Cairo University
Faculty of Computers and artificial intelligence
2023 – Second Semester

Datawarehouse Project

TA:- ENG. Ahmed Mohamed Galal

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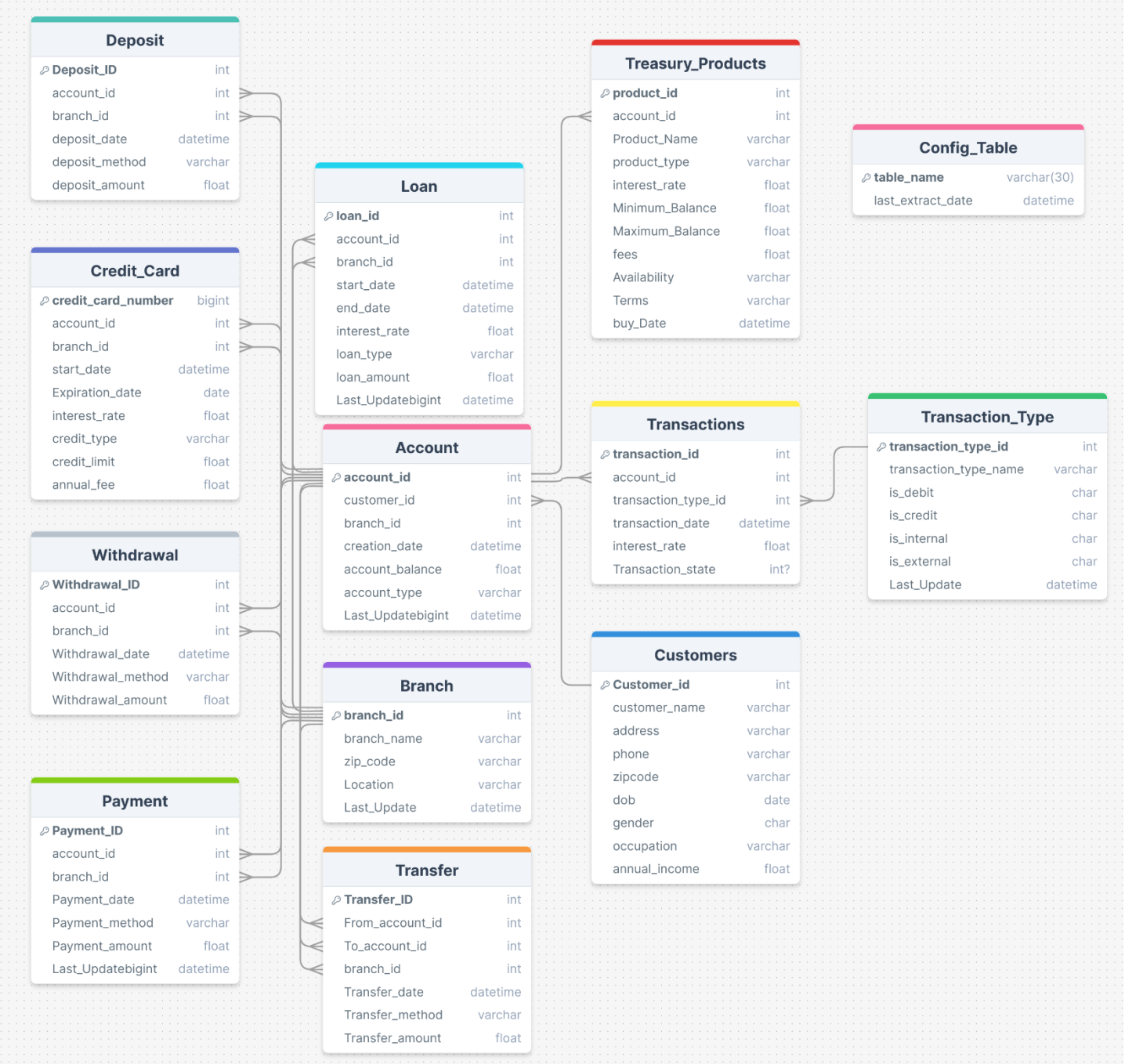
Mohamed Hany	20210358
Hagar Ragaee	20211108

- Physical model of the source system



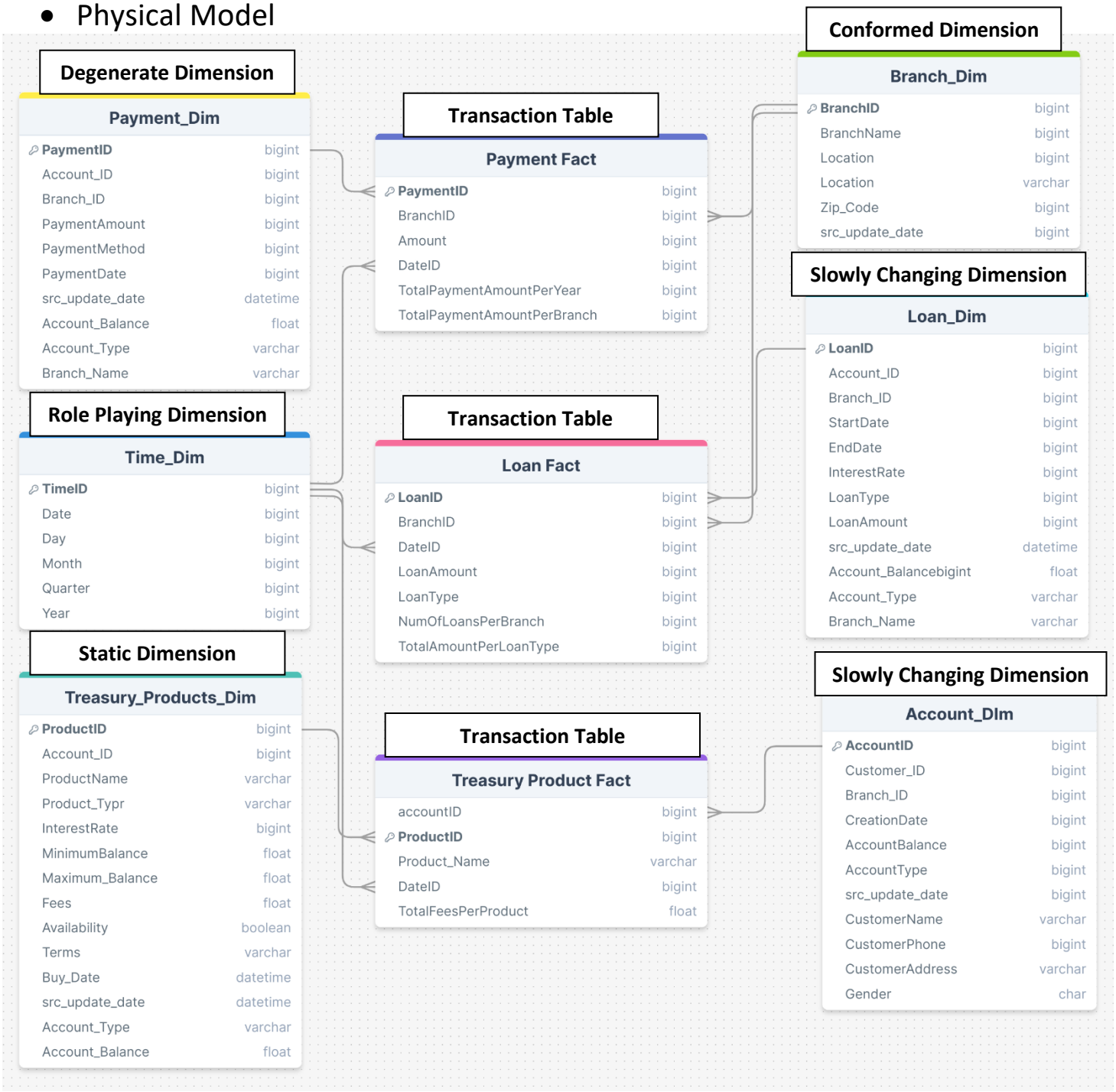
- Fact Tables:-

Fact table	Representation	Measures
Loan_Fact	This fact table represents information about loans granted by the bank. It contains data about loan amounts, type, interest rates, terms, and other loan-specific attributes with each Branch.	Total loans per branch Total loan amount per loan type
Product fact	This fact table represents information about the different products and services offered by the bank, such as mortgages, investments, insurance policies, etc. It includes data about the product type, pricing, terms, and other product-specific attributes.	Total fees per product
Payment fact	This fact table represents information about payments made by customers to the bank or received by customers from the bank. It includes data about the payment amount, date, time, location, and other payment-specific attributes. It also includes data about the accounts and customers involved in each payment transaction.	Total payment amount per year Total payment amount per branch

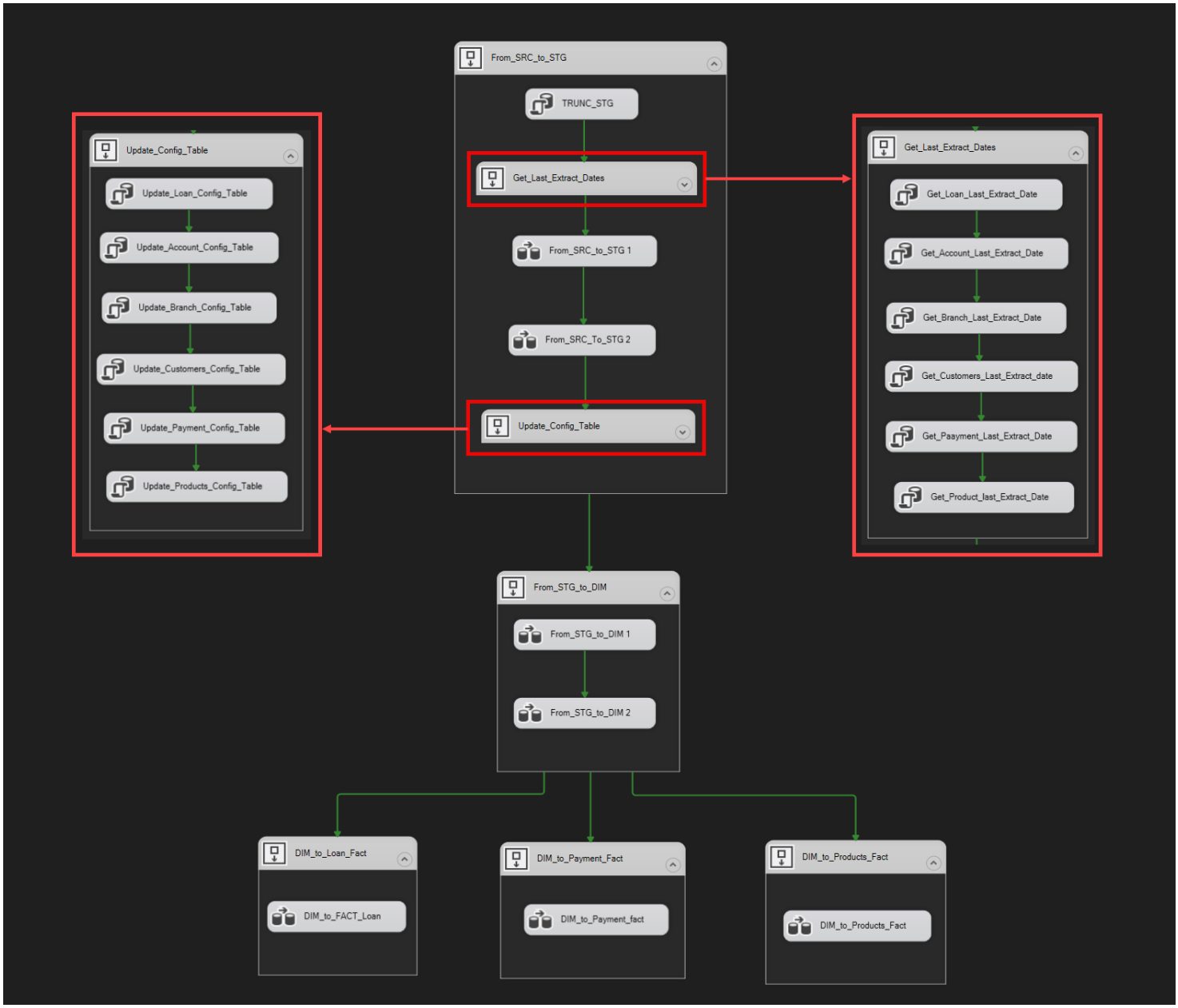
- Dimensions:-

Dimension Table	Representation
Time_Dim	This dimension is used to track various time-related information, such as date, day, month, quarter, year, etc. It can be used to filter and analyze data based on different time periods.
Treasury_Products_Dim	This dimension is used to track information related to different treasury products offered by the bank, such as savings accounts, money market accounts, certificates of deposit, etc. It can be used to analyze and compare different products based on their interest rates, fees, minimum balance requirements, etc.
Branch_Dim	This dimension is used to track information related to the various branches of the bank, such as branch location, address, phone number, etc. It can be used to filter and analyze data based on different branches.
Loan_Dim	This dimension is used to track information related to loans offered by the branch that made by a specific customer, such as loan type, interest rate, loan amount, start date, end date, etc. It can be used to analyze and compare different loans based on their terms and performance
Account_DIm	This dimension is used to track information related to bank accounts, such as account type, account balance, creation date, etc. It can be used to analyze and compare different accounts based on their performance and contains informations about the customer who have this account such as customer name,phone,address.
Payment_Dim	This dimension is used to track information related to payments made by customers in a specific branch , such as payment amount, payment date, payment method, etc. It can be used to analyze and compare different payments based on their amounts and sources.

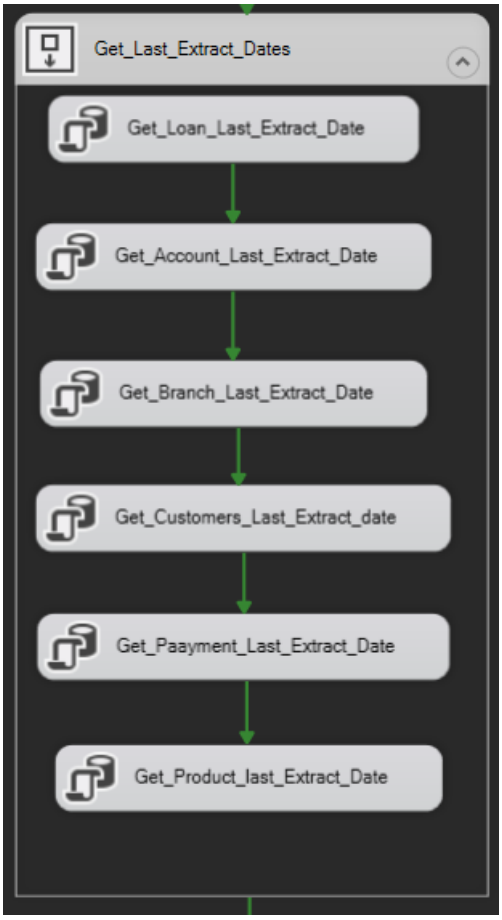
- Physical Model



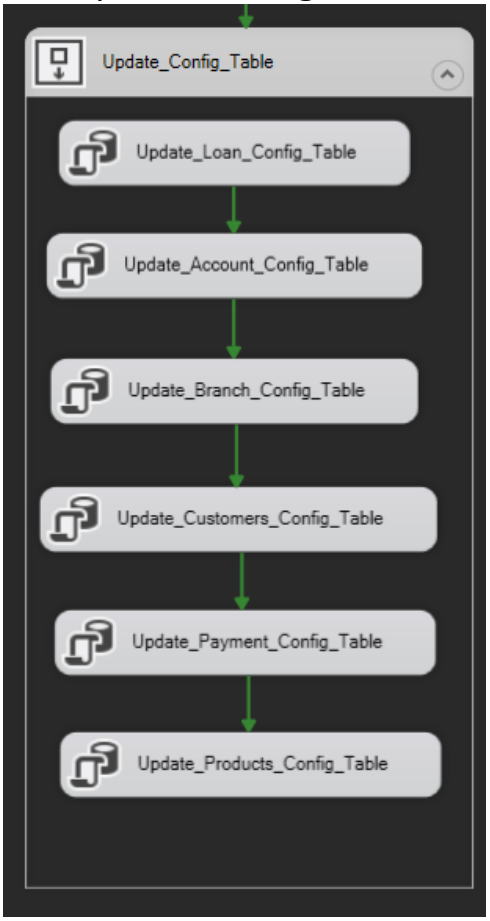
- Control Flow:-



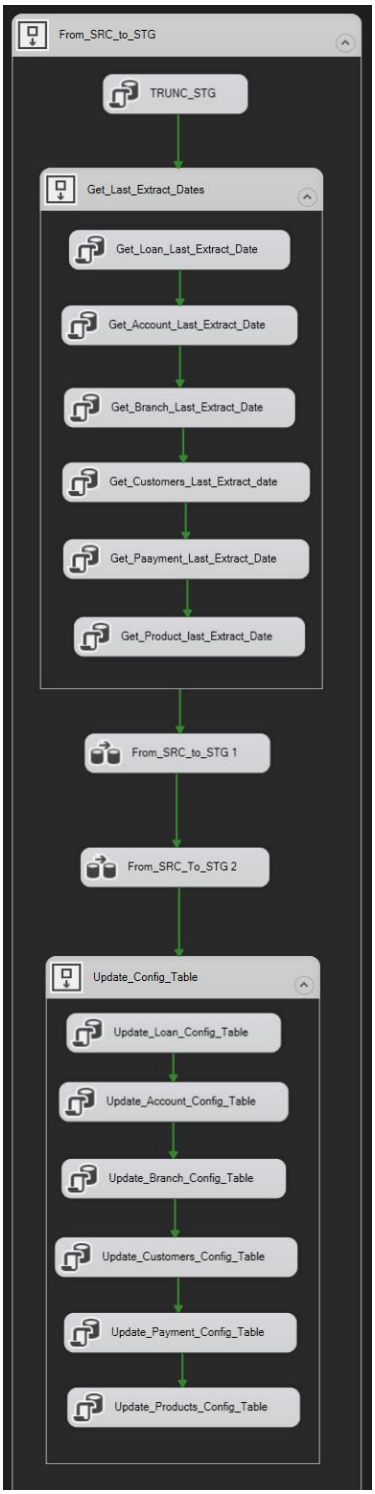
- Data Flow Tasks:-
  1. Last Extract Date



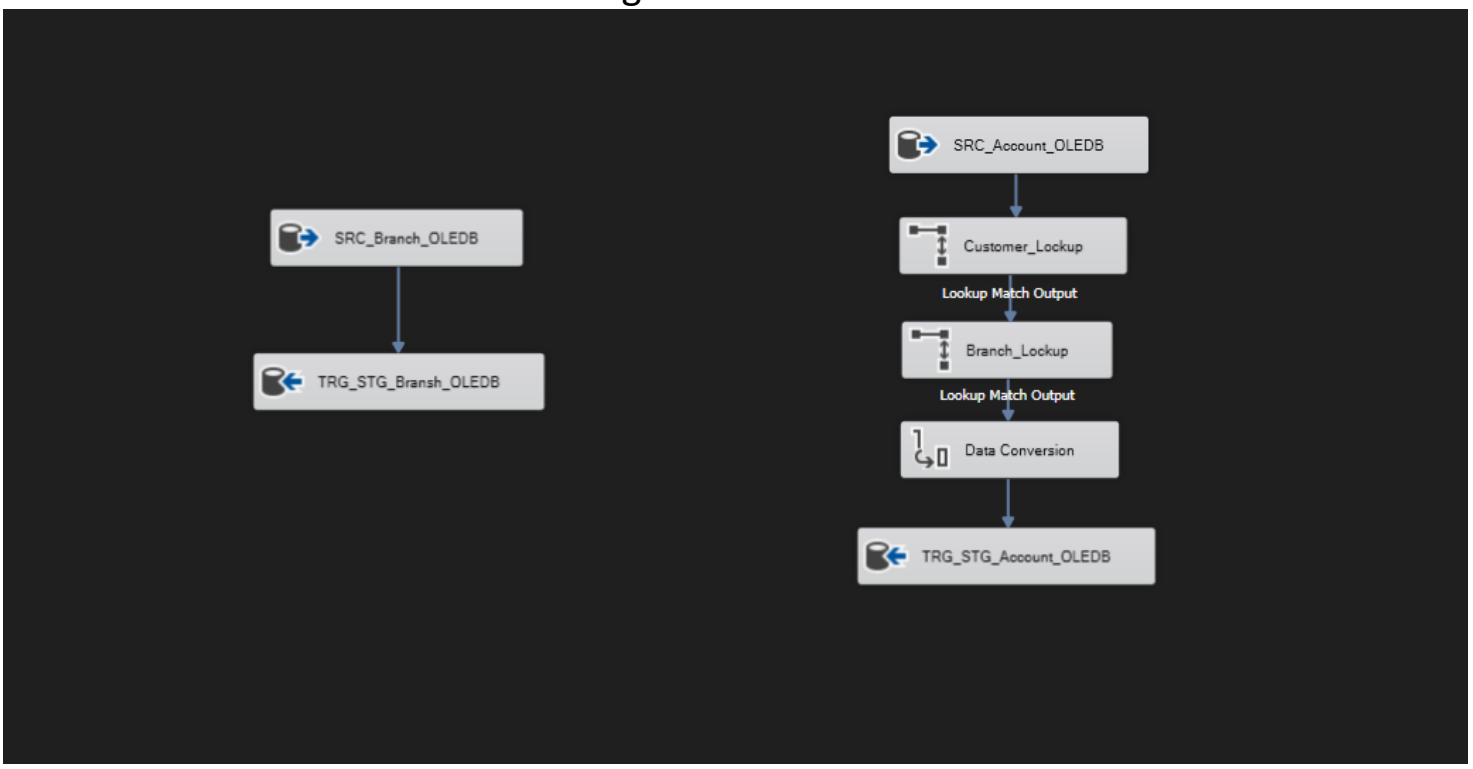
  2. Update Config Table



3. From Source to Stage

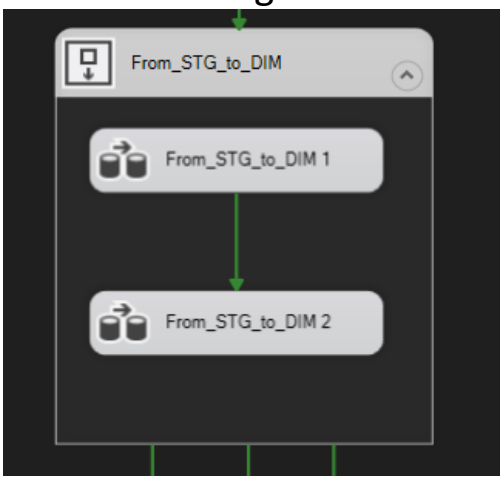


a. From Source to Stage 1

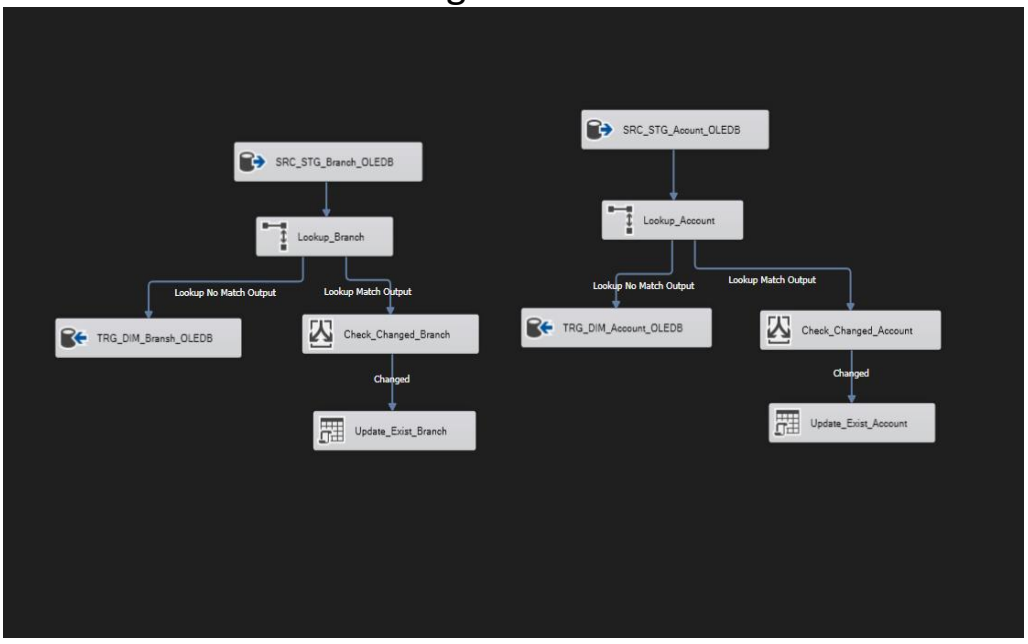


b. From Source to Stage 2

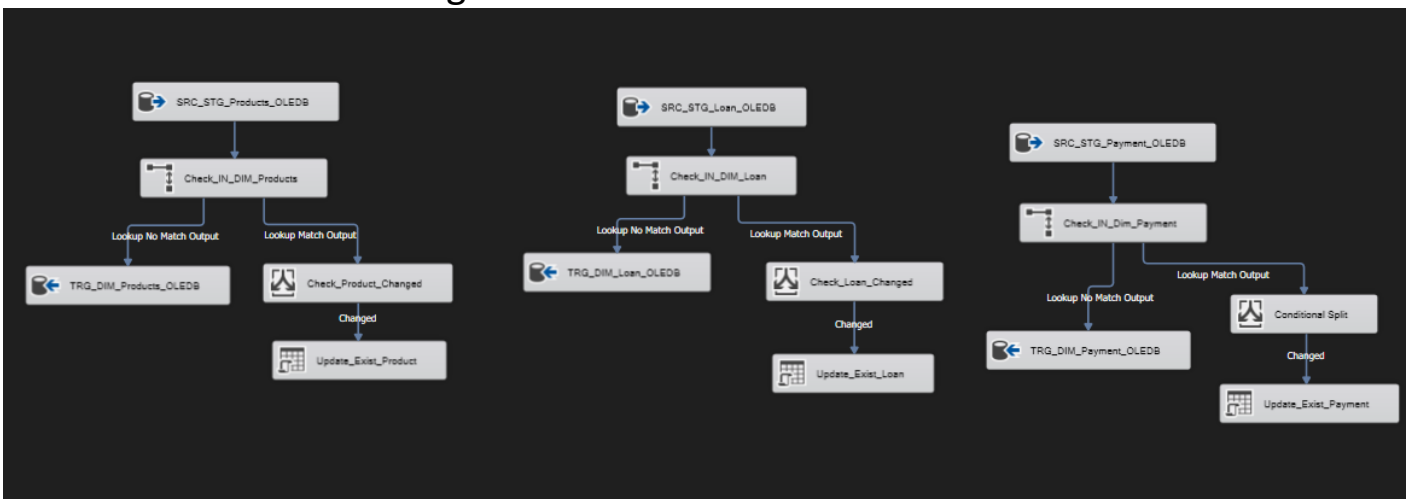
4. From Stage to Dim



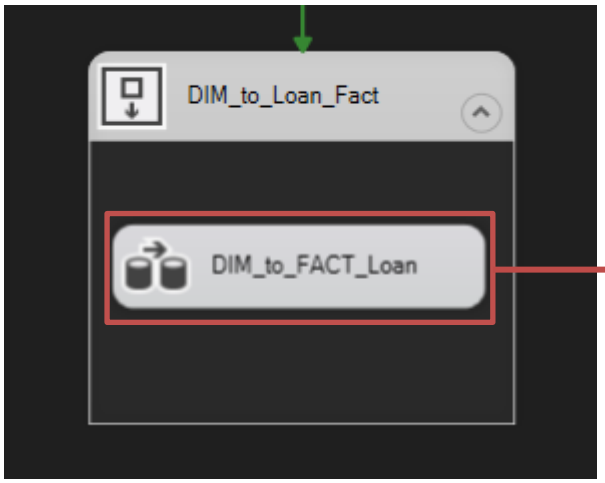
a. From Stage to Dim 1

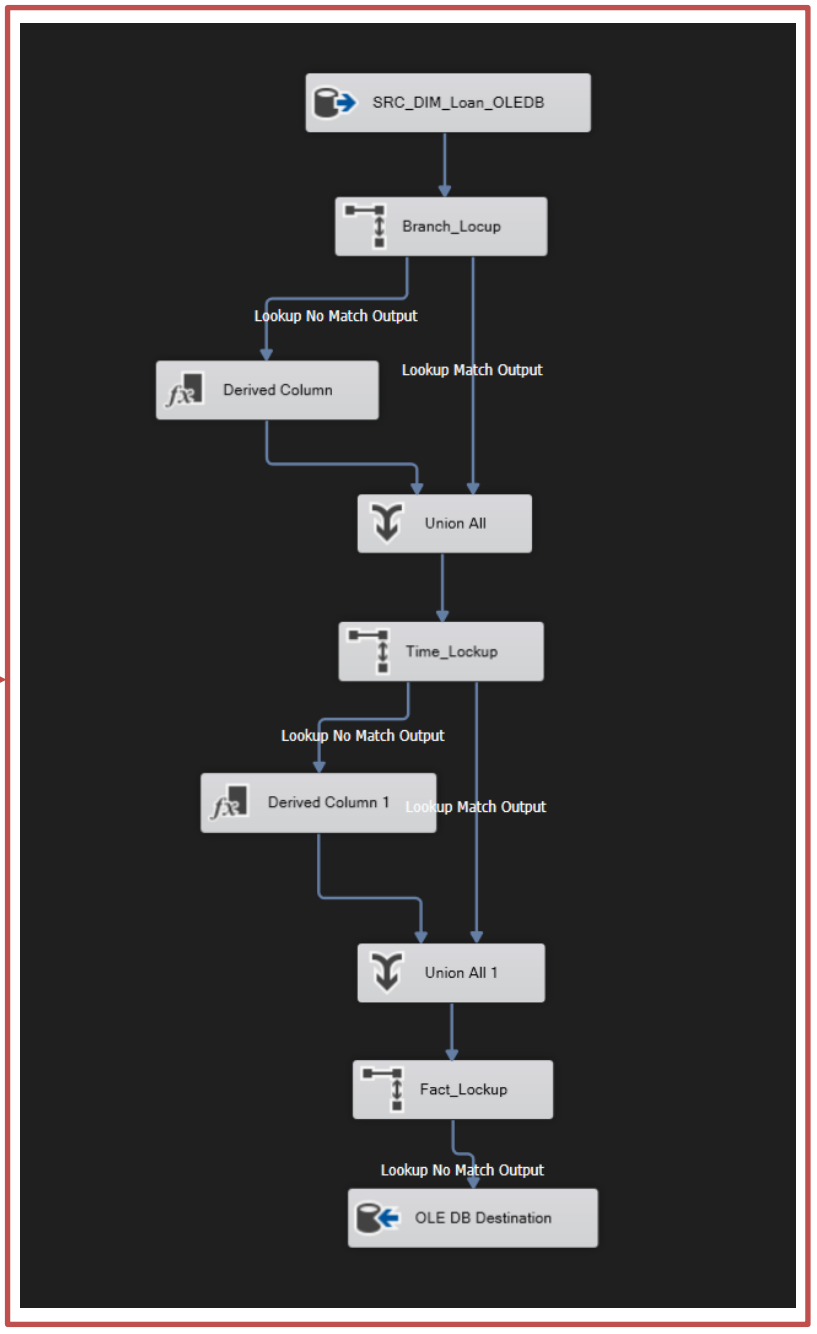


b. From Stage to Dim 2

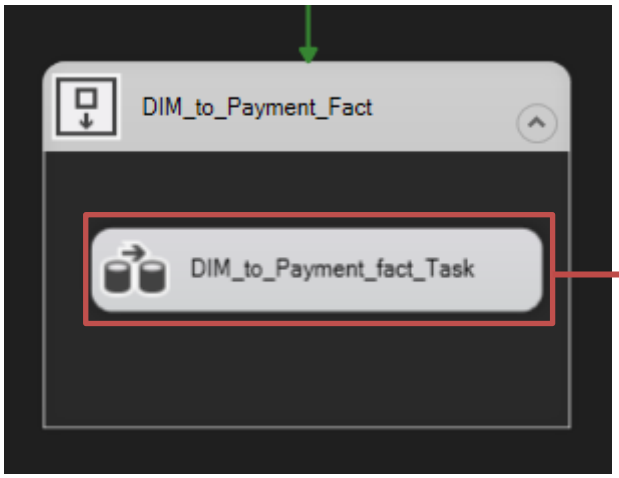


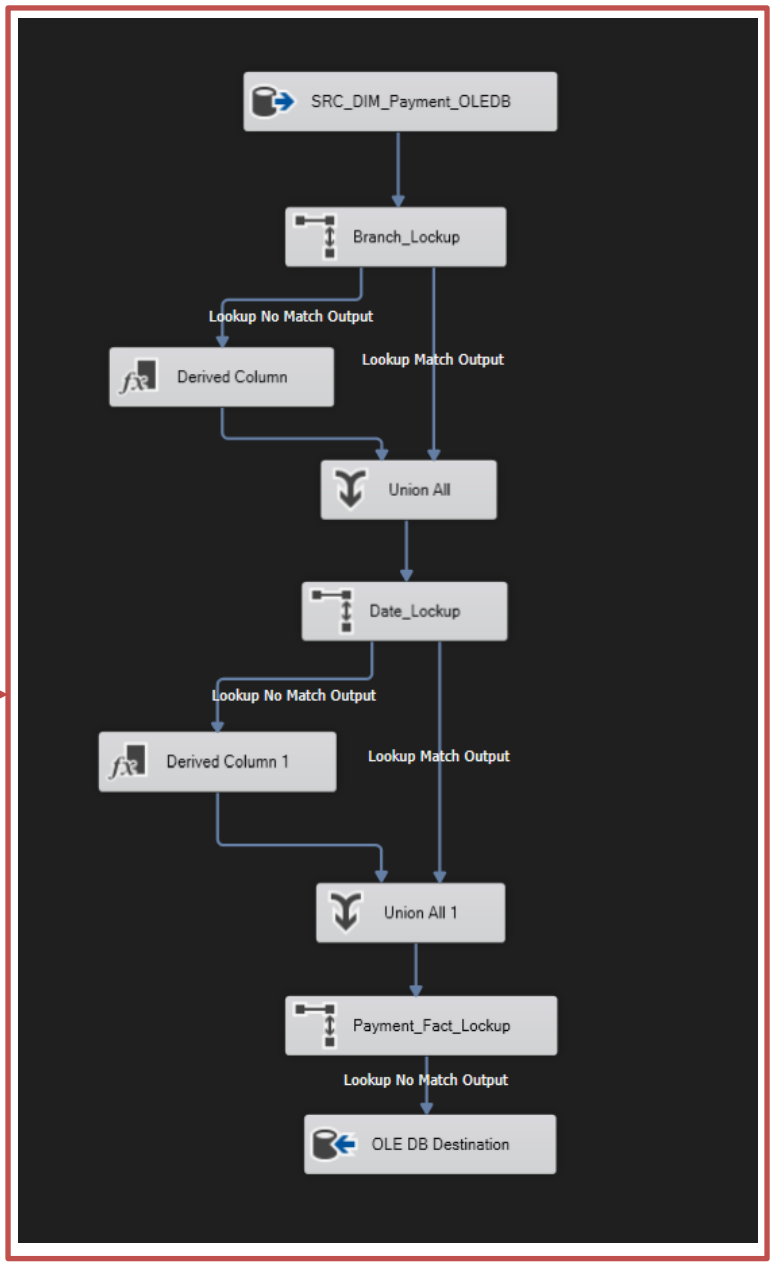
5. Dimension to Fact Loan



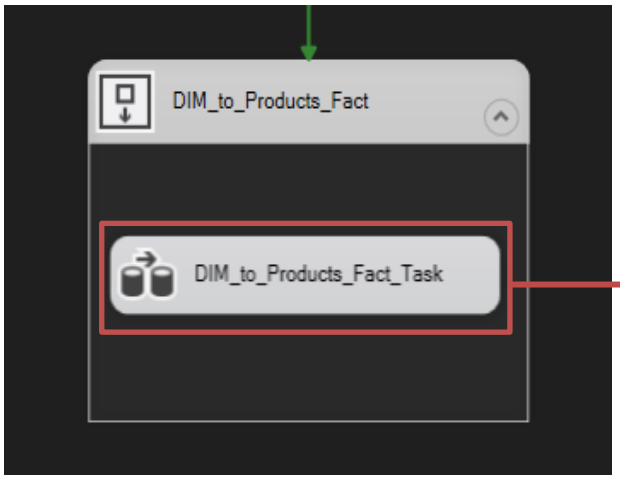


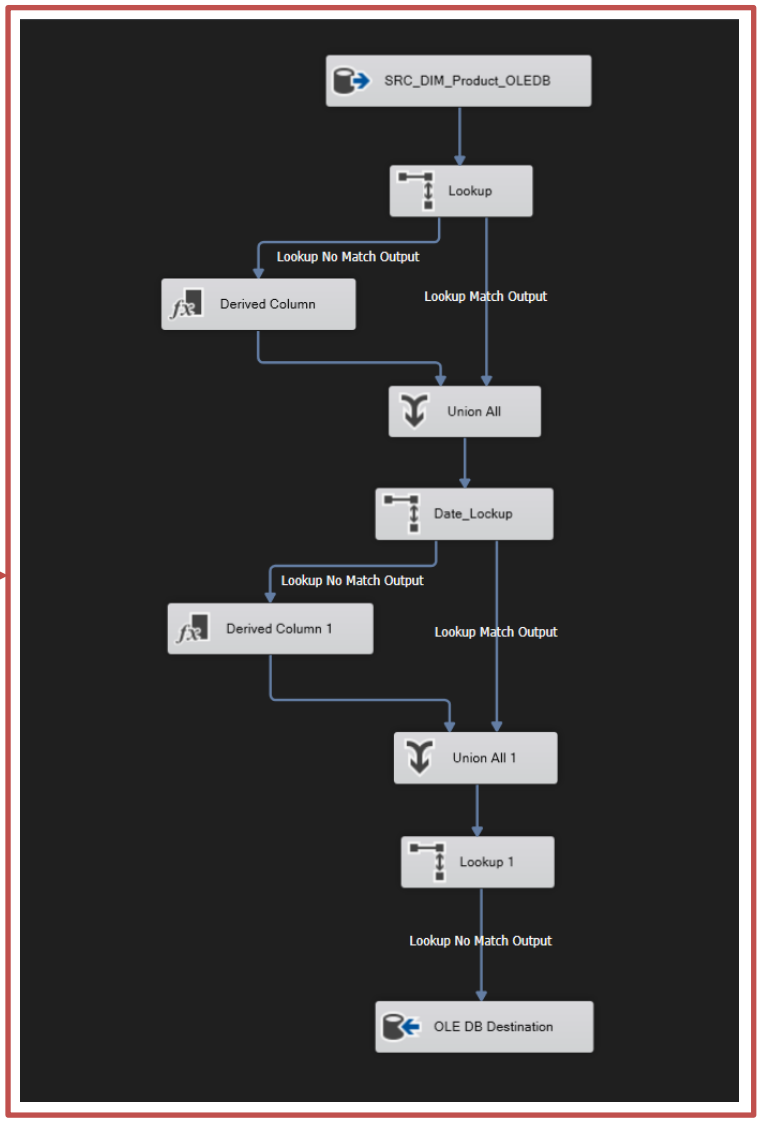
6. Dimension to Fact Payment



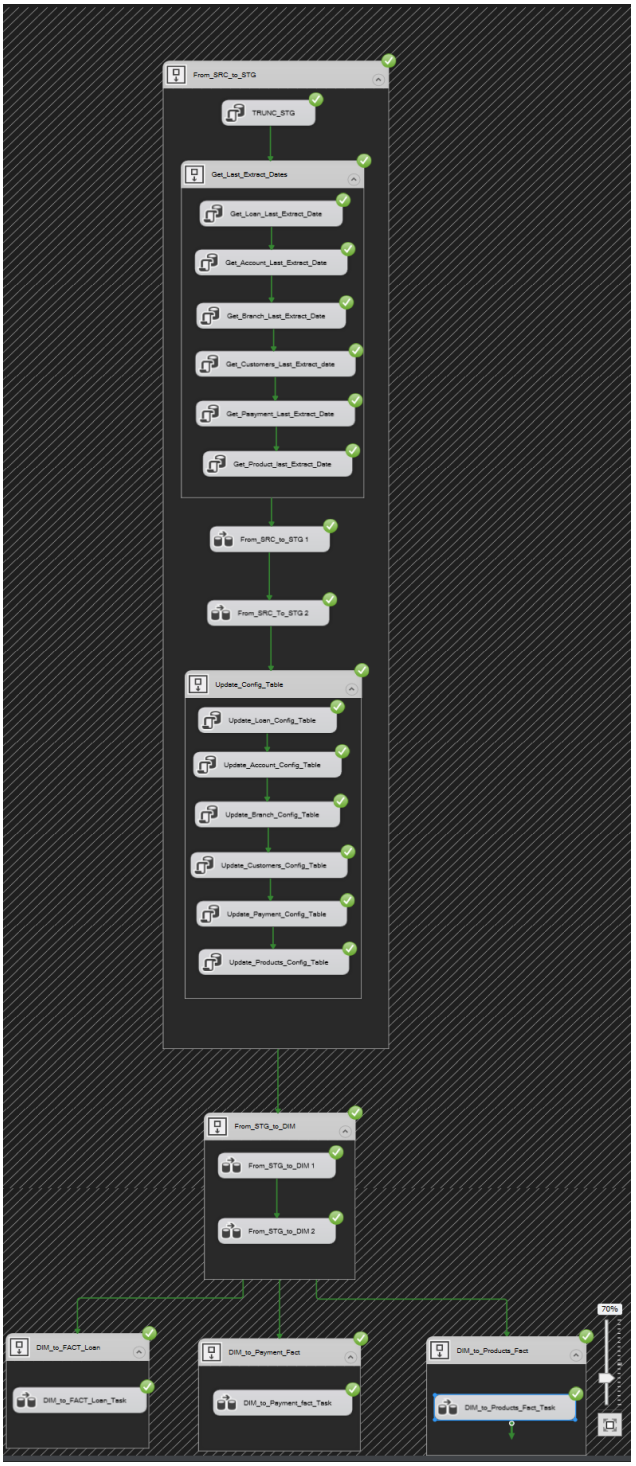


7. Dimension to Fact Products

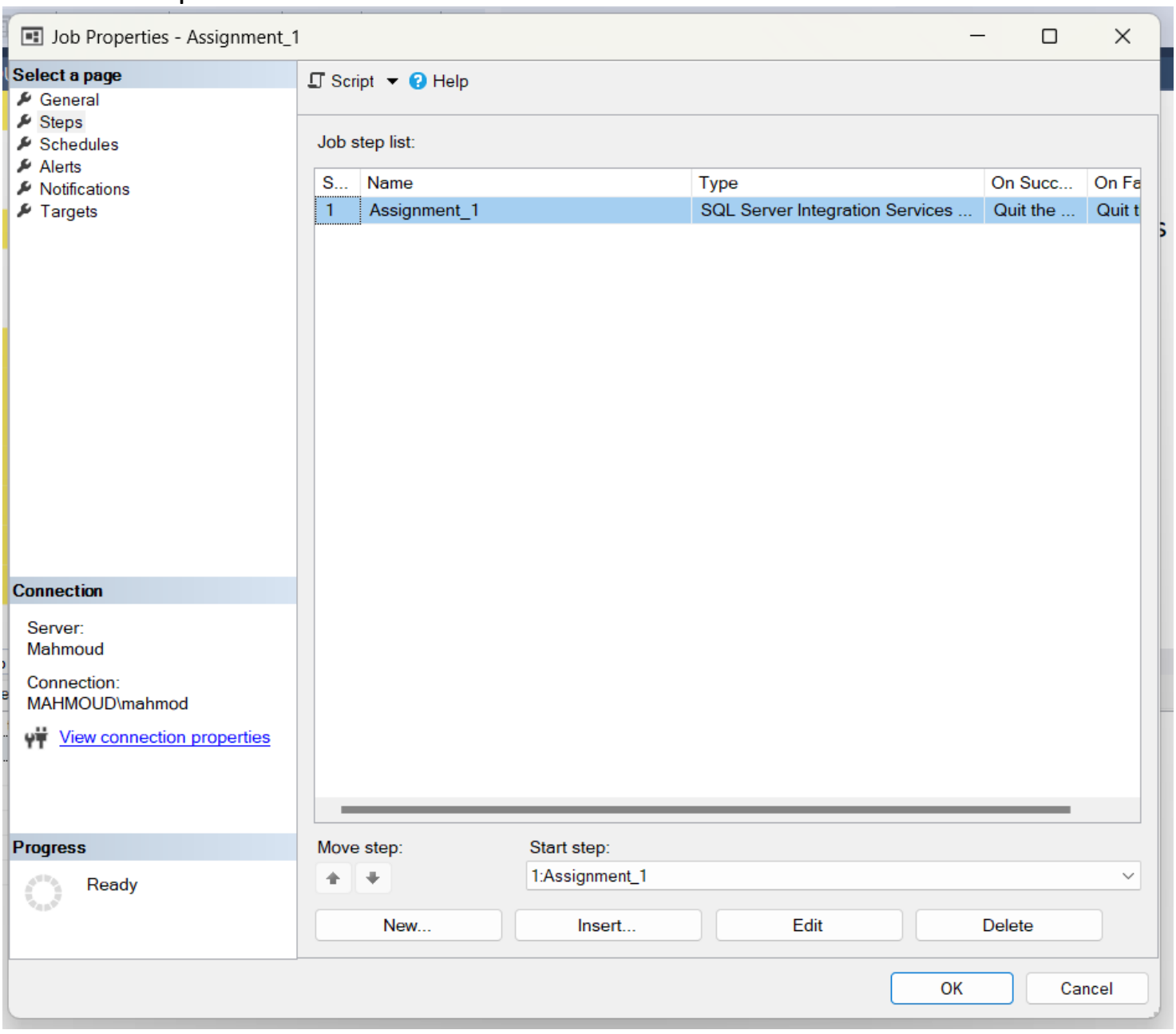




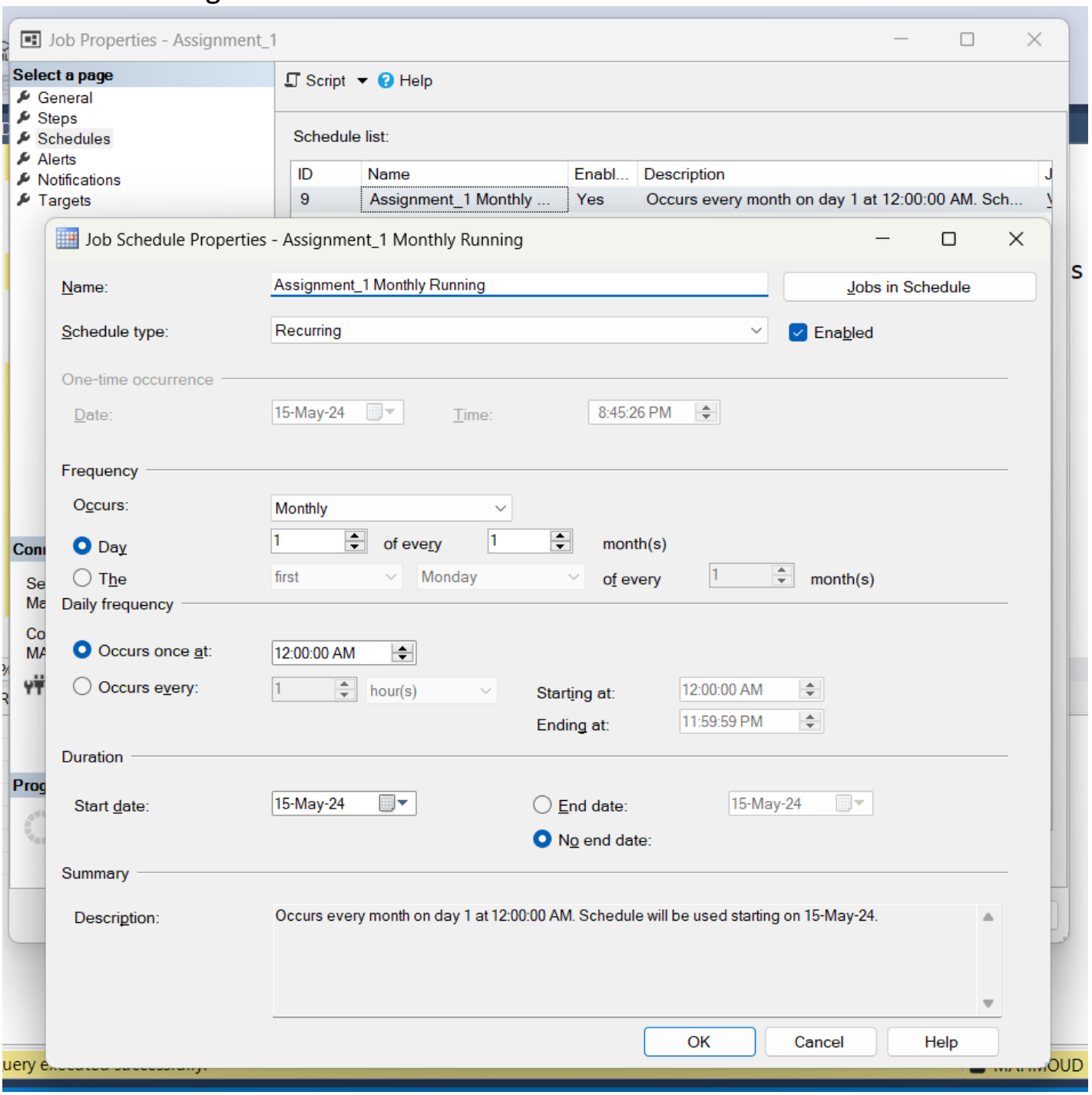
- Running SSIS



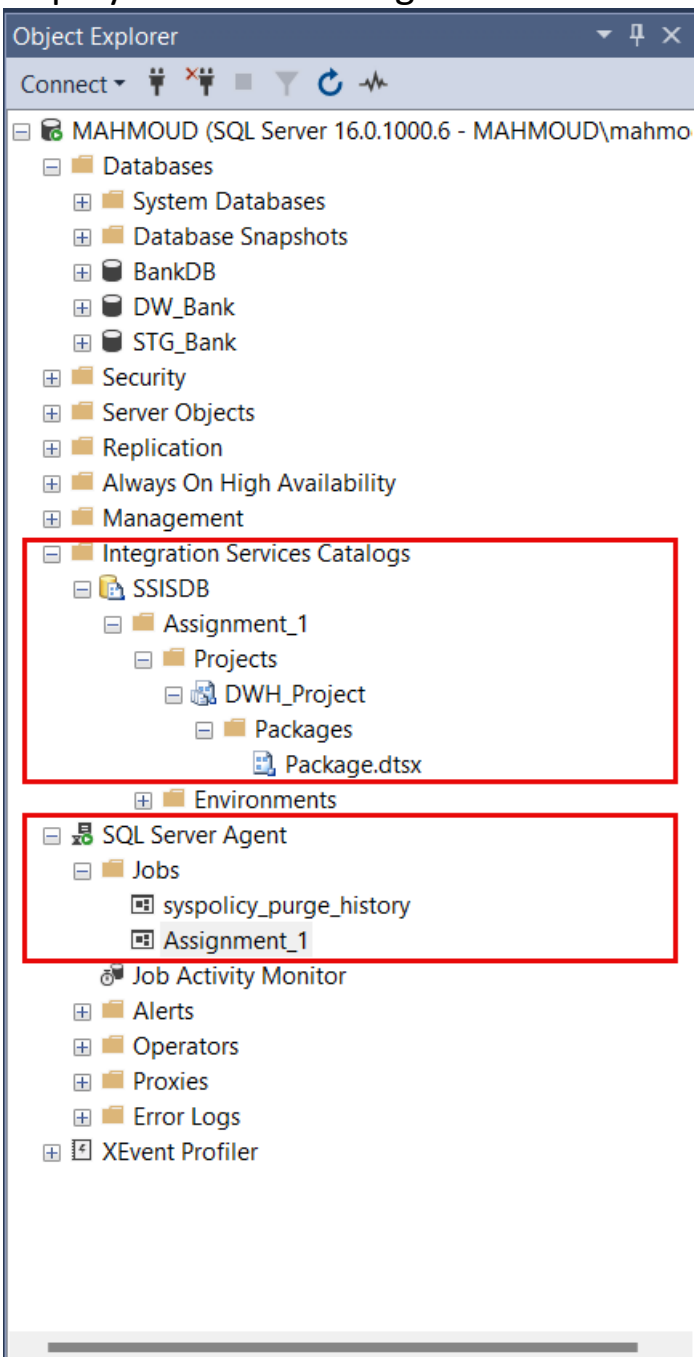
- Job Step


Job Properties - Assignment_1
Select a page
General
Steps
Schedules
Alerts
Notifications
Targets
Script
Help
Job step list:
S...
Name
Type
On Succ...
On Fa
1
Assignment_1
SQL Server Integration Services ...
Quit the ...
Quit t
Connection
Server:
Mahmoud
Connection:
MAHMOUD\mahmod
View connection properties
Progress
Ready
Move step:
Start step:
1:Assignment_1
New...
Insert...
Edit
Delete
OK
Cancel

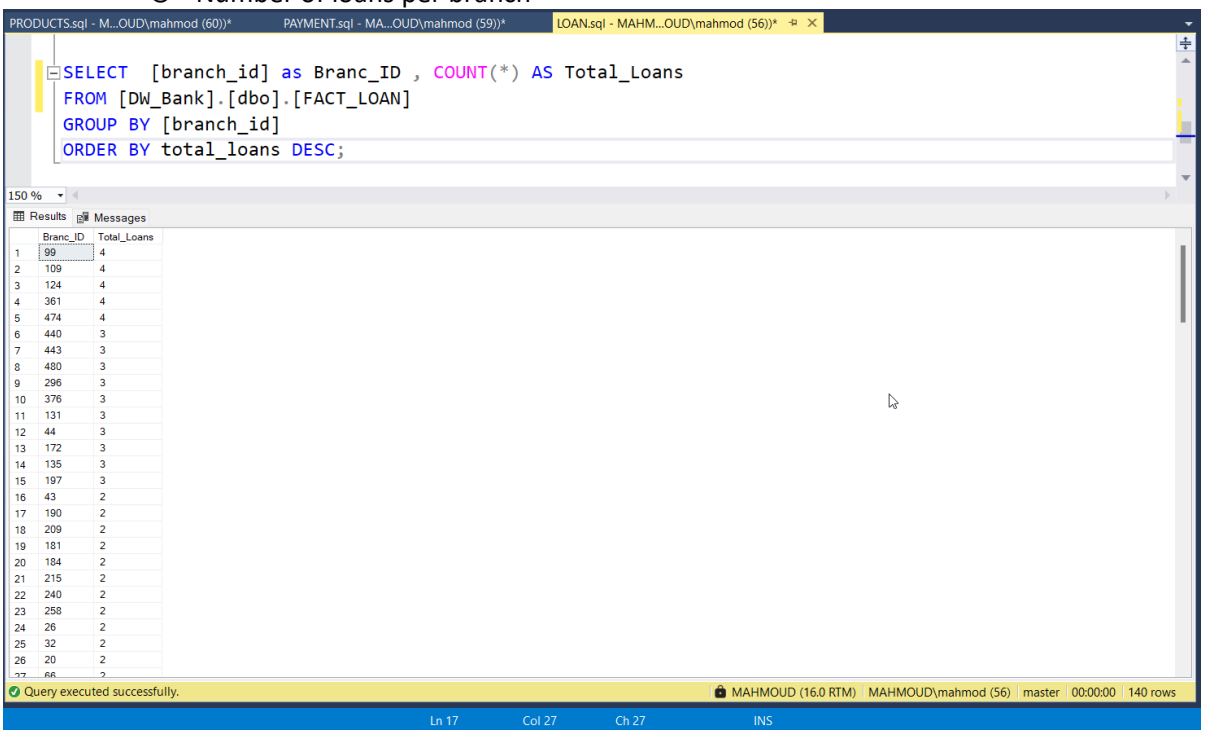
- Scheduling


Job Properties - Assignment_1
Select a page
General
Steps
Schedules
Alerts
Notifications
Targets
Script
Help
Schedule list:
ID
Name
Enabl...
Description
9
Assignment_1 Monthly ...
Yes
Occurs every month on day 1 at 12:00:00 AM. Sch...
Job Schedule Properties - Assignment_1 Monthly Running
Name:
Assignment_1 Monthly Running
Jobs in Schedule
Schedule type:
Recurring
Enabled
One-time occurrence
Date:
15-May-24
Time:
8:45:26 PM
Frequency
Occurs:
Monthly
Day
1
of every
1
month(s)
The
first
Monday
of every
1
month(s)
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:
15-May-24
End date:
15-May-24
No end date:
Summary
Description:
Occurs every month on day 1 at 12:00:00 AM. Schedule will be used starting on 15-May-24.
OK
Cancel
Help

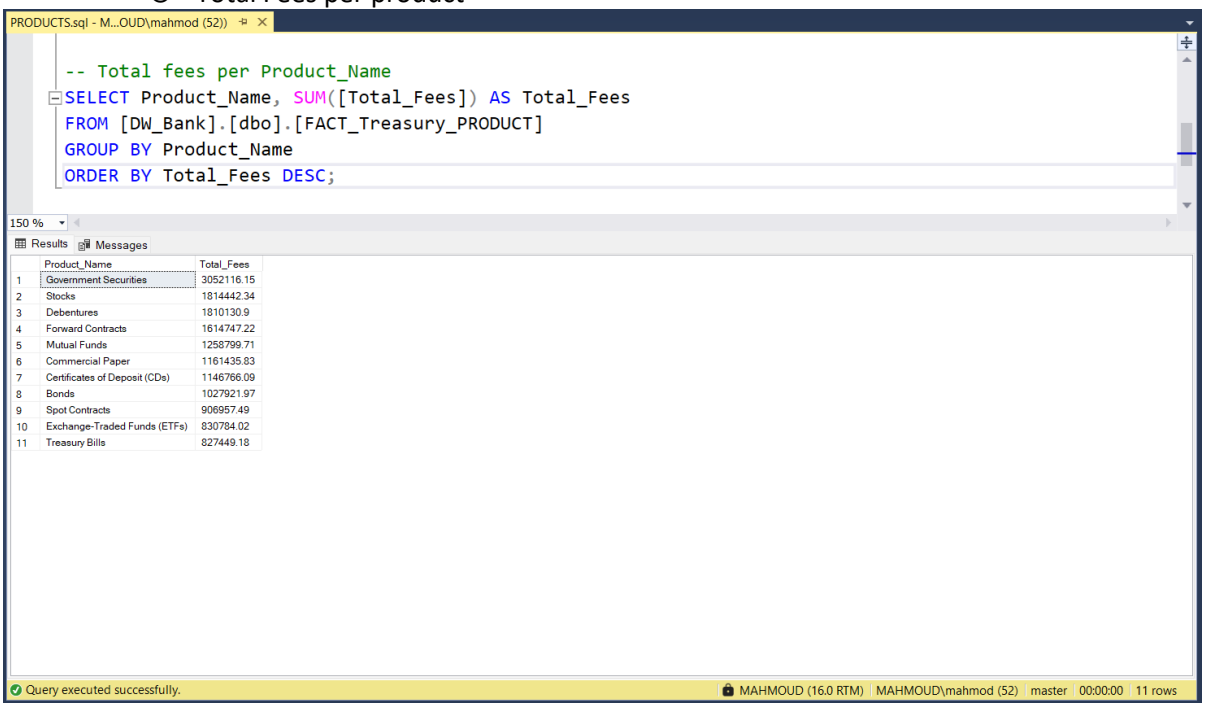
- Deployment Scheduling



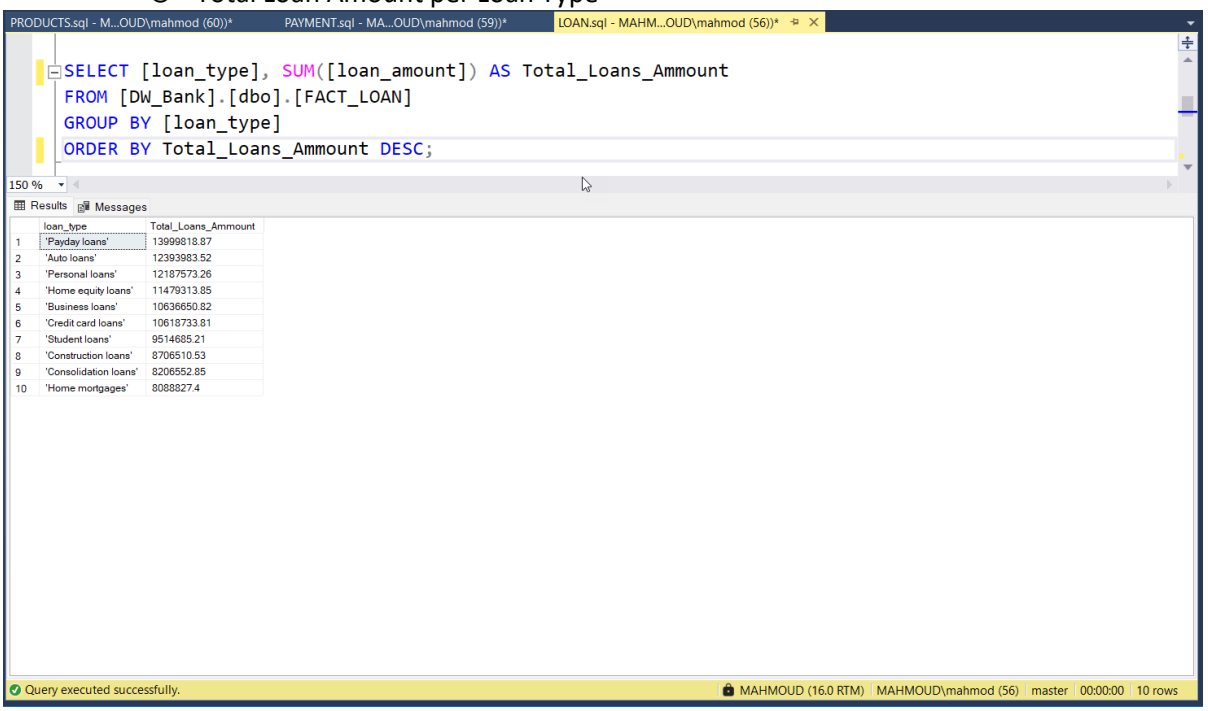
- Queries
  - Number of loans per branch



  - Total Fees per product



- Total Loan Amount per Loan Type

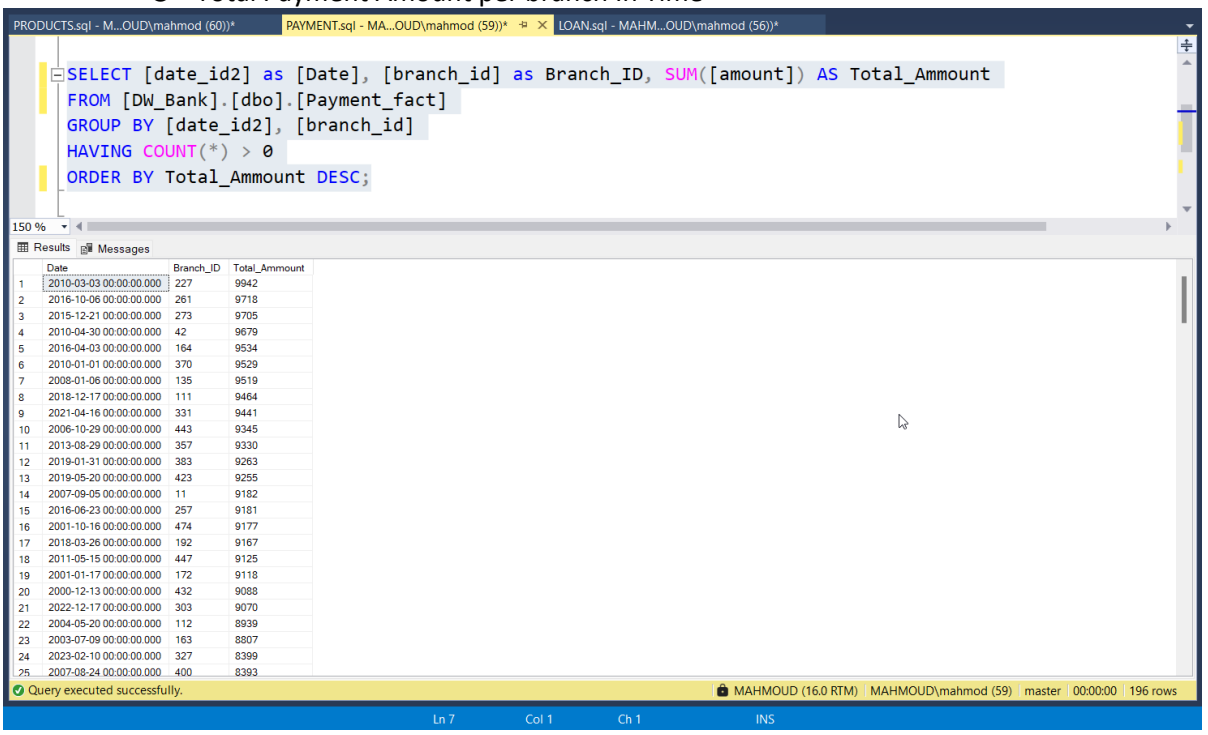


```
SELECT [loan_type], SUM([loan_amount]) AS Total_Loans_Ammount
FROM [DW_Bank].[dbo].[FACT_LOAN]
GROUP BY [loan_type]
ORDER BY Total_Loans_Ammount DESC;
```

	loan_type	Total_Loans_Ammount
1	'Payday loans'	13999818.87
2	'Auto loans'	12393983.52
3	'Personal loans'	12187573.26
4	'Home equity loans'	11479313.85
5	'Business loans'	10636650.82
6	'Credit card loans'	10618733.81
7	'Student loans'	9514685.21
8	'Construction loans'	8706510.53
9	'Consolidation loans'	8206552.85
10	'Home mortgages'	8088827.4

Query executed successfully. MAHMOUD (16.0 RTM) | MAHMOUD\mahmod (56) | master | 00:00:00 | 10 rows

- Total Payment Amount per branch In Time



```
SELECT [date_id2] as [Date], [branch_id] as Branch_ID, SUM([amount]) AS Total_Ammount
FROM [DW_Bank].[dbo].[Payment_fact]
GROUP BY [date_id2], [branch_id]
HAVING COUNT(*) > 0
ORDER BY Total_Ammount DESC;
```

	Date	Branch_ID	Total_Ammount
1	2010-03-03 00:00:00.000	227	9942
2	2016-10-06 00:00:00.000	261	9718
3	2015-12-21 00:00:00.000	273	9705
4	2010-04-30 00:00:00.000	42	9679
5	2016-04-03 00:00:00.000	164	9534
6	2010-01-01 00:00:00.000	370	9529
7	2008-01-06 00:00:00.000	135	9519
8	2018-12-17 00:00:00.000	111	9464
9	2021-04-16 00:00:00.000	331	9441
10	2006-10-29 00:00:00.000	443	9345
11	2013-08-29 00:00:00.000	357	9330
12	2019-01-31 00:00:00.000	383	9263
13	2019-05-20 00:00:00.000	423	9255
14	2007-09-05 00:00:00.000	11	9182
15	2016-06-23 00:00:00.000	257	9181
16	2001-10-16 00:00:00.000	474	9177
17	2018-03-26 00:00:00.000	192	9167
18	2011-05-15 00:00:00.000	447	9125
19	2001-01-17 00:00:00.000	172	9118
20	2000-12-13 00:00:00.000	432	9088
21	2022-12-17 00:00:00.000	303	9070
22	2004-05-20 00:00:00.000	112	8939
23	2003-07-09 00:00:00.000	163	8807
24	2023-02-10 00:00:00.000	327	8399
25	2007-08-24 00:00:00.000	400	8393

Query executed successfully. MAHMOUD (16.0 RTM) | MAHMOUD\mahmod (59) | master | 00:00:00 | 196 rows

Ln 7 Col 1 Ch 1 INS

- Dashboard


Total Loan_Amount per Loan_Type
9.51M (8.99%)
12.39M (11.71%)
12.19M (11.52%)
10.64M (10.05%)
8.21M (7.75%)
14M (13.23%)
8.71M (8.23%)
8.09M (7.64%)
10.62M (10.03%)
11.48M (10.85%)
loan_type
'Auto loans'
'Business loans'
'Consolidation loans'
'Construction loans'
'Credit card loans'
'Home equity loans'
'Home mortgages'
'Payday loans'
'Personal loans'
'Student loans'
Payment_Ammount by Year
200K
150K
100K
50K
0K
Payment_Ammount
2000
2010
2020
Year
Payment ammount per branch per year
Year
branch_id
Payment_Ammount
2023 327 16,798.00
2022 108 3,930.00
2022 126 7,392.00
2022 137 2,452.00
2022 151 610.00
2022 248 5,798.00
2022 292 16,640.00
2022 303 18,140.00
2022 326 11,608.00
2022 402 1,938.00
2022 430 10,438.00
2022 435 480.00
2021 151 6,310.00
2021 192 8,478.00
2021 328 9,286.00
2021 330 5,454.00
Num of Loans per Branch
loan_type
'Auto loans'
'Business loans'
'Consolidation loans'
'Construction loans'
'Credit card loans'
'Home equity loans'
'Home mortgages'
'Payday loans'
'Personal loans'
'Student loans'
branch_id
10
11
16
20
23
25
26
32
36
43
44
50
0
1
2
3
4
Num of Loans per Branch
Total Fees per Product Name
0.83M (5.36%)
0.83M (5.38%)
3.05M (19.75%)
0.91M (5.87%)
1.03M (6.65%)
1.81M (11.74%)
1.15M (7.42%)
1.16M (7.52%)
1.81M (11.71%)
1.26M (8.15%)
1.61M (10.45%)
Product_Name
Government Securities
Stocks
Debentures
Forward Contracts
Mutual Funds
Commercial Paper
Certificates of Deposit (CDs)
Bonds
Spot Contracts
Exchange-Traded Funds (ETFs)
Treasury Bills