



# **Data warehousing**

## **Data Warehouse Term Project**

### **Phase\_2**

**Submitted to TA\ Alaa Adel**

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<b>Abdallah Mahmoud</b>	<b>20200307</b>
<b>Abdeltwab Mohamed</b>	<b>20200274</b>
<b>Nagi mohamed</b>	<b>20200580</b>
<b>Nour eldeen mahmoud okbi</b>	<b>20200608</b>

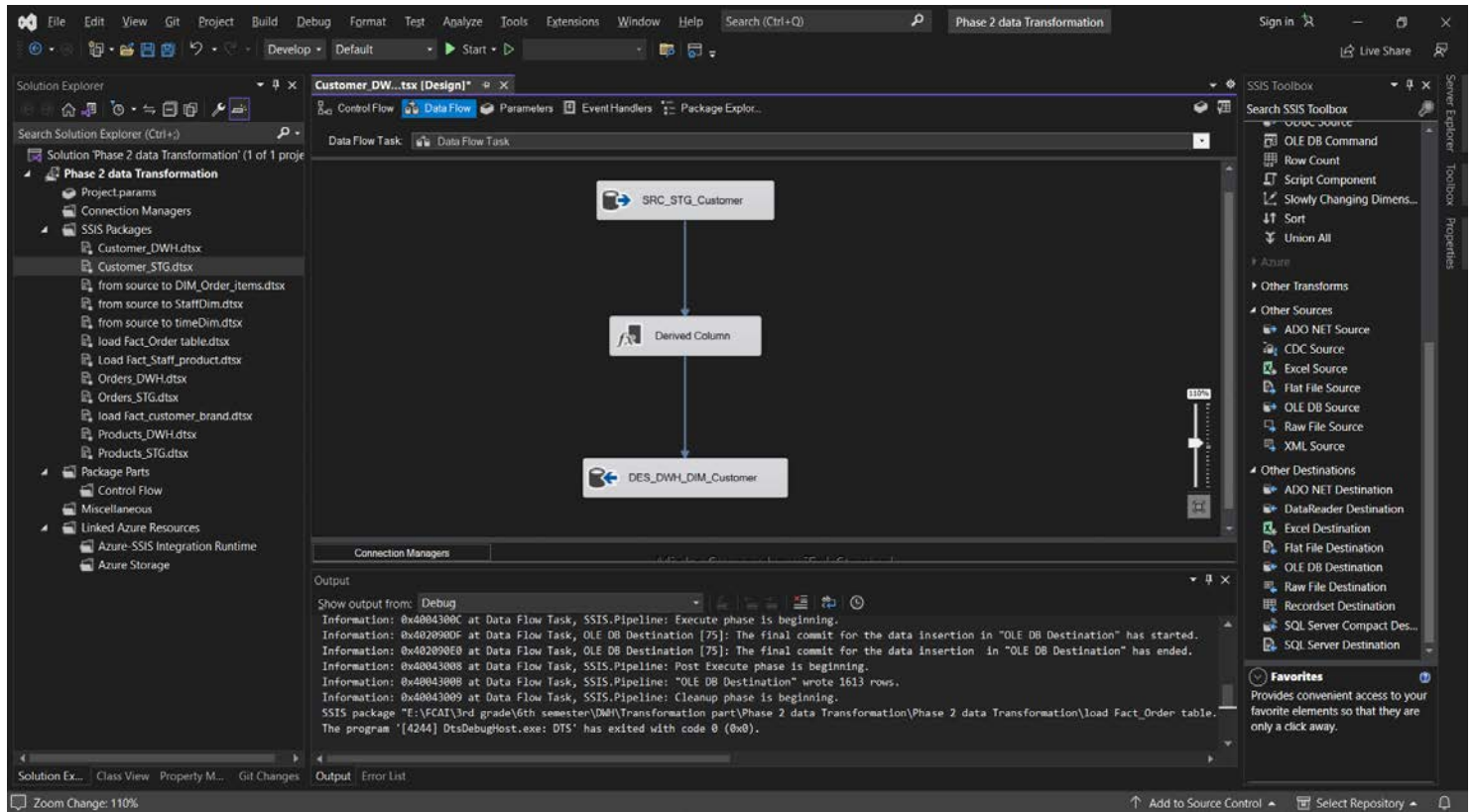


The screenshot shows the SSDT interface for a project named 'Phase 2 data Transformation'. The main canvas displays a Data Flow Task connected to a 'truncate STG\_Customers' task. The Solution Explorer on the left lists the project files, including 'Customer\_STG.dtsx'. The Output window at the bottom shows the execution log for the Data Flow Task, indicating successful completion.

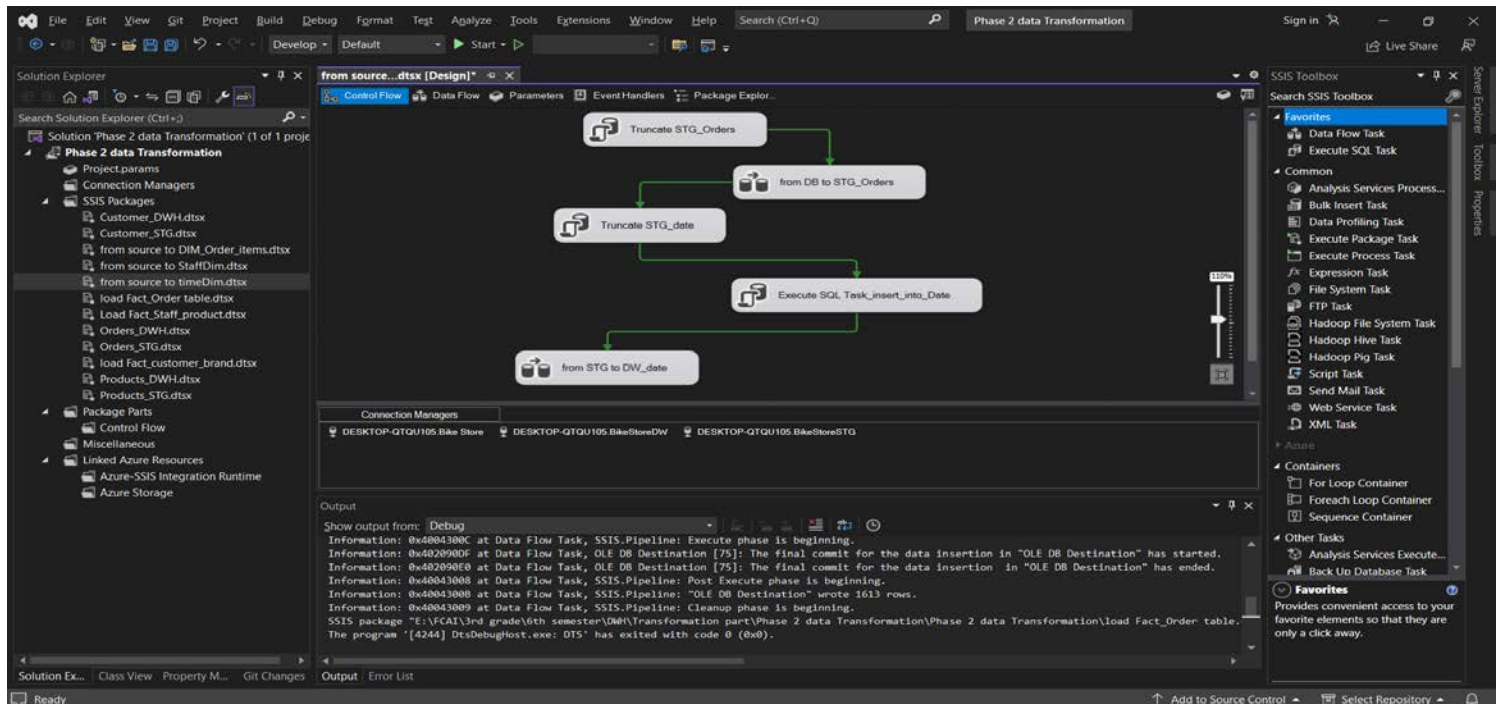
### Control Flow Customer STG

The screenshot shows the SSDT interface for a project named 'Phase 2 data Transformation'. The main canvas displays a Data Flow Task connected to a 'SRC\_BikeStores\_Customer' task. The Solution Explorer on the left lists the project files, including 'Customer\_STG.dtsx'. The Output window at the bottom shows the execution log for the Data Flow Task, indicating successful completion.

### Customers\_STG\_from\_source



**Customer\_DW\_from\_STG**



**Control Flow Date DIM**





**Products\_STG.dtsx (Design)\***

Control Flow

truncate STG\_Products

Data Flow Task

Connection Managers

Output

Information: 0x4004300C at Data Flow Task, SSIS.Pipeline: Execute phase is beginning.  
Information: 0x4020900F at Data Flow Task, OLE DB Destination [75]: The final commit for the data insertion in "OLE DB Destination" has started.  
Information: 0x4020900F at Data Flow Task, OLE DB Destination [75]: The final commit for the data insertion in "OLE DB Destination" has ended.  
Information: 0x40043008 at Data Flow Task, SSIS.Pipeline: Post Execute phase is beginning.  
Information: 0x40043008 at Data Flow Task, SSIS.Pipeline: "OLE DB Destination" wrote 1613 rows.  
Information: 0x40043009 at Data Flow Task, SSIS.Pipeline: Cleanup phase is beginning.  
SSIS package "E:\FCAI\3rd grade\6th semester\DW\Transformation part\Phase 2 data Transformation\Phase 2 data Transformation\load Fact\_Order table.  
The program '[4244] DtsDebugHost.exe: DTS' has exited with code 0 (0x0).

**Control Flow products STG**

**Products\_STG.dtsx (Design)\***

Data Flow Task

Lookup

Lookup Match Output

DES\_STG\_Products

Connection Managers

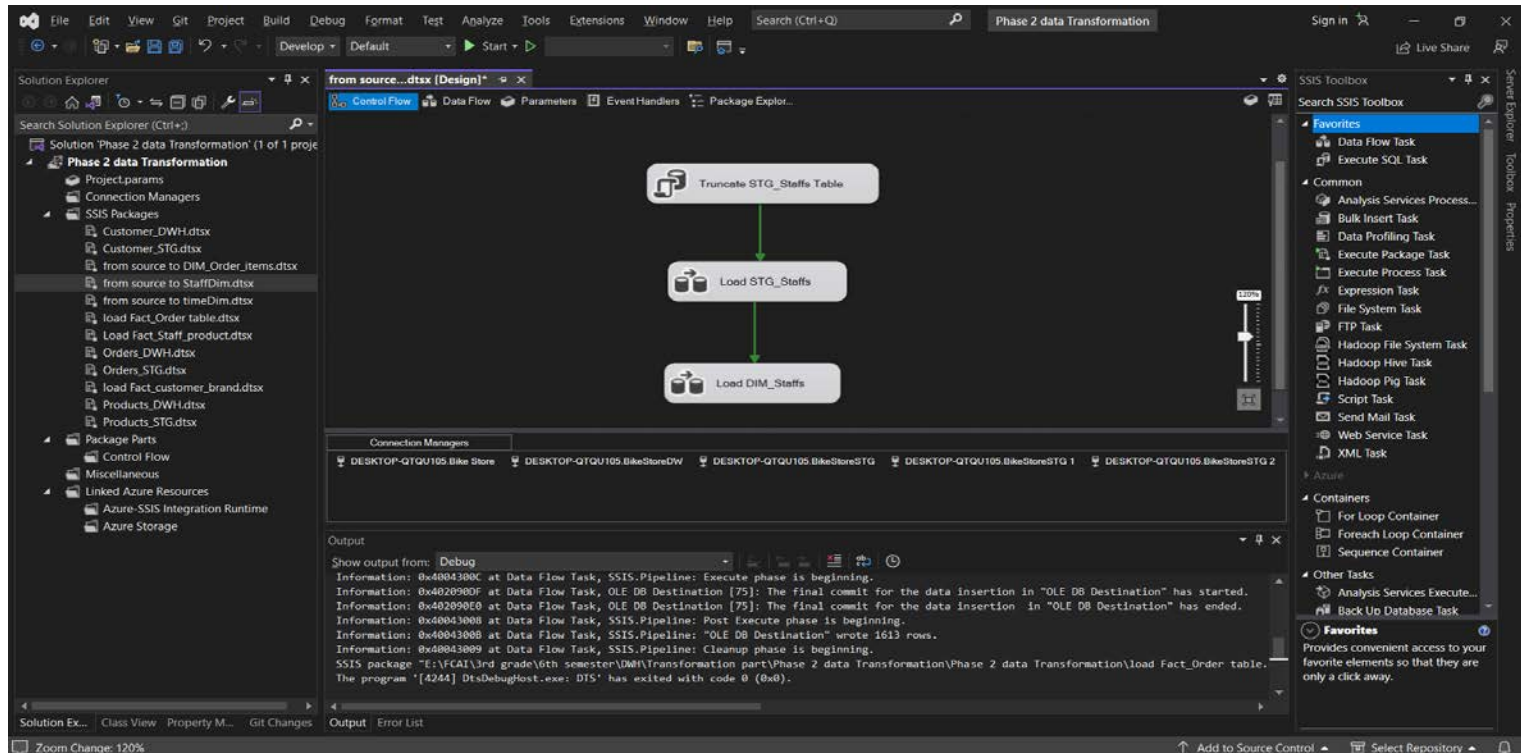
Output

Information: 0x4004300C at Data Flow Task, SSIS.Pipeline: Execute phase is beginning.  
Information: 0x4020900F at Data Flow Task, OLE DB Destination [75]: The final commit for the data insertion in "OLE DB Destination" has started.  
Information: 0x4020900F at Data Flow Task, OLE DB Destination [75]: The final commit for the data insertion in "OLE DB Destination" has ended.  
Information: 0x40043008 at Data Flow Task, SSIS.Pipeline: Post Execute phase is beginning.  
Information: 0x40043008 at Data Flow Task, SSIS.Pipeline: "OLE DB Destination" wrote 1613 rows.  
Information: 0x40043009 at Data Flow Task, SSIS.Pipeline: Cleanup phase is beginning.  
SSIS package "E:\FCAI\3rd grade\6th semester\DW\Transformation part\Phase 2 data Transformation\Phase 2 data Transformation\load Fact\_Order table.  
The program '[4244] DtsDebugHost.exe: DTS' has exited with code 0 (0x0).

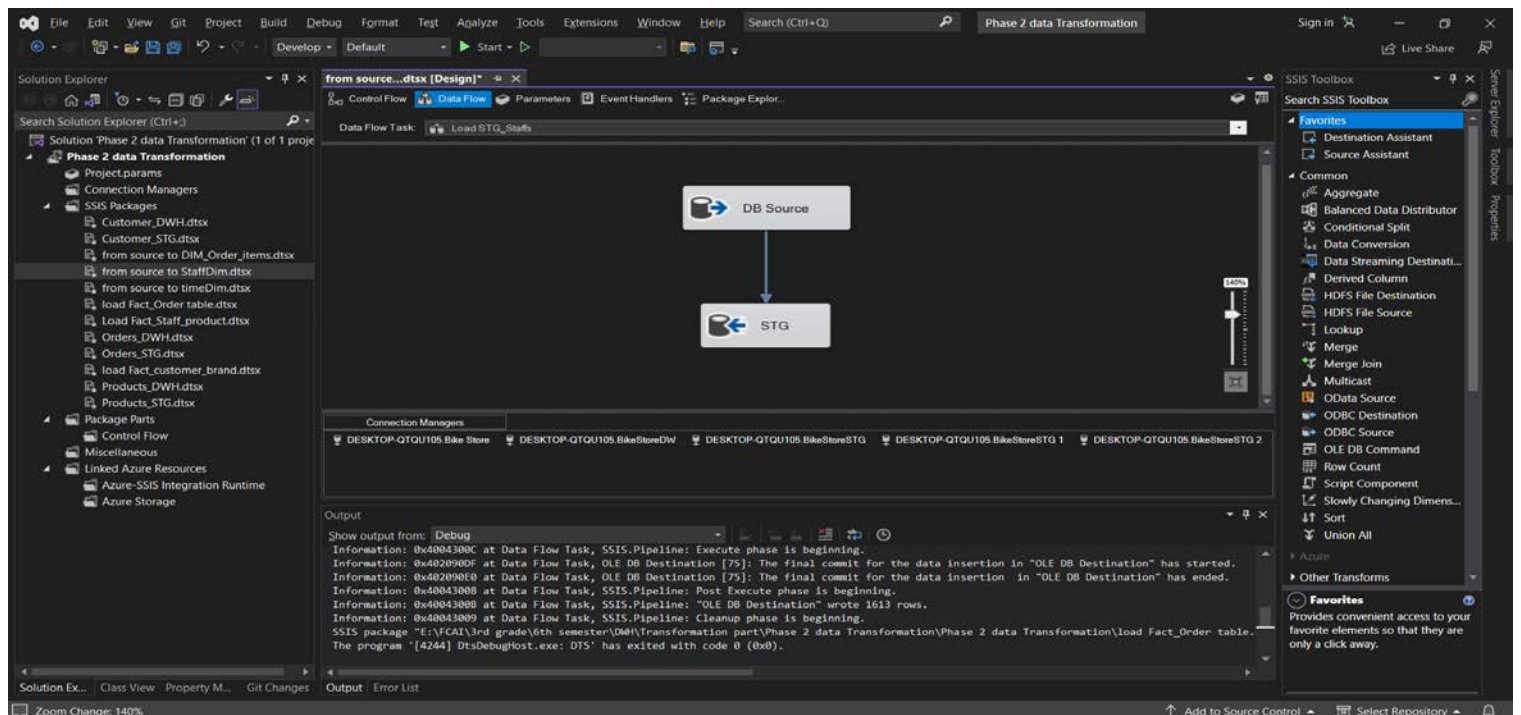
**Data Flow transfer products data from SRC to STG**



**Data Flow Transfer Products Data from STG to DWH**



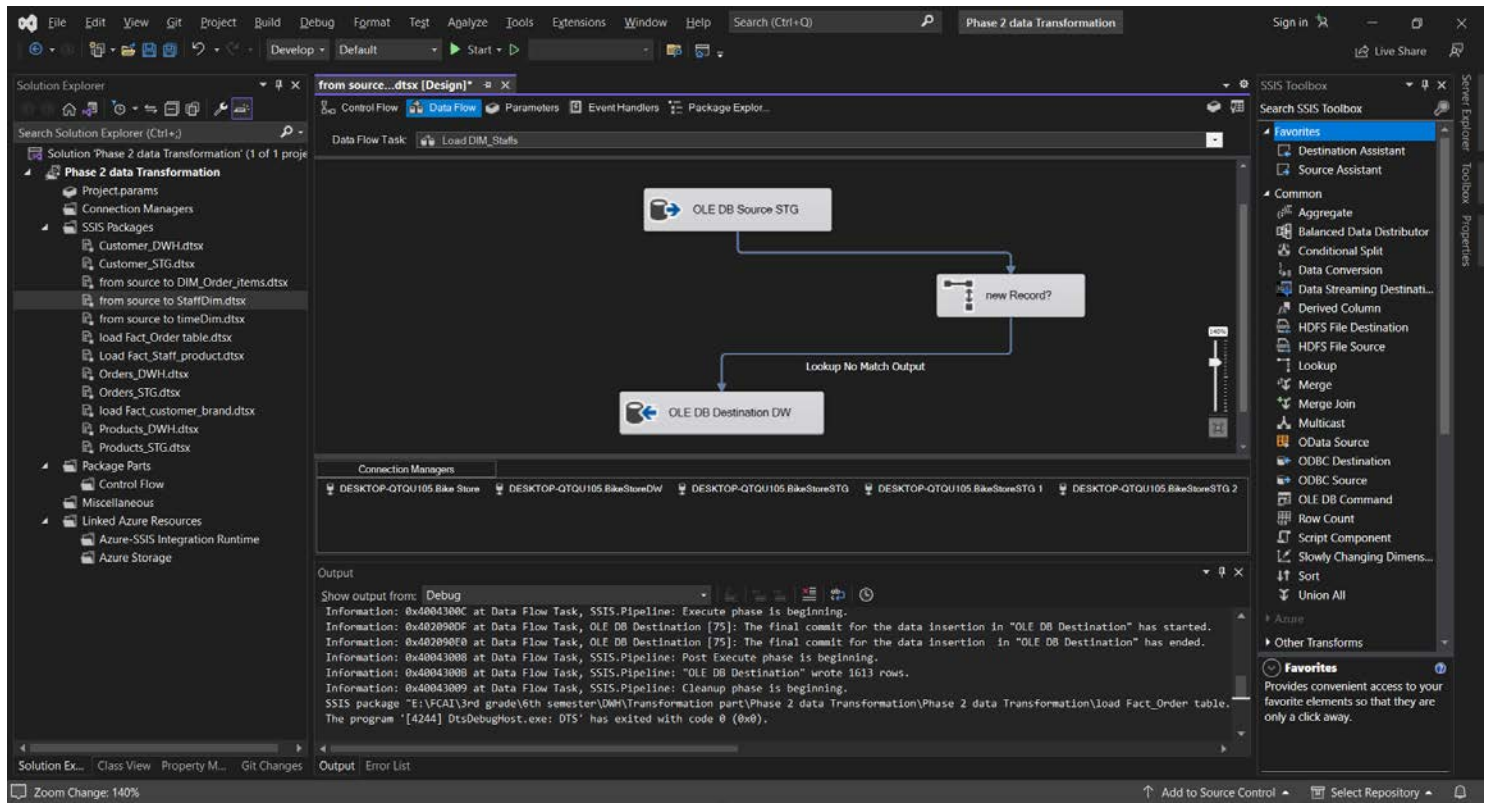
*From\_source\_to\_DIM\_staffs\_control\_flow*



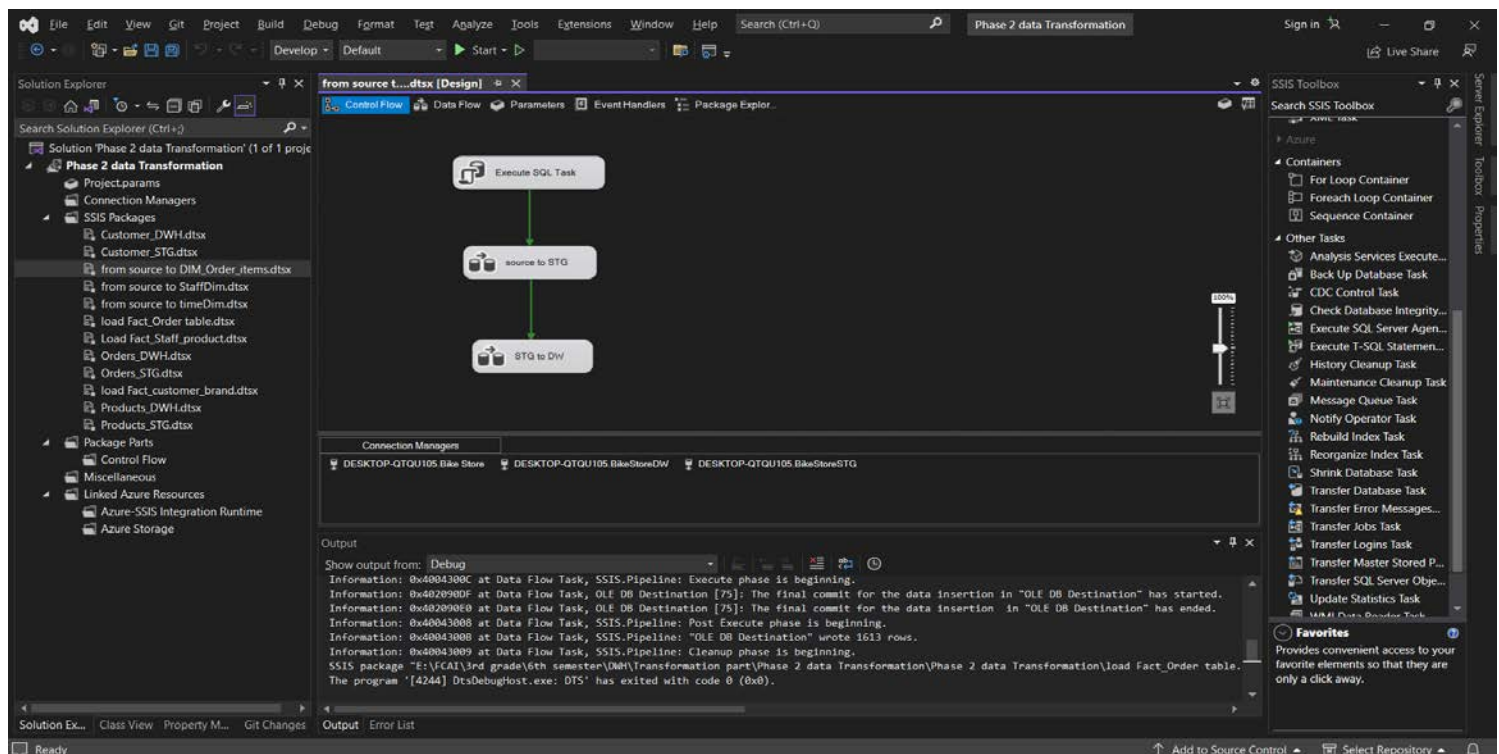
*from\_source\_to\_DIM\_staffs\_data\_flow\_from\_source\_to\_STG*



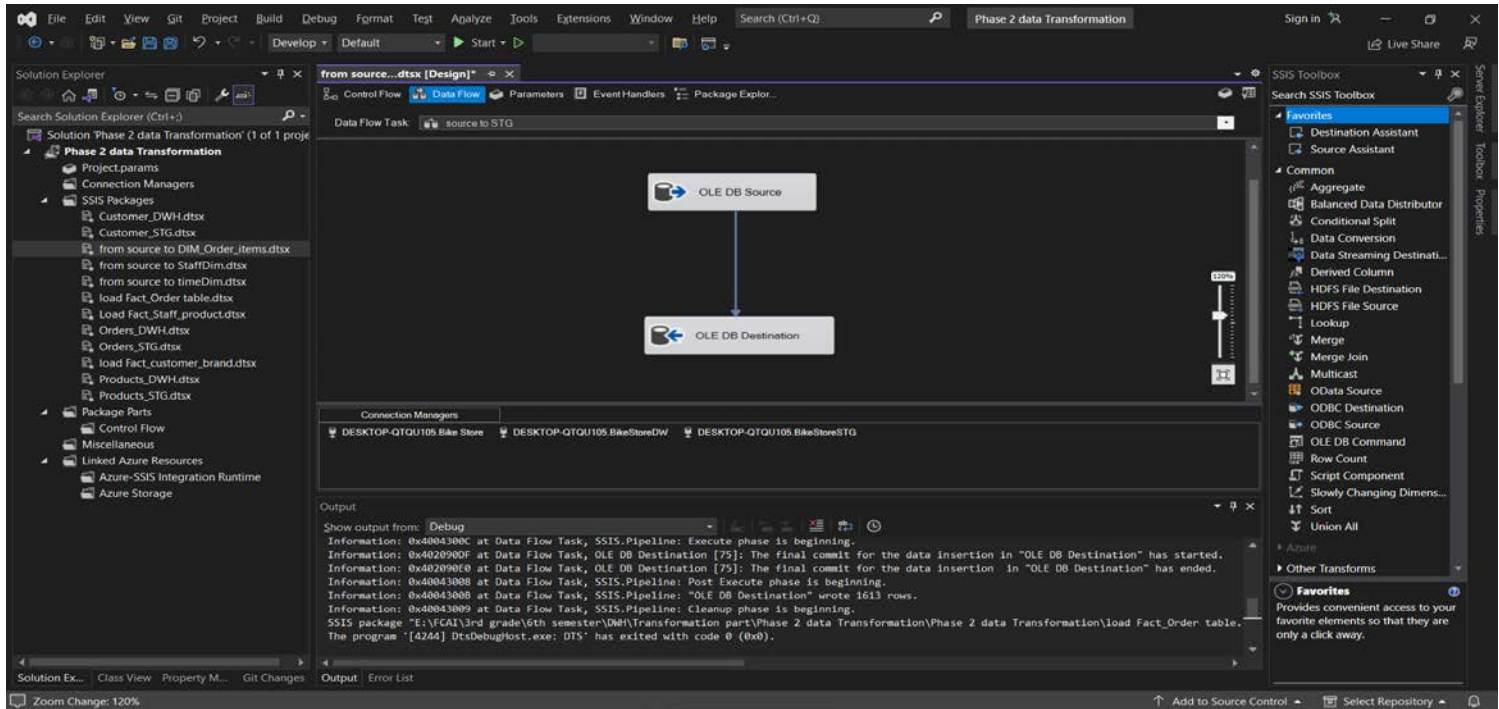
**2023/2024**



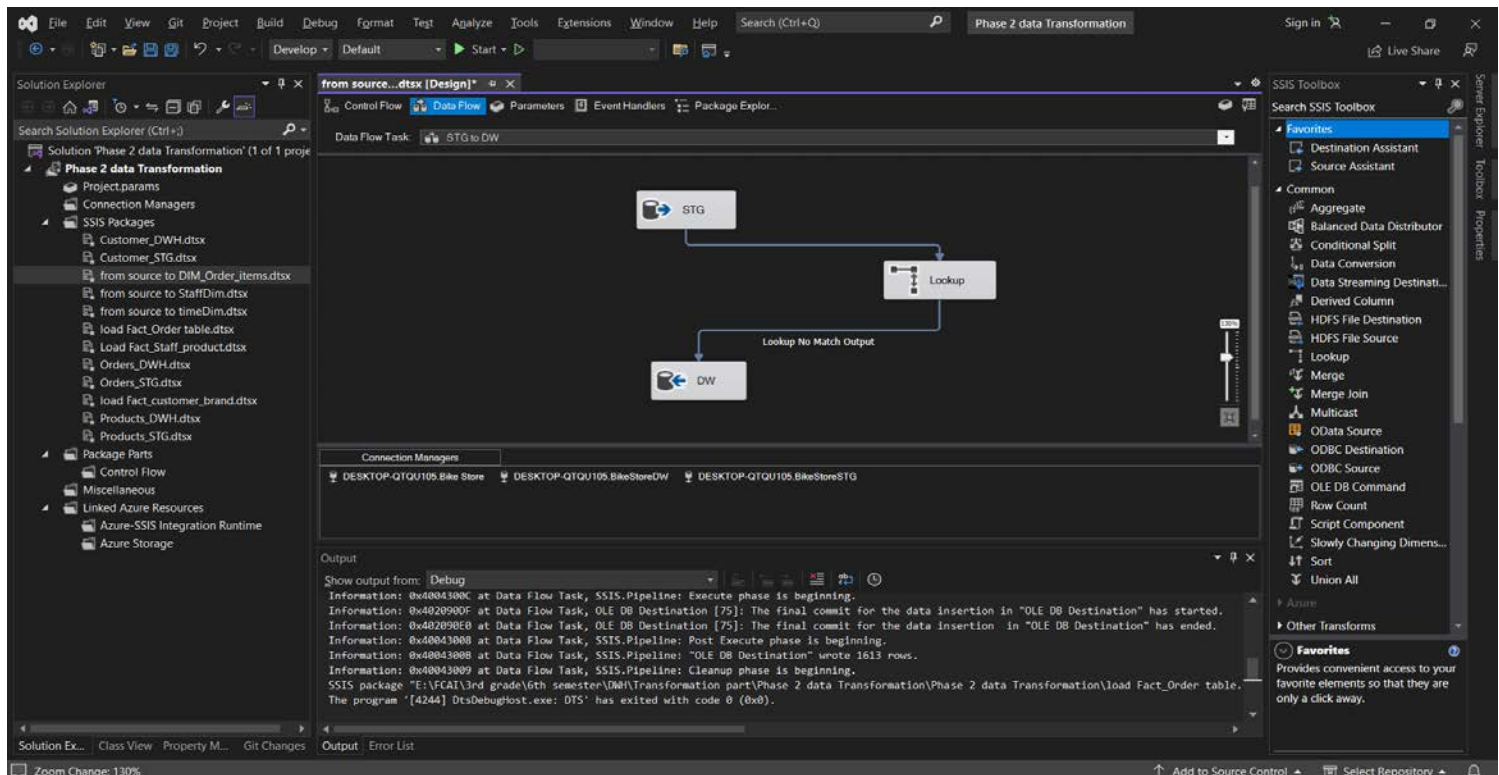
*from\_source\_to\_DIM\_staffs\_data\_flow\_from\_STG\_to\_DW*



*from source to DIM order items control flow*

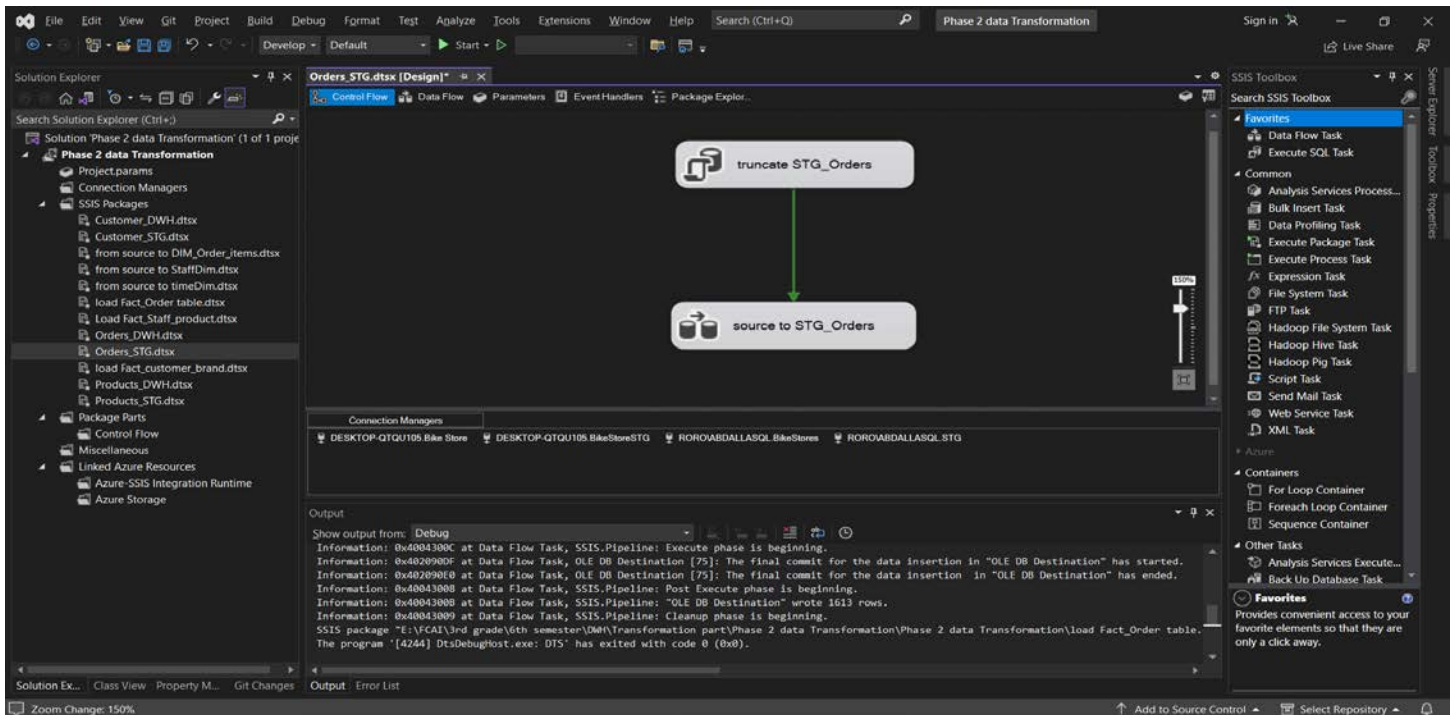


*from\_source\_to\_STG\_order\_items\_data\_flow*

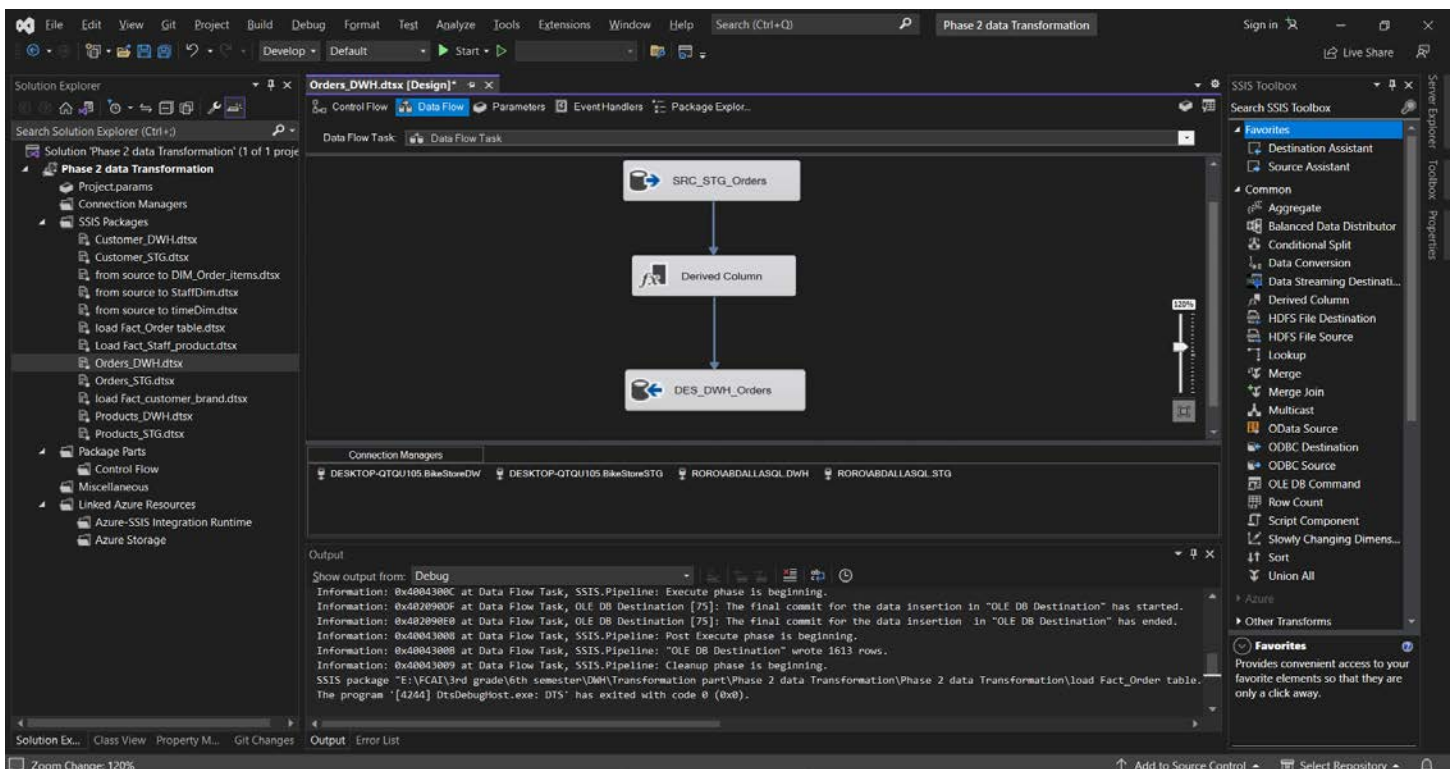


*from\_STG\_to\_DW\_order\_items\_data\_flow*

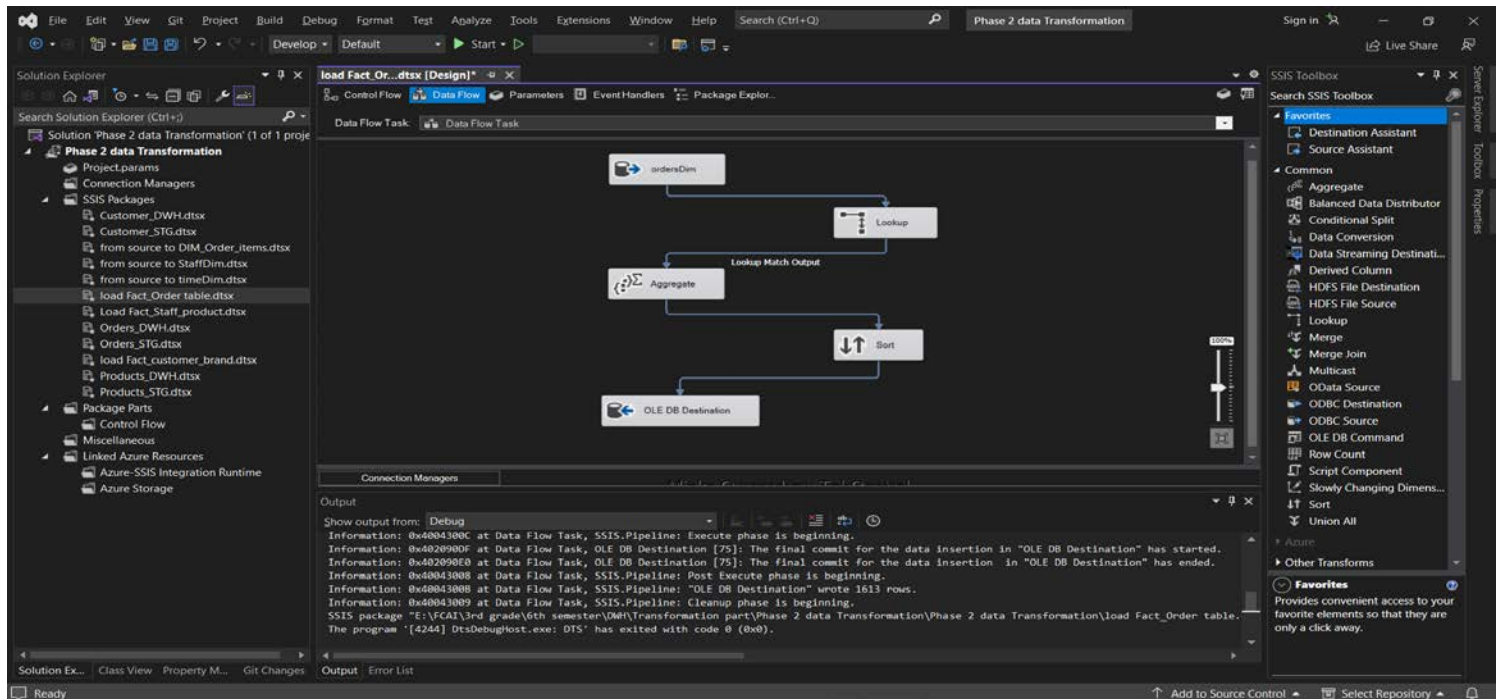




*Orders\_STG\_control\_flow*



*Order\_Stg\_to\_Orders\_DWH*



*load\_Fact\_Order\_table*

**Fact\_orders\_query**

```
     drop table Fact_Orders     create table Fact_Orders(         fact_order_id int identity(1,1) primary key,         customer_id int references DIM_Customer(customer_id),         store_id int references DIM_Stores(store_id),         staff_id int references DIM_Staffs(staff_id),         year int,         Quarter INT,         orders_number int     )     select * from Fact_Orders   
```

fact_order_id	customer_id	store_id	staff_id	year	Quarter	orders_number	
1	1	2	6	2016	4	1	
2	2	5	1	3	2016	2	1
3	3	5	1	2	2016	4	1
4	4	7	2	7	2016	1	1
5	8	2	7	2016	4	1	
6	6	9	2	6	2016	1	1
7	7	12	2	6	2016	1	1
8	8	13	3	9	2016	2	1
9	9	14	3	8	2016	3	2
10	10	16	2	7	2016	3	1
11	11	17	2	6	2016	2	1
12	12	17	2	6	2016	3	1
13	13	18	2	7	2016	4	1
14	14	20	3	8	2016	4	1
15	15	22	2	7	2016	2	1
16	16	24	1	2	2016	2	1
17	17	26	2	7	2016	2	1
18	18	27	2	6	2016	4	1
19	19	30	1	2	2016	3	1

*Fact\_orders\_query*





**Load Fact Staff Product**

Information: 0x4004308C at Data Flow Task, SSIS.Pipeline: Execute phase is beginning.  
 Information: 0x4004308D at Data Flow Task, OLE DB Destination [75]: The final commit for the data insertion in "OLE DB Destination" has started.  
 Information: 0x4004308E at Data Flow Task, OLE DB Destination [75]: The final commit for the data insertion in "OLE DB Destination" has ended.  
 Information: 0x40043088 at Data Flow Task, SSIS.Pipeline: Post Execute phase is beginning.  
 Information: 0x40043089 at Data Flow Task, SSIS.Pipeline: "OLE DB Destination" wrote 1613 rows.  
 Information: 0x40043089 at Data Flow Task, SSIS.Pipeline: Cleanup phase is beginning.  
 SSIS package "E:\VC\AI\3rd grade\6th semester\DW\Transformation part\Phase 2 data Transformation\Phase 2 data Transformation\Load Fact\_Order table.dtsx".  
 The program "[4244] DtsDebugHost.exe: DTS" has exited with code 0 (0x0).

### Load\_Fact\_Staff\_product

```

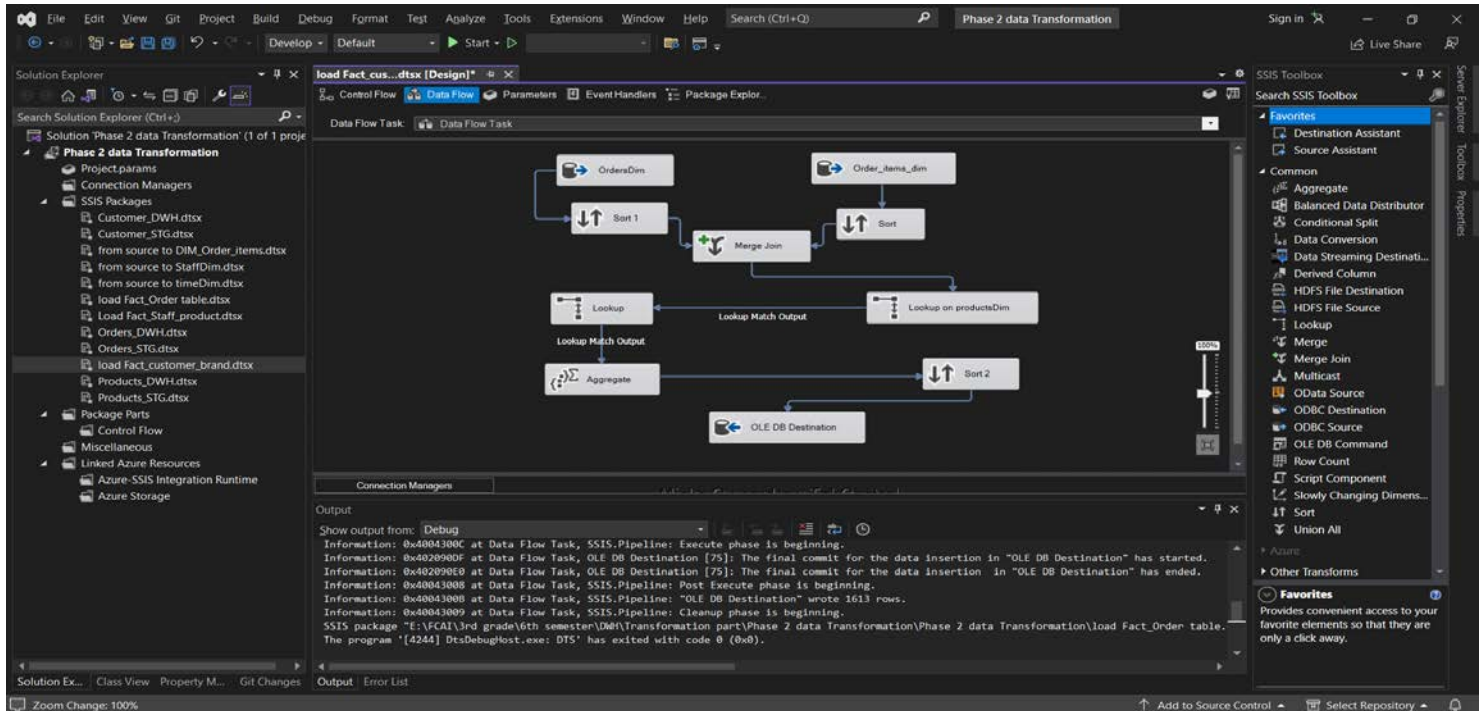
store_id int references DIM_Stores(store_id),
product_id int references DIM_Products(product_id),
quantity INT NOT NULL,
year int
)

select * from Fact_Staff_product
    
```

brand_id	brand_name	customers_num	year
1	Electra	853	2018
2	Heller	67	2018
3	Pure Cycles	201	2018
4	Ritchey	62	2018
5	Sunley	297	2018
6	Trek	293	2018
7	Electra	552	2017
8	Heller	159	2017
9	Heller	23	2017
10	Pure Cycles	49	2017
11	Ritchey	12	2017
12	Sun Bicycles	418	2017
13	Sunley	240	2017
14	Trek	587	2017
15	Electra	324	2018
16	Heller	31	2018
17	Heller	7	2018
18	Pure Cycles	6	2018
19	Ritchey	3	2018
20	Strider	16	2018
21	Sun Bicycles	67	2018
22	Sunley	68	2018
23	Trek	355	2018

### Fact\_staff\_product\_query





**Load\_Fact\_Customer\_Brand**

The screenshot shows the 'Fact\_Customer\_brans' table in the 'BikeStoreDW' database. The table has four columns: 'brand\_id', 'brand\_name', 'customers\_num', and 'year'. The data is as follows:

brand_id	brand_name	customers_num	year
1	Electra	853	2016
2	Heller	67	2016
3	Pure Cycles	201	2016
4	Ritchey	62	2016
5	Sury	297	2016
6	Trek	293	2016
7	Electra	552	2017
8	Haro	189	2017
9	Heller	23	2017
10	Pure Cycles	40	2017
11	Ritchey	12	2017
12	Sun Bicycles	418	2017
13	Sury	240	2017
14	Trek	587	2017
15	Electra	324	2018
16	Haro	31	2018
17	Heller	7	2018
18	Pure Cycles	8	2018
19	Ritchey	3	2018
20	Strider	16	2018
21	Sun Bicycles	67	2018
22	Sury	68	2018

**Fact\_customer\_brands\_query**

# Faculty of Computers and Artificial Intelligence

## Information Systems Department

2023/2024



Job Schedule Properties - Customer\_STG

Name:

Customer\_STG

Jobs in Schedule

Schedule type:

Recurring

☒ Enabled

One-time occurrence

Date:

5/ 8/2023

Time:

6:09:29 PM

Frequency

Occurs:

Weekly

Recurs every:

1

week(s) on

☐ Monday

☐ Tuesday

☐ Wednesday

☐ Thursday

☐ Friday

☐ Saturday

☒ Sunday

Daily frequency

☒ Occurs once at:

12:00:00 AM

☐ Occurs every:

1

hour(s)

Starting at:

12:00:00 AM

Ending at:

11:59:59 PM

Duration

Start date:

5/ 8/2023

☒ End date:

5/31/2023

☐ No end date:

Summary

Description:

Occurs every week on Sunday at 12:00:00 AM. Schedule will be used between 5/8/2023 and 5/31/2023.

# Faculty of Computers and Artificial Intelligence

## Information Systems Department

2023/2024



Job Schedule Properties - Customer\_DW

Name:

Customer\_DW

Jobs in Schedule

Schedule type:

Recurring

☒ Enabled

One-time occurrence

Date:

5/ 8/2023

Time:

6:09:55 PM

Frequency

Occurs:

Weekly

Recurs every:

1

week(s) on

☒ Monday

☐ Wednesday

☐ Friday

☐ Saturday

☐ Tuesday

☐ Thursday

☐ Sunday

Daily frequency

☒ Occurs once at:

12:00:00 AM

☐ Occurs every:

1

hour(s)

Starting at:

12:00:00 AM

Ending at:

11:59:59 PM

Duration

Start date:

5/ 8/2023

☐ End date:

5/ 8/2023

☒ No end date:

Summary

Description:

Occurs every week on Monday at 12:00:00 AM. Schedule will be used starting on 5/8/2023.




# Faculty of Computers and Artificial Intelligence

## Information Systems Department

2023/2024



 Job Schedule Properties - Order\_items\_DW

Name:

Order\_items\_DW

Jobs in Schedule

Schedule type:

Recurring

☒ Enabled

One-time occurrence

Date:

5/ 8/2023

Time:

6:10:35 PM

Frequency

Occurs:

Weekly

Recurs every:

1

week(s) on

☐ Monday

☐ Wednesday

☐ Friday

☐ Saturday

☐ Tuesday

☐ Thursday

☒ Sunday

Daily frequency

☒ Occurs once at:

6:00:00 AM

☐ Occurs every:

1

hour(s)

Starting at:

6:00:00 AM

Ending at:

11:59:59 PM

Duration

Start date:

5/ 8/2023

☒ End date:

5/31/2023

☐ No end date:

Summary

Description:

Occurs every week on Sunday at 6:00:00 AM. Schedule will be used between 5/8/2023 and 5/31/2023.

# Faculty of Computers and Artificial Intelligence

## Information Systems Department

2023/2024



Job Schedule Properties - Orders\_STG

Name:

Orders\_STG

Jobs in Schedule

Schedule type:

Recurring

☒ Enabled

One-time occurrence

Date:

5/ 8/2023

Time:

6:09:39 PM

Frequency

Occurs:

Weekly

Recurs every:

1

week(s) on

☐ Monday

☐ Tuesday

☐ Wednesday

☐ Thursday

☐ Friday

☐ Saturday

☒ Sunday

Daily frequency

☒ Occurs once at:

12:00:00 AM

☐ Occurs every:

1

hour(s)

Starting at:

12:00:00 AM

Ending at:

11:59:59 PM

Duration

Start date:

5/ 8/2023

☒ End date:

5/31/2023

☐ No end date:

Summary

Description:

Occurs every week on Sunday at 12:00:00 AM. Schedule will be used between 5/8/2023 and 5/31/2023.

# Faculty of Computers and Artificial Intelligence

## Information Systems Department

2023/2024



Job Schedule Properties - Orders\_DW

Name:

Orders\_DW

Jobs in Schedule

Schedule type:

Recurring

☒ Enabled

One-time occurrence

Date:

5/ 8/2023

Time:

6:10:06 PM

Frequency

Occurs:

Weekly

Recurs every:

1

week(s) on

☒ Monday

☐ Wednesday

☐ Friday

☐ Saturday

☐ Tuesday

☐ Thursday

☐ Sunday

Daily frequency

☒ Occurs once at:

12:00:00 AM

☐ Occurs every:

1

hour(s)

Starting at:

12:00:00 AM

Ending at:

11:59:59 PM

Duration

Start date:

5/ 8/2023

☒ End date:

5/31/2023

☐ No end date:

Summary

Description:

Occurs every week on Monday at 12:00:00 AM. Schedule will be used between 5/8/2023 and 5/31/2023.



# Faculty of Computers and Artificial Intelligence

## Information Systems Department

2023/2024



Job Schedule Properties - Products\_STG

Name:

Products\_STG

Jobs in Schedule

Schedule type:

Recurring

☒ Enabled

One-time occurrence

Date:

5/ 8/2023

Time:

6:09:48 PM

Frequency

Occurs:

Weekly

Recurs every:

1

week(s) on

☐ Monday

☐ Wednesday

☐ Friday

☐ Saturday

☐ Tuesday

☐ Thursday

☒ Sunday

Daily frequency

☒ Occurs once at:

12:00:00 AM

☐ Occurs every:

1

hour(s)

Starting at:

12:00:00 AM

Ending at:

11:59:59 PM

Duration

Start date:

5/ 8/2023

☒ End date:

5/31/2023

☐ No end date:

Summary

Description:

Occurs every week on Sunday at 12:00:00 AM. Schedule will be used between 5/8/2023 and 5/31/2023.

# Faculty of Computers and Artificial Intelligence

## Information Systems Department

2023/2024



Job Schedule Properties - Products\_DW

Name: Products\_DW Jobs in Schedule

Schedule type: Recurring ☒ Enabled

One-time occurrence

Date: 5/ 8/2023 Time: 6:10:15 PM

Frequency

Occurs: Weekly

Recurs every: 1 week(s) on

☒ Monday ☐ Wednesday ☐ Friday ☐ Saturday  
☐ Tuesday ☐ Thursday ☐ Sunday

Daily frequency

☒ Occurs once at: 12:00:00 AM

☐ Occurs every: 1 hour(s) Starting at: 12:00:00 AM  
Ending at: 11:59:59 PM

Duration

Start date: 5/ 8/2023 ☒ End date: 5/31/2023  
☐ No end date:

Summary

Description: Occurs every week on Monday at 12:00:00 AM. Schedule will be used between 5/8/2023 and 5/31/2023.

# Faculty of Computers and Artificial Intelligence

## Information Systems Department

2023/2024



Job Schedule Properties - Staff\_DW

Name:

Staff\_DW

Jobs in Schedule

Schedule type:

Recurring

☒ Enabled

One-time occurrence

Date:

5/ 8/2023

Time:

6:10:27 PM

Frequency

Occurs:

Weekly

Recurs every:

1

week(s) on

☐ Monday

☐ Wednesday

☐ Friday

☐ Saturday

☐ Tuesday

☐ Thursday

☒ Sunday

Daily frequency

☒ Occurs once at:

6:00:00 AM

☐ Occurs every:

1

hour(s)

Starting at:

6:00:00 AM

Ending at:

11:59:59 PM

Duration

Start date:

5/ 8/2023

☒ End date:

5/31/2023

☐ No end date:

Summary

Description:

Occurs every week on Sunday at 6:00:00 AM. Schedule will be used between 5/8/2023 and 5/31/2023.



# Faculty of Computers and Artificial Intelligence

## Information Systems Department

2023/2024



Job Schedule Properties - Load\_Time\_Dim

Name:

Load\_Time\_Dim

Jobs in Schedule

Schedule type:

Recurring

✓ Enabled

One-time occurrence

Date:

5/ 8/2023

Time:

6:10:45 PM

Frequency

Occurs:

Weekly

Recurs every:

1

week(s) on

☒ Monday

☐ Wednesday

☐ Friday

☐ Saturday

☐ Tuesday

☐ Thursday

☐ Sunday

Daily frequency

☒ Occurs once at:

12:00:00 AM

☐ Occurs every:

1

hour(s)

Starting at:

12:00:00 AM

Ending at:

11:59:59 PM

Duration

Start date:

5/ 8/2023

☒ End date:

5/31/2023

☐ No end date:

Summary

Description:

Occurs every week on Monday at 12:00:00 AM. Schedule will be used between 5/8/2023 and 5/31/2023.

# Faculty of Computers and Artificial Intelligence

## Information Systems Department

2023/2024



Job Schedule Properties - Load\_Fact\_Orders

Name:

Load\_Fact\_Orders

Jobs in Schedule

Schedule type:

Recurring

☒ Enabled

One-time occurrence

Date:

5/ 8/2023

Time:

6:11:03 PM

Frequency

Occurs:

Weekly

Recurs every:

1

week(s) on

☐ Monday

☒ Wednesday

☐ Friday

☐ Saturday

☐ Tuesday

☐ Thursday

☐ Sunday

Daily frequency

☒ Occurs once at:

12:00:00 AM

☐ Occurs every:

1

hour(s)

Starting at:

12:00:00 AM

Ending at:

11:59:59 PM

Duration

Start date:

5/ 8/2023

☒ End date:

5/31/2023

☐ No end date:

Summary

Description:

Occurs every week on Wednesday at 12:00:00 AM. Schedule will be used between 5/8/2023 and 5/31/2023.

# Faculty of Computers and Artificial Intelligence

## Information Systems Department

2023/2024



Job Schedule Properties - Load\_Fact\_Staff\_Products

Name:

Load\_Fact\_Staff\_Products

Jobs in Schedule

Schedule type:

Recurring

☒ Enabled

One-time occurrence

Date:

5/ 8/2023

Time:

6:11:14 PM

Frequency

Occurs:

Weekly

Recur every:

1

week(s) on

☐ Monday

☒ Wednesday

☐ Friday

☐ Saturday

☐ Tuesday

☐ Thursday

☐ Sunday

Daily frequency

☒ Occurs once at:

12:00:00 AM

☐ Occurs every:

1

hour(s)

Starting at:

12:00:00 AM

Ending at:

11:59:59 PM

Duration

Start date:

5/ 8/2023

☒ End date:

5/31/2023

☐ No end date:

Summary

Description:

Occurs every week on Wednesday at 12:00:00 AM. Schedule will be used between 5/8/2023 and 5/31/2023.

# Faculty of Computers and Artificial Intelligence

## Information Systems Department

2023/2024



### Job Schedule Properties - Load\_Fact\_Customer\_Brands

Name: Load\_Fact\_Customer\_Brands

Jobs in Schedule

Schedule type: Recurring

☒ Enabled

One-time occurrence

Date: 5/ 8/2023

Time: 6:10:53 PM

Frequency

Occurs: Weekly

Recurs every: 1 week(s) on

☐ Monday

☒ Wednesday

☐ Friday

☐ Saturday

☐ Tuesday

☐ Thursday

☐ Sunday

Daily frequency

☒ Occurs once at: 12:00:00 AM

☐ Occurs every: 1 hour(s)

Starting at: 12:00:00 AM

Ending at: 11:59:59 PM

Duration

Start date: 5/ 8/2023

☒ End date: 5/31/2023

☐ No end date:

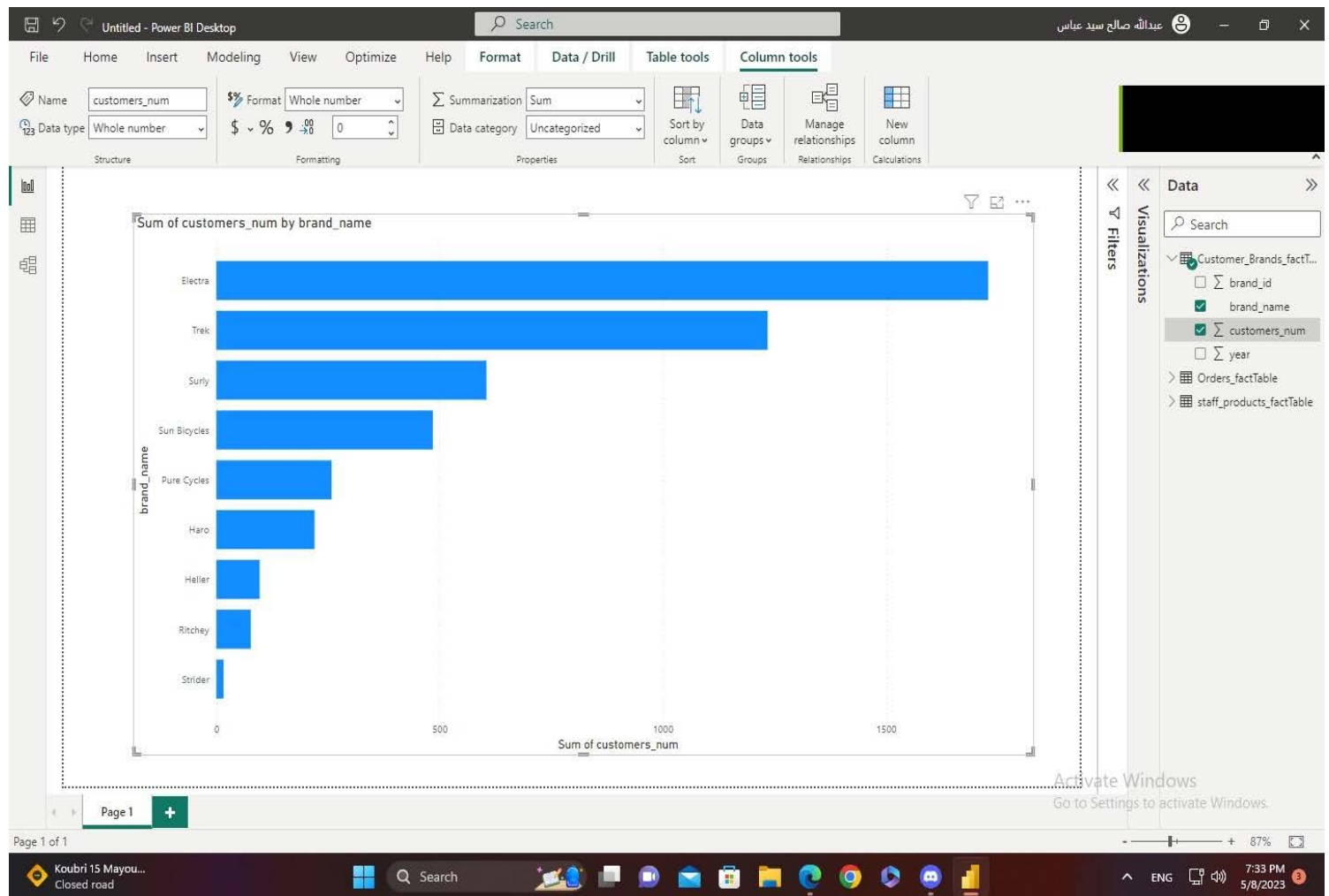
Summary

Description: Occurs every week on Wednesday at 12:00:00 AM. Schedule will be used between 5/8/2023 and 5/31/2023.





## Screenshots for interactive dashboard for the DWH



*Interactive dashboard for Customer numbers Grouped by Brand Name*

# Faculty of Computers and Artificial Intelligence

## Information Systems Department

2023/2024



Power BI Desktop interface showing a table of data for the Orders Fact Table. The table includes columns for customer\_id, Sum of Quarter, orders\_number, staff\_id, store\_id, and year. The data is displayed in a grid format, with a total row at the bottom showing a sum of 3765 for the orders\_number column.

customer_id	Sum of Quarter	orders_number	staff_id	store_id	year
1	4	1	6	2	2016
1	4	1	6	2	2018
1	2	1	7	2	2018
2	3	1	2	1	2017
2	1	1	3	1	2017
2	2	1	3	1	2018
3	1	1	2	1	2018
3	6	1	3	1	2018
4	1	1	6	2	2017
4	2	1	6	2	2018
4	4	1	7	2	2017
5	4	1	2	1	2016
5	2	1	2	1	2018
5	2	1	3	1	2016
6	3	1	7	2	2017
6	5	1	7	2	2018
7	1	1	7	2	2016
7	2	2	7	2	2018
8	4	1	7	2	2016
8	3	1	7	2	2017
8	2	1	7	2	2018
9	1	1	6	2	2016
9	2	1	6	2	2018
9	1	1	7	2	2018
10	2	1	7	2	2017
10	5	1	7	2	2018
11	3	1	6	2	2017
11	2	1	6	2	2018
11	1	1	7	2	2018
12	1	1	6	2	2016
12	1	1	6	2	2017
12	2	1	7	2	2018
13	2	1	9	3	2016
Total		3765			

Page 1 of 1

GOOG +1.55%

Search

ENG 9:17 PM 5/8/2023

Interactive dashboard for Orders Fact Table

# Faculty of Computers and Artificial Intelligence

## Information Systems Department

2023/2024



Untitled - Power BI Desktop

Search

Sign in

File Home Insert Modeling View Optimize Help Format Data / Drill Table tools Column tools

Name: fact\_order\_id

Data type: Whole number

Format: Whole number

Summarization: Sum

Data category: Uncategorized

Sort by column

Data groups

Manage relationships

New column

Structure

Formatting

Properties

customer_id	fact_order_id	Quarter	orders_number	staff_id	store_id	year
2	635	1	1	3	1	2017
2	636	3	1	2	1	2017
2	1325	2	1	3	1	2018
3	1326	1	1	2	1	2018
3	1327	2	1	3	1	2018
3	1328	4	1	3	1	2018
5	2	2	1	3	1	2016
5	3	4	1	2	1	2016
5	1330	2	1	2	1	2018
24	16	2	1	2	1	2016
24	651	4	1	3	1	2017
24	1357	2	1	2	1	2018
30	19	3	1	2	1	2016
30	20	3	1	3	1	2016
30	1363	2	1	3	1	2018
31	21	2	1	3	1	2016
31	22	3	1	3	1	2016
31	1364	2	1	2	1	2018
32	23	2	1	2	1	2016
32	24	4	1	2	1	2016
32	1365	2	1	2	1	2018
33	25	4	1	3	1	2016
33	1366	2	1	3	1	2018
33	1367	3	1	2	1	2018
40	27	4	1	3	1	2016
40	659	3	1	2	1	2017
40	1375	2	1	3	1	2018
46	29	1	1	3	1	2016
46	665	3	1	2	1	2017
46	1381	2	1	3	1	2018
47	666	2	1	2	1	2017
47	667	3	1	3	1	2017
47	1382	2	1	3	1	2018

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**Interactive dashboard for Staffs products Fact Table**