield-Jackson Atlanta International	Kansas City International	2020-08-21 00:00:00.000	2629	3	70	2022-05-06 09:04:45.790	2022-05-17 1

Transform and load passenger data

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SELECT *
  FROM DimPassenger
```

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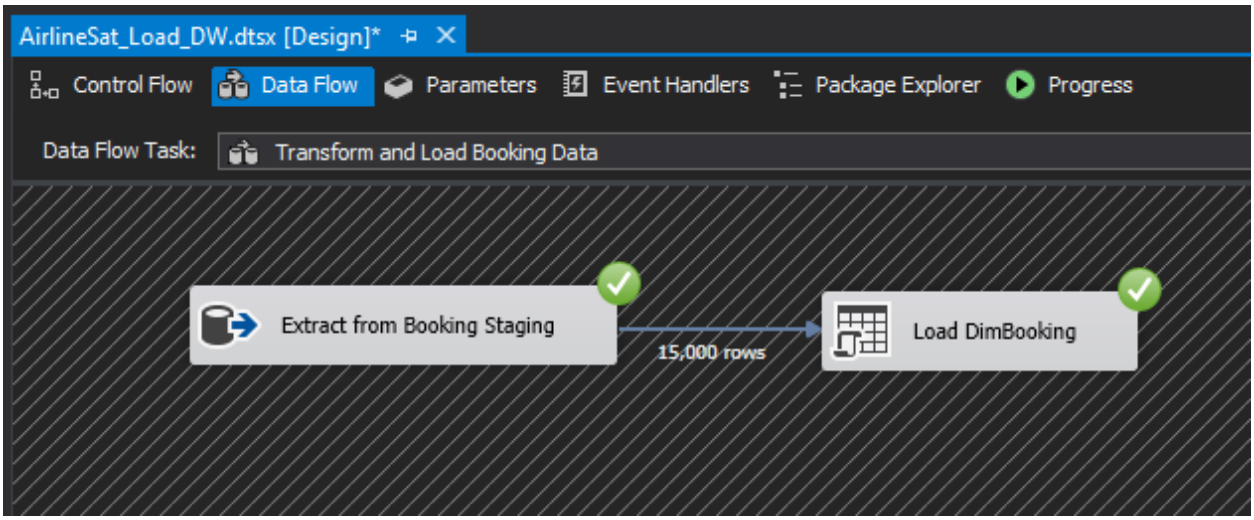
Results | Messages | Client Statistics

	PassengerSK	AlternatePassengerID	FirstName	LastName	Gender	Age	Email	PhoneNumber	PassengerType	Address	City	State	ZIP	Count
1	1	20	Dorance	Raine	Female	42	mendoza_robert87@xfinity.com	744-909-9091	Loyal Passenger	8834 Firestone Drive	Santa Monica	California	42651	Unite
2	2	35	Shepherd	Moldenhauer	Male	39	kaitlyn.s@yahoo.com	313-598-4097	Loyal Passenger	8465 Kim Court	Hawthorne	Queensland	12171	Austr
3	3	49	Audria	Mumm	Male	20	stephanielewis@att.com	557-454-6274	Disloyal Passenger	8051 Reality Dr.	Burien	Washington	98225	Unite
4	4	55	Christy	Ryans	Male	36	eric_jackson65@zoho.com	412-989-6448	Loyal Passenger	8544 Dewing Avenue	Coronado	California	46236	Unite
5	5	69	Wayland	Kovacs	Male	52	mr._v@yandex.com	946-176-5726	Loyal Passenger	2862 Pinehurst Court	Issaquah	Washington	98312	Unite
6	6	75	Fannie	Hawkes	Female	23	bates.jessica@xfinity.com	621-656-1270	Disloyal Passenger	4055 Leonard Ct.	Warrnambool	Victoria	5023	Austr
7	7	78	Alcie	Galante	Male	58	moon_martha@zoho.com	962-077-7257	Loyal Passenger	5337 Claudia Dr.	Sydney	New South Wales	92020	Austr
8	8	79	Matilda	Gomes	Female	70	rebecca_reynolds@xfinity.com	475-034-9606	Loyal Passenger	1775 Choctaw Court	Beaverton	Oregon	95062	Unite
9	9	90	Salina	Mccleary	Male	41	kevinjohnson@xfinity.com	376-989-0100	Loyal Passenger	3592 Del Monte Court	Bellflower	California	1597	Unite
10	10	93	Eleonor	Binford	Female	43	jacob.b@zoho.com	118-135-8481	Loyal Passenger	811, rue Basse-du-Rocher	Saint Ouen	Charente-Maritime	48001	Franc
11	11	105	Monte	Hague	Female	55	rachel.w@att.com	238-760-9861	Loyal Passenger	3888 Arnold Drive	Geelong	Victoria	5023	Austr
12	12	126	Hedvig	Muir	Male	66	timothyward@xfinity.com	757-144-1727	Loyal Passenger	25, rue de Terre Neuve	Paris	Seine (Paris)	98901	Franc
13	13	128	Elease	Tessier	Male	65	gerald_thompson41@outlook.com	590-919-1442	Loyal Passenger	48bis, boulevard du Montparnasse	Les Ulis	Essonne	90712	Franc
14	14	129	Lutisha	Jeffreys	Male	67	delgado_timothy92@xfinity.com	705-856-1045	Loyal Passenger	5703 Donald Dr.	Victoria	British Columbia	98901	Cana
15	15	134	Noemie	Starling	Female	33	oscar.carpenter35@att.com	309-056-4243	Loyal Passenger	2747 Cranbrook Way	Novato	California	91910	Unite

Transform and load Booking data

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SELECT *
  FROM DimBooking
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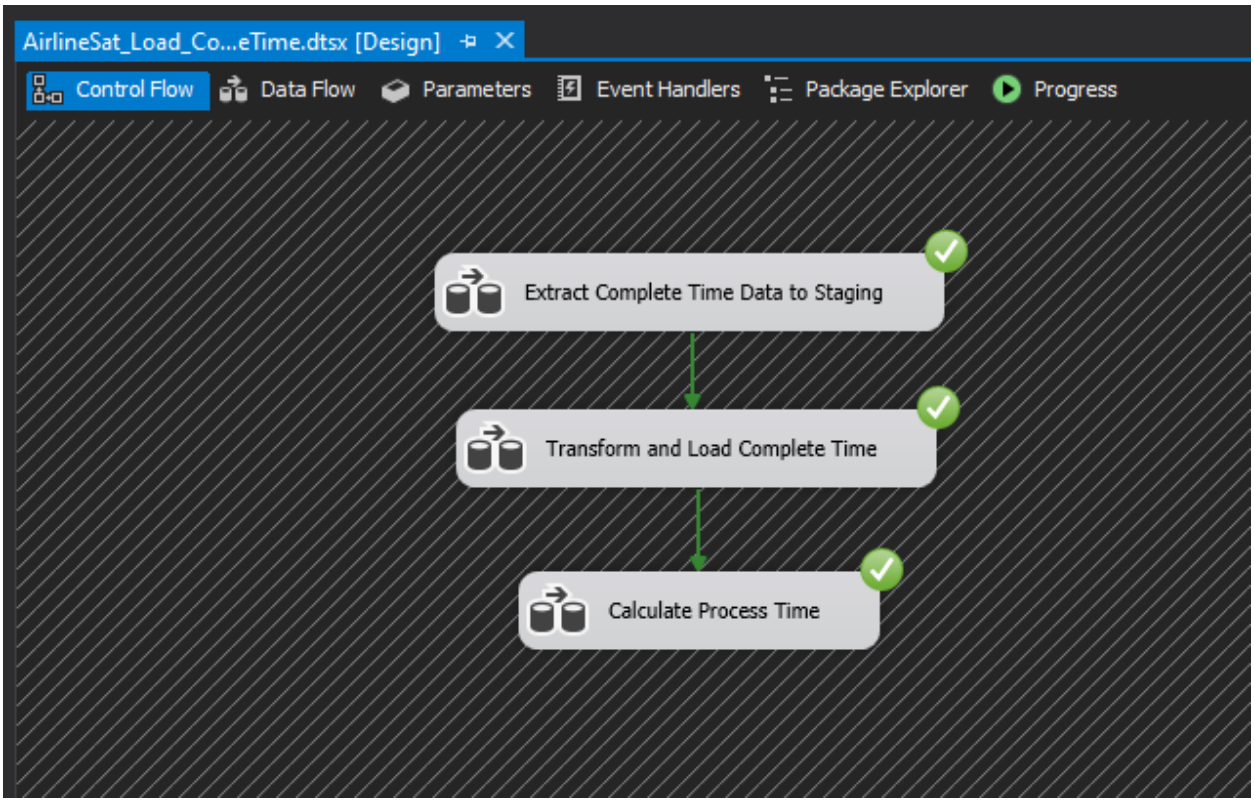
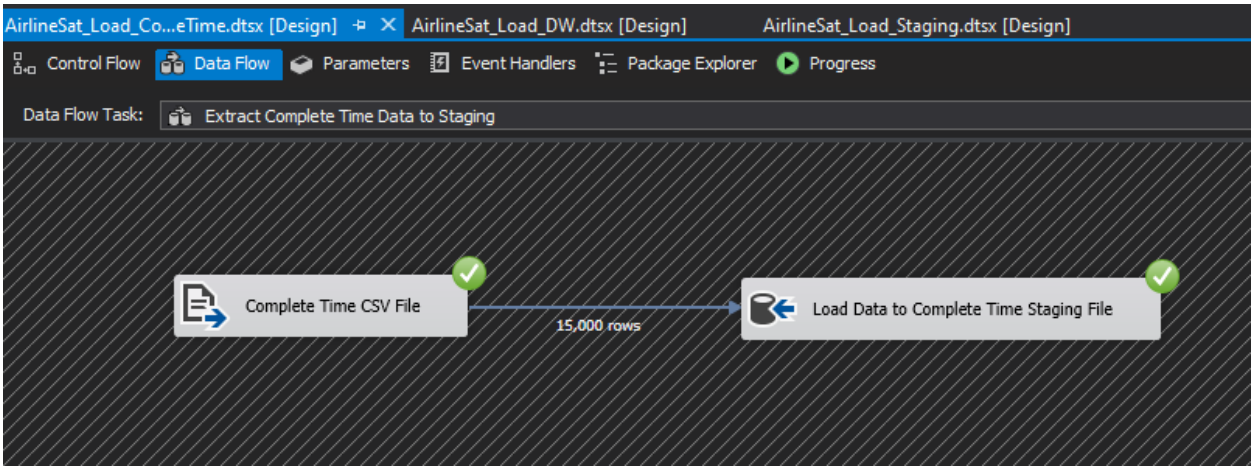
100 %

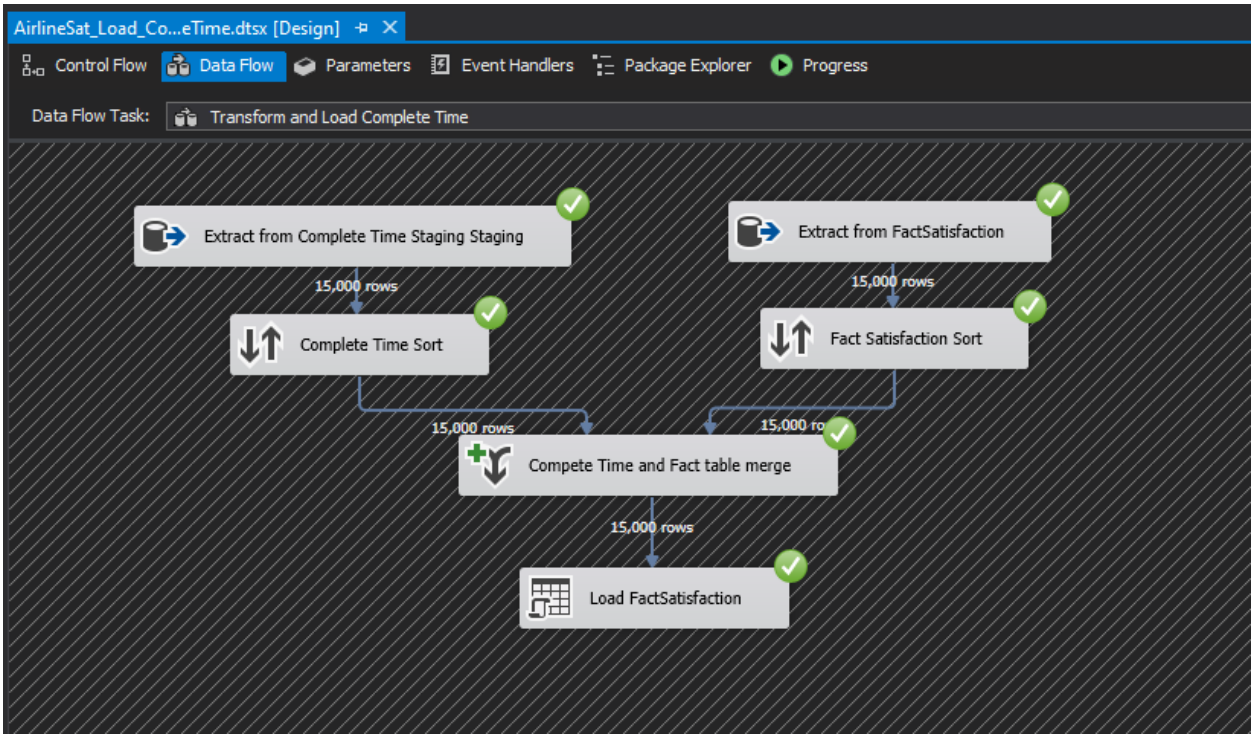
Results | Messages | Client Statistics

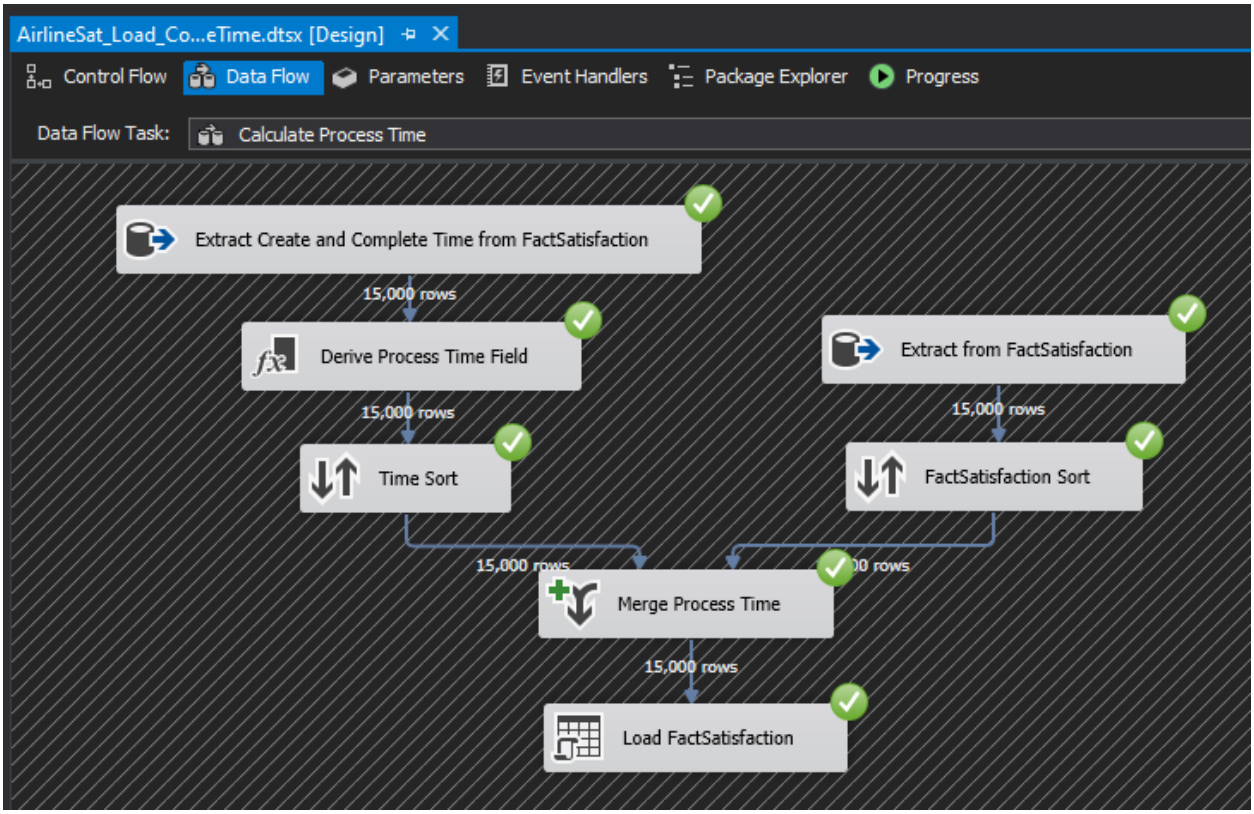
	BookingSK	AlternateBookingtID	Class	TravelType	SeatNumber	InsertDate	ModifiedDate
1	1	23899	Eco	Business travel	30	2022-05-16 10:21:20.853	2022-05-17 19:19:11.843
2	2	22458	Business	Business travel	396	2022-05-16 10:21:20.857	2022-05-17 19:19:11.863
3	3	21058	Eco	Business travel	342	2022-05-16 10:21:20.857	2022-05-17 19:19:11.880
4	4	26871	Business	Business travel	72	2022-05-16 10:21:20.857	2022-05-17 19:19:11.893
5	5	24676	Eco	Business travel	18	2022-05-16 10:21:20.860	2022-05-17 19:19:11.910
6	6	17740	Eco	Business travel	18	2022-05-16 10:21:20.860	2022-05-17 19:19:11.920
7	7	15017	Business	Business travel	72	2022-05-16 10:21:20.860	2022-05-17 19:19:11.937
8	8	20553	Business	Business travel	18	2022-05-16 10:21:20.860	2022-05-17 19:19:11.947
9	9	12649	Eco	Business travel	36	2022-05-16 10:21:20.860	2022-05-17 19:19:11.960
10	10	12632	Business	Business travel	18	2022-05-16 10:21:20.860	2022-05-17 19:19:11.973
11	11	12639	Eco	Business travel	3128	2022-05-16 10:21:20.860	2022-05-17 19:19:11.980
12	12	12718	Business	Business travel	2720	2022-05-16 10:21:20.860	2022-05-17 19:19:11.993
13	13	20910	Business	Business travel	2992	2022-05-16 10:21:20.863	2022-05-17 19:19:12.010
14	14	14766	Business	Business travel	18	2022-05-16 10:21:20.863	2022-05-17 19:19:12.020
15	15	27225	Business	Business travel	851	2022-05-16 10:21:20.863	2022-05-17 19:19:12.033

Step 6: ETL Development – Accumulating fact table






AirlineSat_Load_Co...eTime.dtsx [Design]
Control Flow
Data Flow
Parameters
Event Handlers
Package Explorer
Progress
Data Flow Task:
Transform and Load Complete Time
Extract from Complete Time Staging Staging
15,000 rows
Complete Time Sort
Extract from FactSatisfaction
15,000 rows
Fact Satisfaction Sort
15,000 rows
15,000 rows
Compete Time and Fact table merge
15,000 rows
Load FactSatisfaction


AirlineSat_Load_Co...eTime.dtsx [Design]
Control Flow
Data Flow
Parameters
Event Handlers
Package Explorer
Progress
Data Flow Task:
Calculate Process Time
Extract Create and Complete Time from FactSatisfaction
15,000 rows
Derive Process Time Field
15,000 rows
Time Sort
Extract from FactSatisfaction
15,000 rows
FactSatisfaction Sort
15,000 rows
Merge Process Time
15,000 rows
Load FactSatisfaction