# Automotive Dealership Database Design

**-Edison Wang**

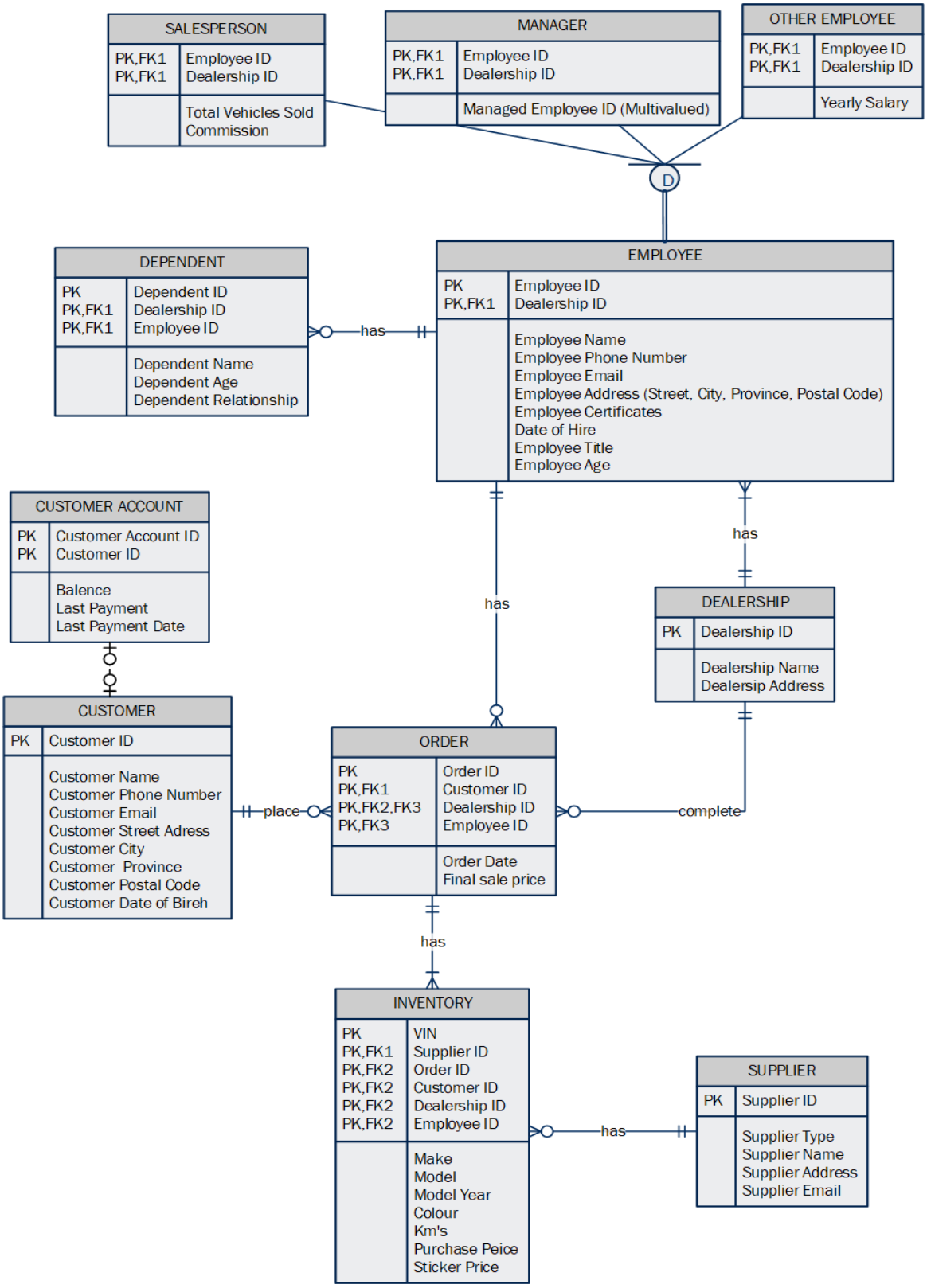
## Overview:

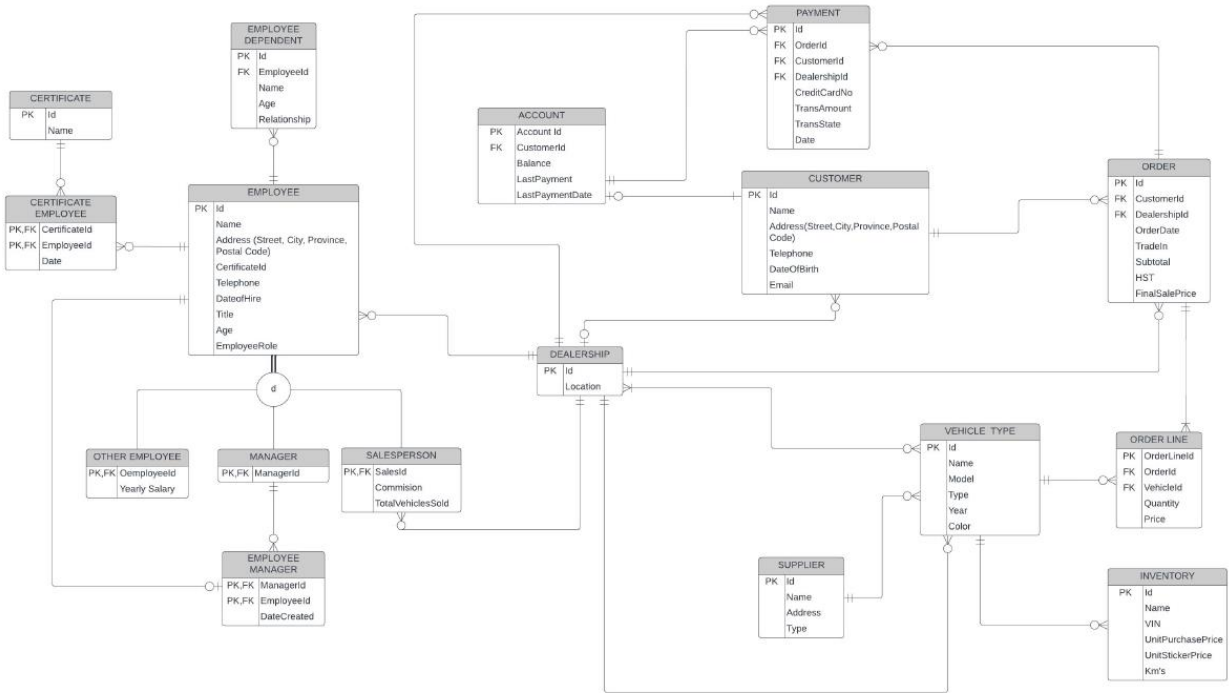
-Design a database management system for a chain of stores that sell used vehicles. Owner requires this system to track details about inventory, employees, sales and customers, etc.

-Database Name: “WonderfulWheels”.

-Star Schema

**Step1: Design Entity Relationship diagrams:**






Manager

| Manager Id | Salesperson Id | Reportee | Employee Id |
|---|---|---|---|

Salesperson

| Salesperson Id | Manager Id | Total Vehicles Sold | Commission | Employee Id |
|---|---|---|---|---|

Employee

| Employee Id | Name | Phone Number | Email | Street | City | Province | Postal Code | Dealership Id | Certificate | Date of Hire | Title | Age |
|---|---|---|---|---|---|---|---|---|---|---|---|---|

Dependent

| Dependent Id | Name | Age | Relationship | Employee Id |
|---|---|---|---|---|

Dealership

| Dealership Id | Name | Address |
|---|---|---|

Customer Account

| Customer Account Id | Customer Id | Balance | Last Payment | Last Payment Date |
|---|---|---|---|---|

Customer

| Customer Id | Name | Number | Customer Account Id | Street | City | Province | Postal Code | Date of Birth | Dealership Id | Email |
|---|---|---|---|---|---|---|---|---|---|---|

Order

| Order Id | Employee Id | Customer Id | Purchase Price | Invoice Number |
|---|---|---|---|---|

Billing Information

| Invoice Number | Invoice Date | Trade in Amount | Selling Price | HST |
|---|---|---|---|---|

Order Line

| Order Line Id | Quantity | Order Id | Vehicle Id |
|---|---|---|---|

Vehicle

| Vehicle Id | Make | Model | Model Year | VIN | Supplier Id | Colour | Km's | Purchase Price | Sticker Price | Dealership Id | Inventory Id |
|---|---|---|---|---|---|---|---|---|---|---|---|

Inventory

| Inventory Id | Name |
|---|---|

Supplier

| Supplier Id | Supplier Type | Name | Email | Street | City | Province | Postal Code |
|---|---|---|---|---|---|---|---|

Auction

| Auction Id | Supplier Id | Name |
|---|---|---|

Bank

| Bank Id | Supplier id | Name |
|---|---|---|

Private Dealership

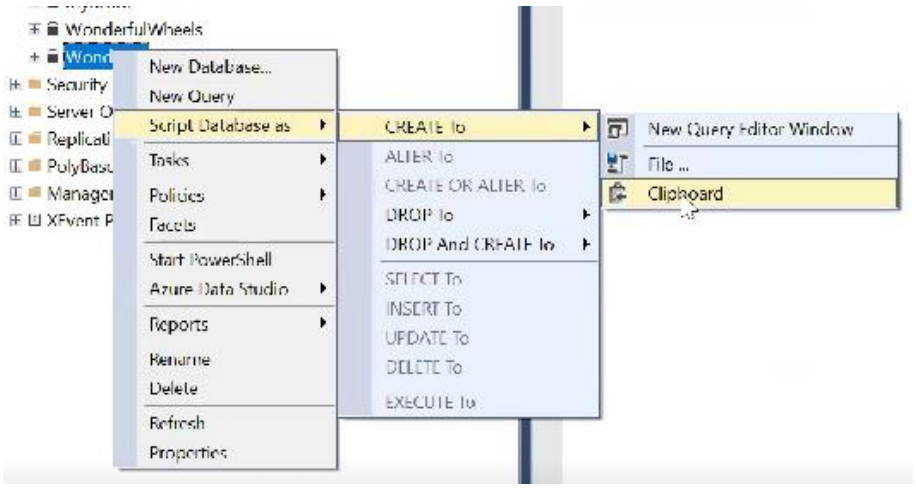
| Private Dealership Id | Supplier Id | Name |
|---|---|---|

Private Seller

| Private Seller Id | Supplier Id | Name |
|---|---|---|

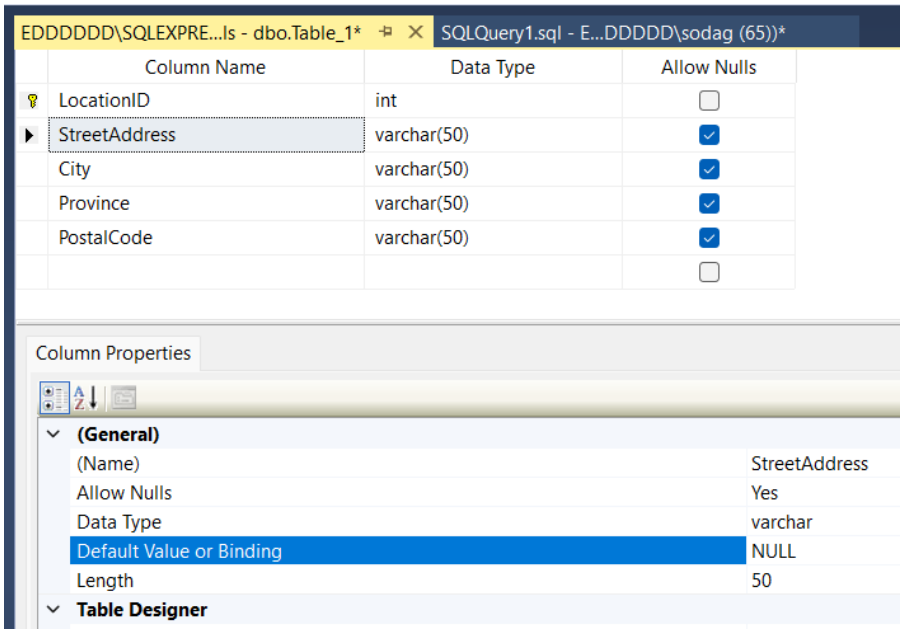
**Step2: Database Creation with constraints**:

1. Right click “Databases”: New Database -> WonderfulWheels -> OK

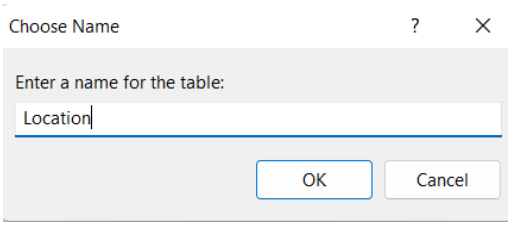



2. Create tables:
   WonderfulWheels -> Tables -> New Table -> Fill column names -> DataType -> [NULL]
   Right click on column name -> Set as primary key
   Continue filling other columns

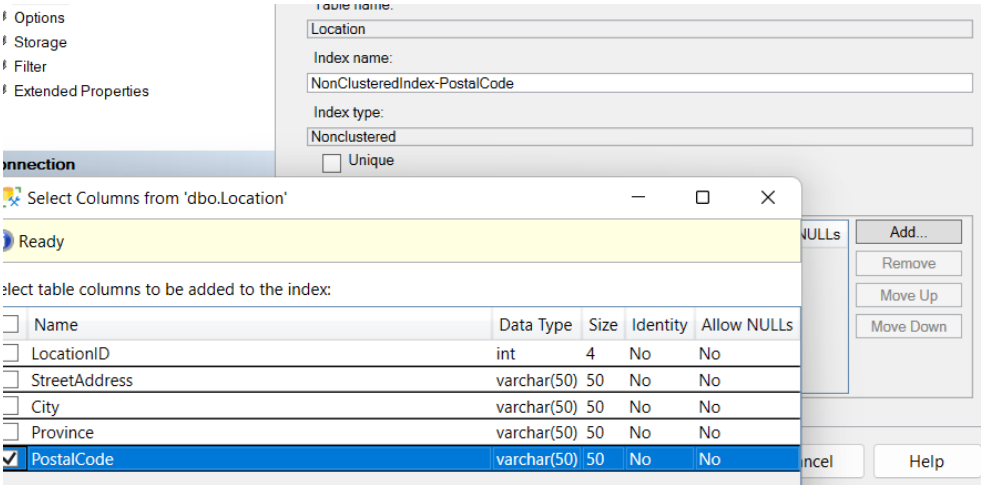
3. Setting Default Value: (column properties)



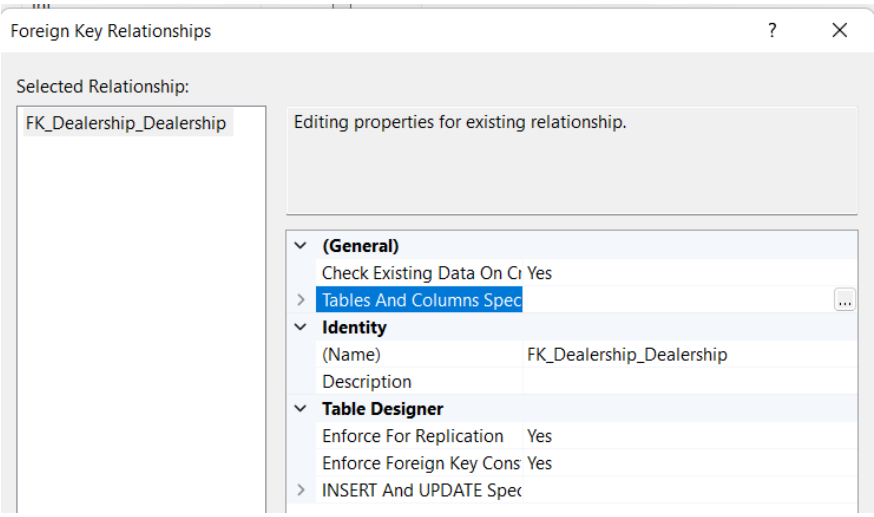
4. If need auto generated IDs:
   Click on ColName -> Column Properties -> Identity Specification -> Double Click (YES) -> Set Seed(Starting Value) and Increments.
5. Close window when ready -> Rename the table -> Refresh



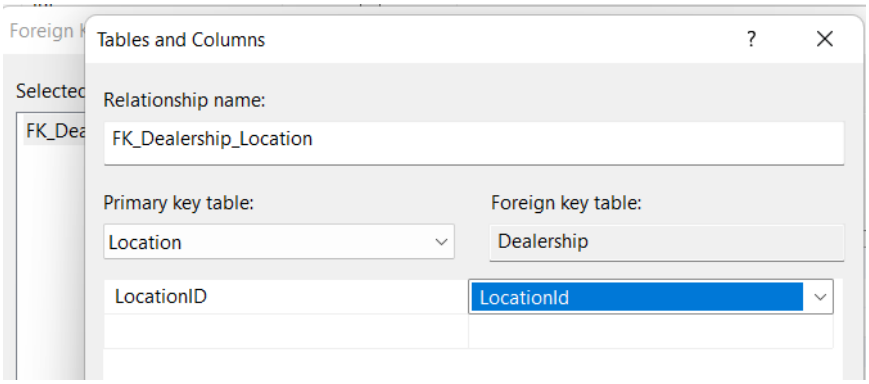

6. Index:
   Double Click on Table -> Right click Indexes -> New [Non Clustered Index] -> Rename Index -> Add the desired columns:



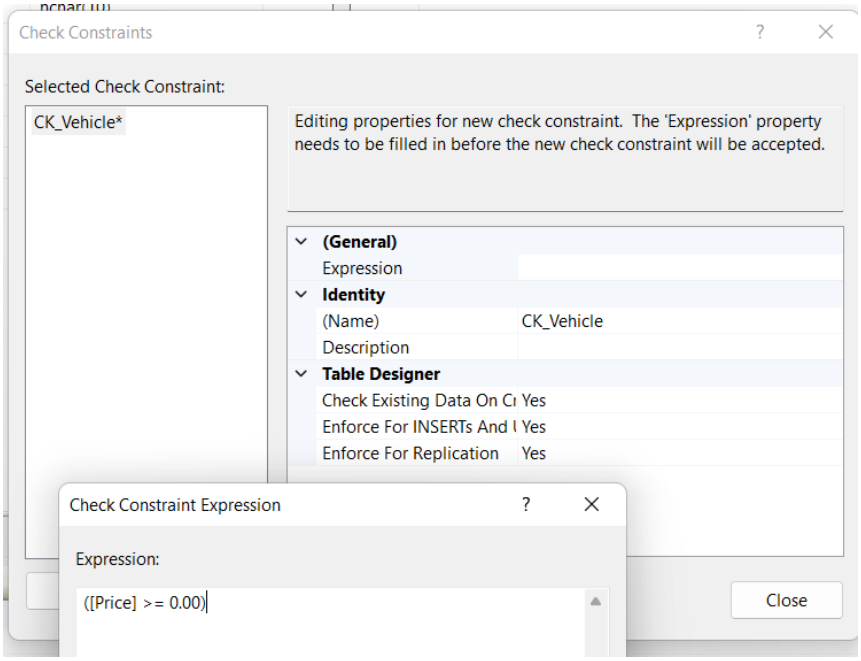

7. Setting Foreign Keys: (Column can not be NULL)
   Inside the table with foreign key: right click in black -> Relationships (Add)



Click on the 3 dots

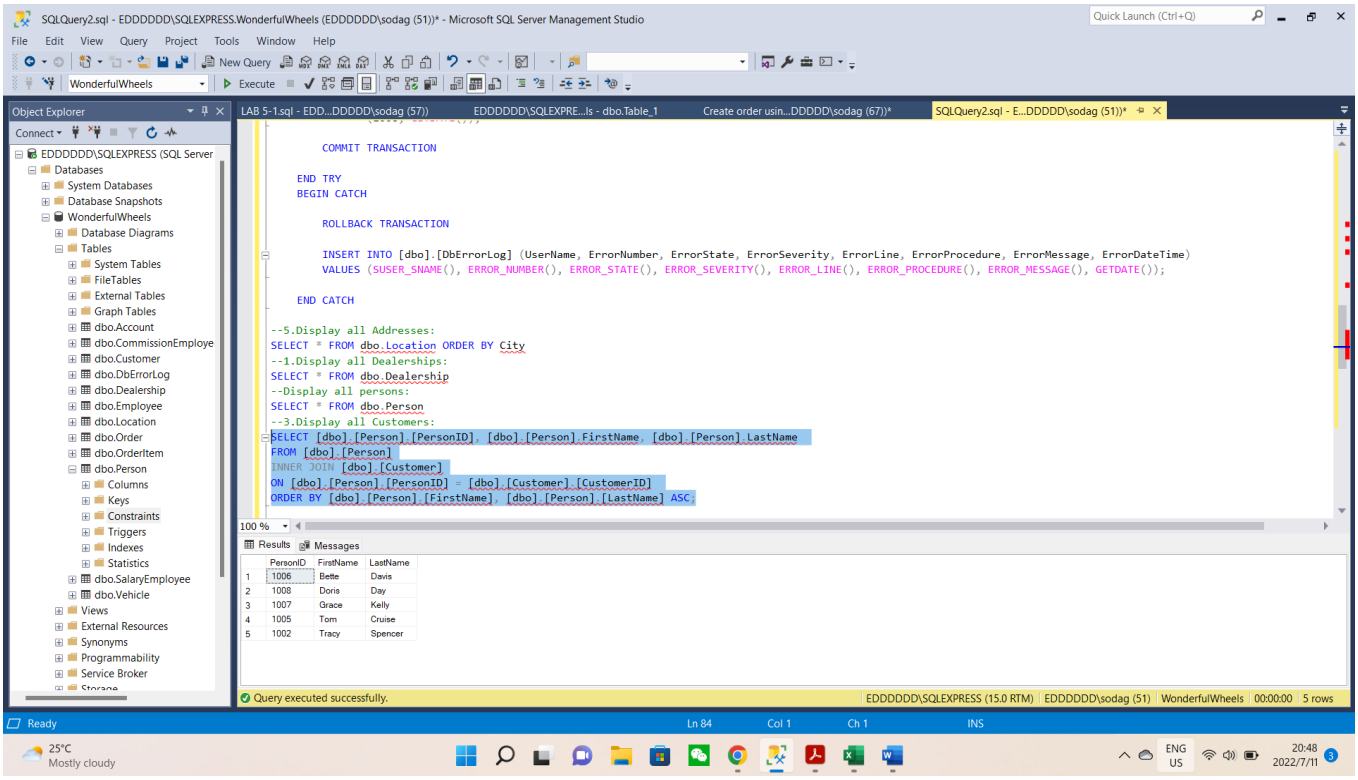



8. Adding Constraints:
   Double click Table -> Constraints -> New -> Rename and add Expression.

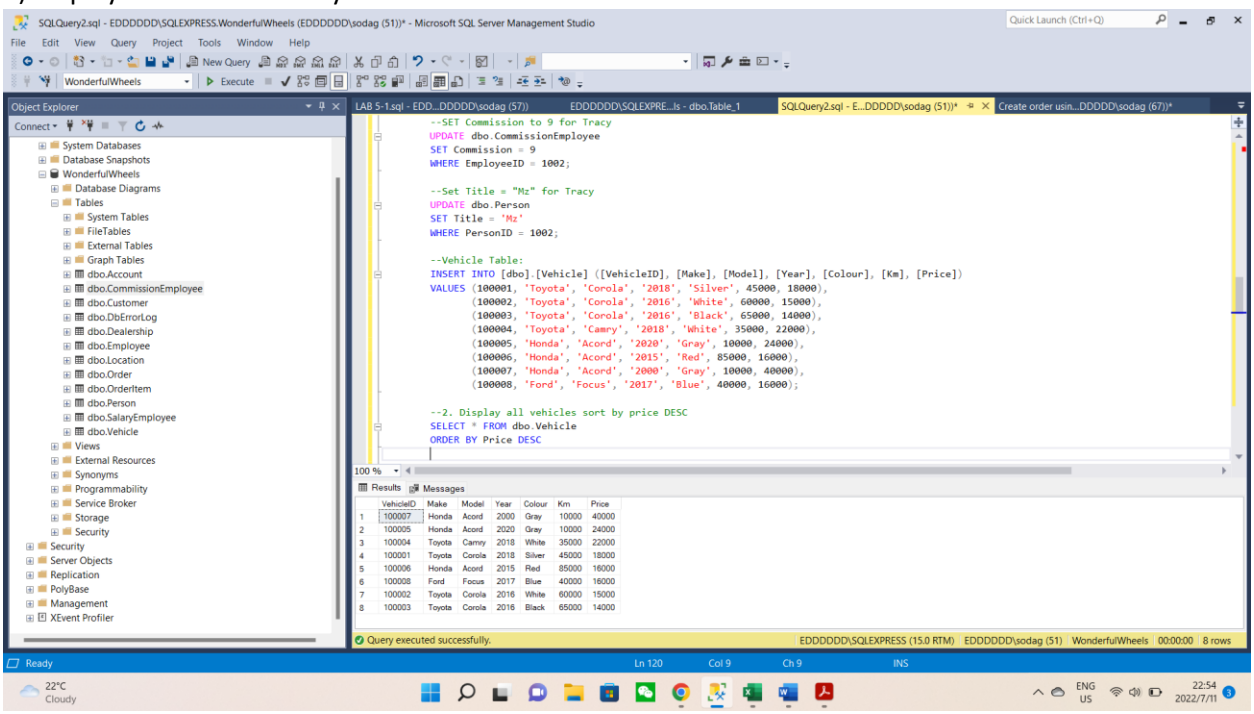


**Step3: Data import with validation rule testing**

1)Display all Dealerships:




2) Display all vehicles sort by Price DESC:

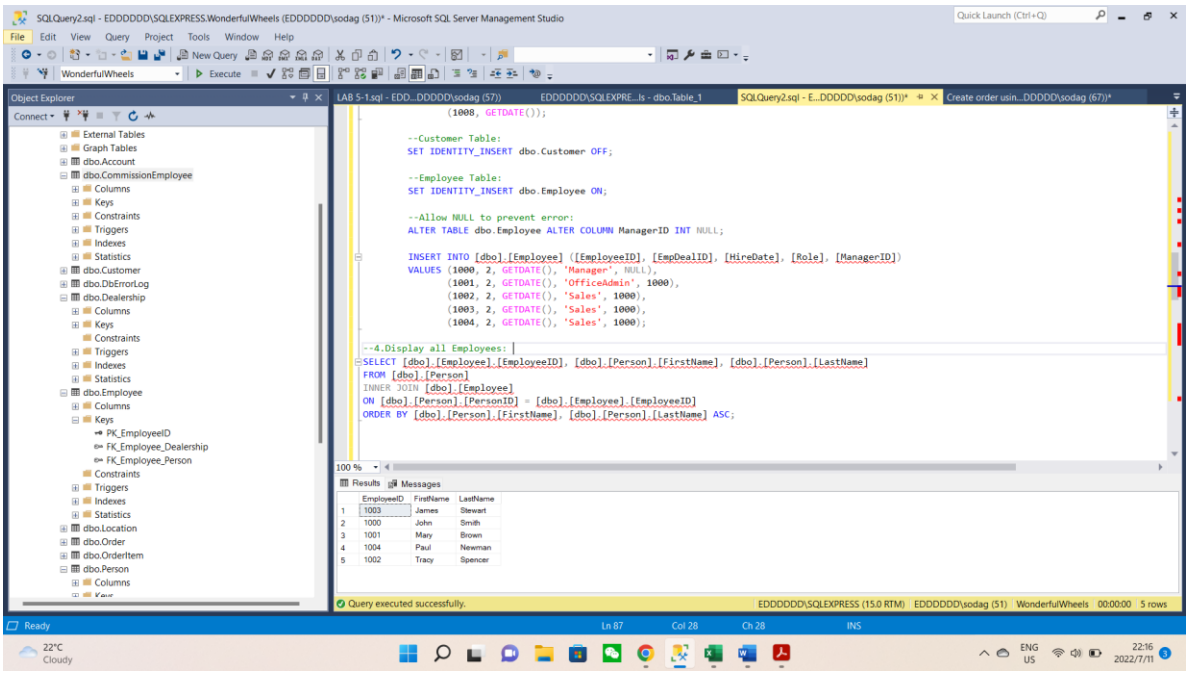


3) Display all customers order by first, last names asc:

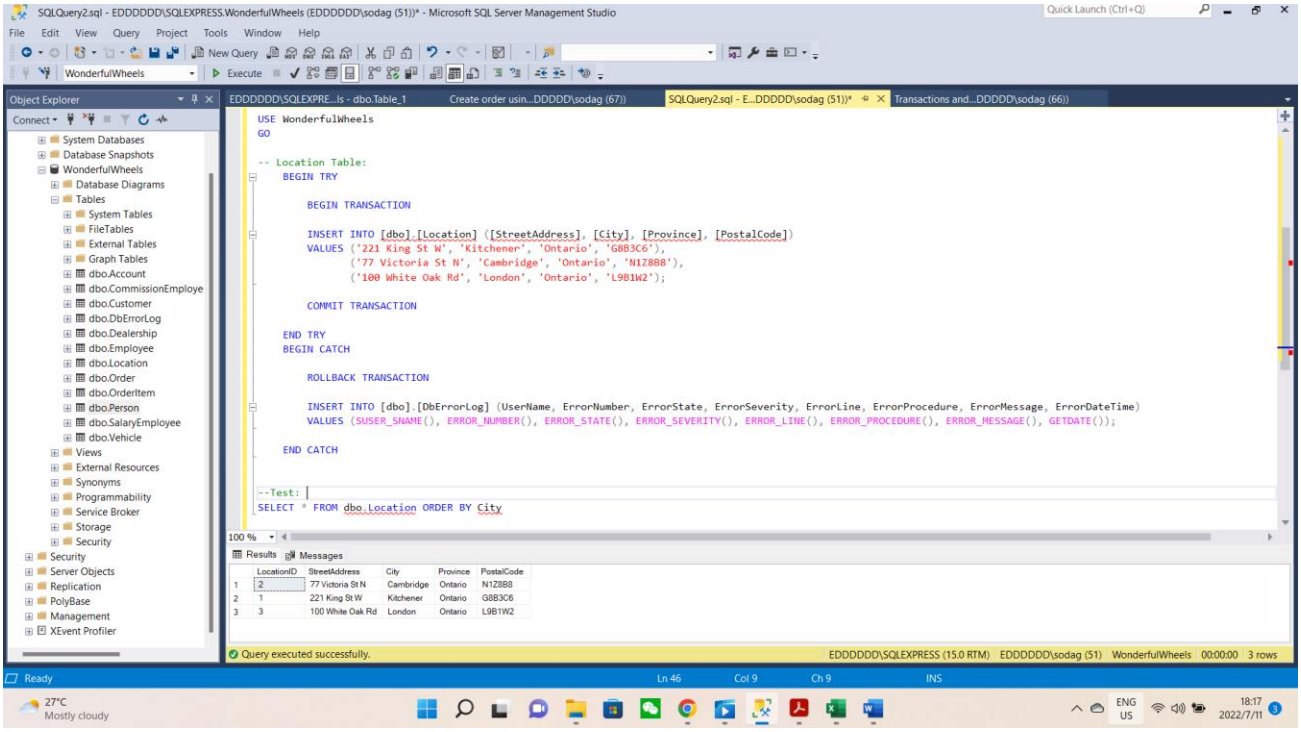
```
--Customer Table:
SET IDENTITY_INSERT dbo.Customer OFF;

--Employee Table:
SET IDENTITY_INSERT dbo.Employee ON;


INSERT INTO [dbo].[Employee] ([EmployeeID], [EmpDealID], [HireDate], [Role], [ManagerID])
VALUES (1000, 1, GETDATE(), 'Manager', NULL),
       (1001, 1, GETDATE(), 'OfficeAdmin', 1000),
       (1002, 1, GETDATE(), 'Sales', 1000),
       (1003, 1, GETDATE(), 'Sales', 1000),
       (1004, 1, GETDATE(), 'Sales', 1000);
```

```
) %
Messages
Msg 515, Level 16, State 2, Line 78
Cannot insert the value NULL into column 'ManagerID', table 'WonderfulWheels.dbo.Employee'; column does not allow nulls. INSERT fails.
The statement has been terminated.

Completion time: 2022-07-11T21:12:09.5325710-04:00
```

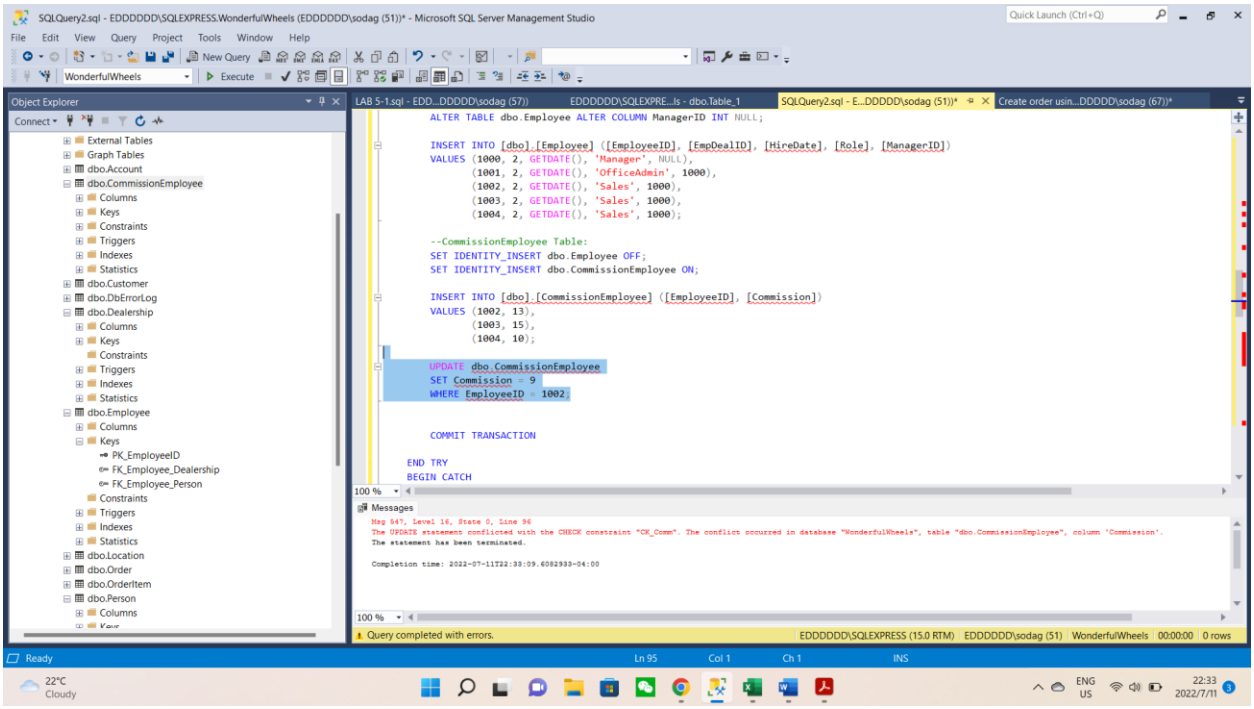
4. ) Display all employees order by first, last names asc:



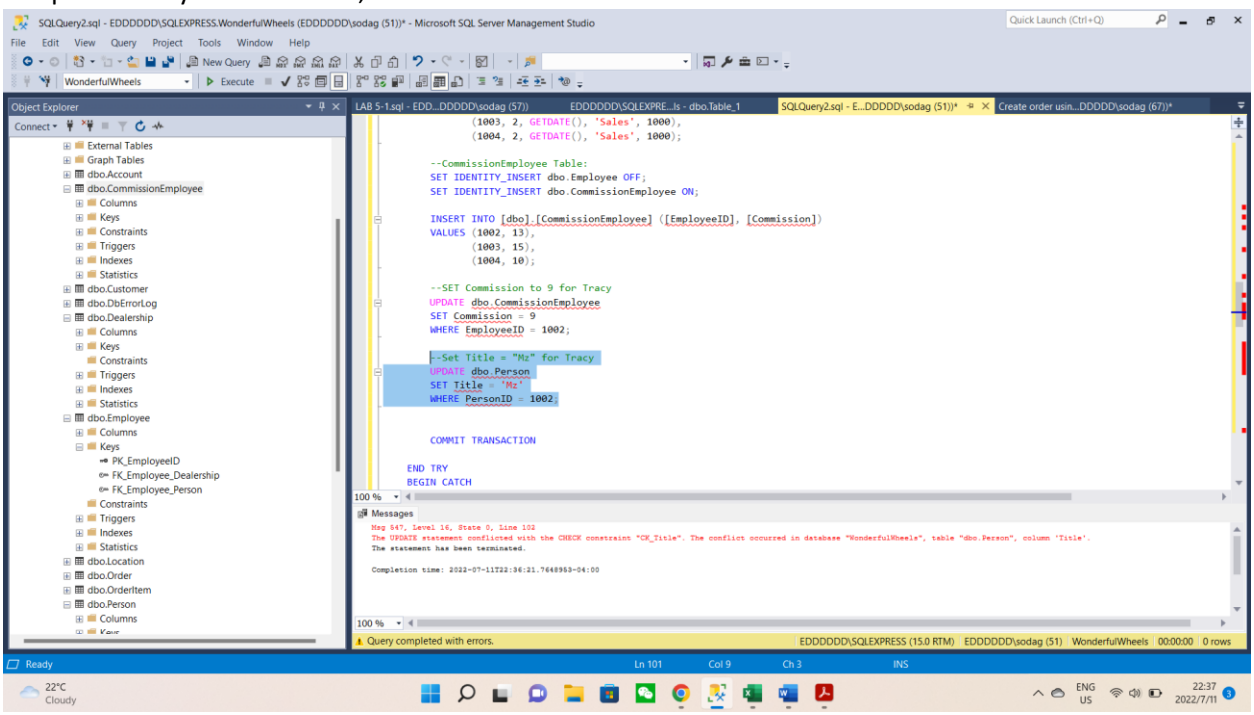
5) Display Addresses sort by City:



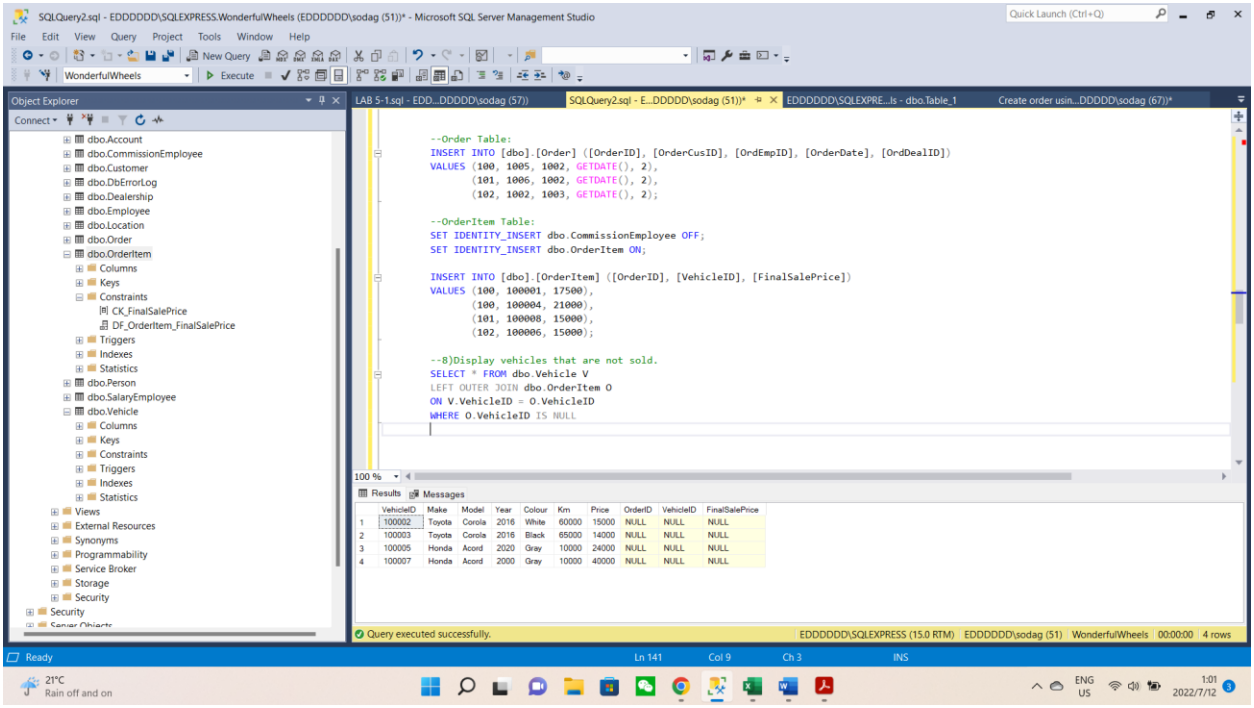

6. Update Tracy Spencer commission to 9:  ERROR OCCURRED



7. Update Tracy's Title to 'Mz', error occurred:

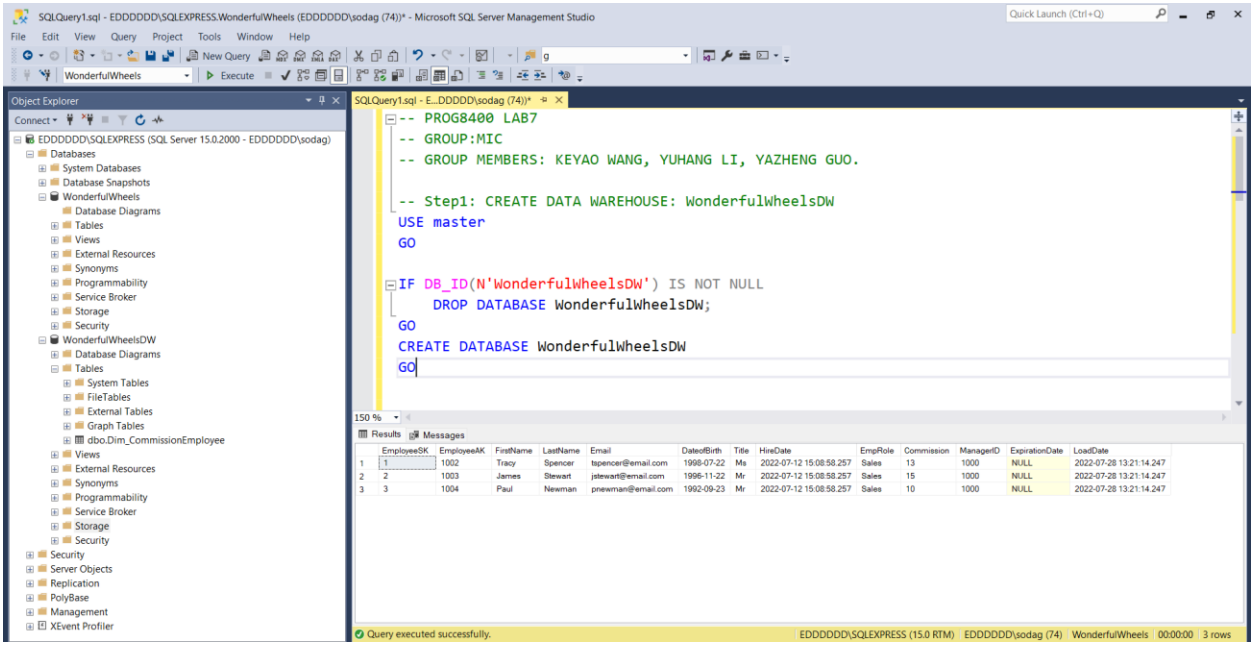



8. Display vehicles that are not sold:

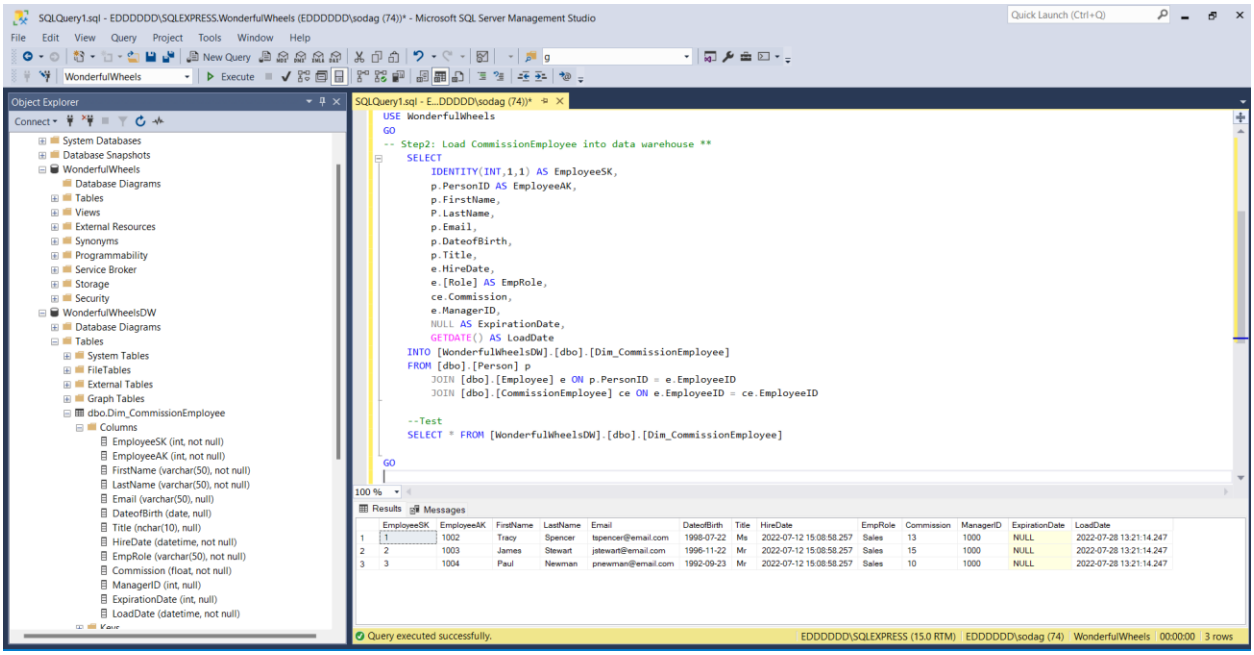


## Step4: Data Warehousing

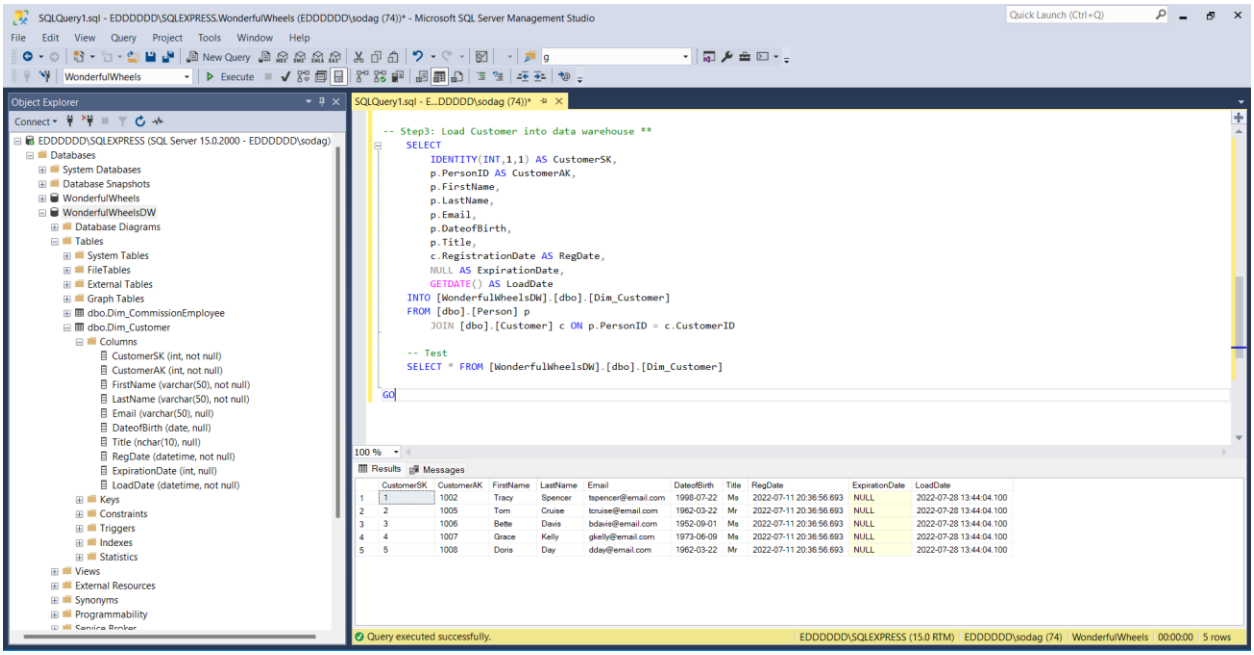
1: Create Data Warehouse:



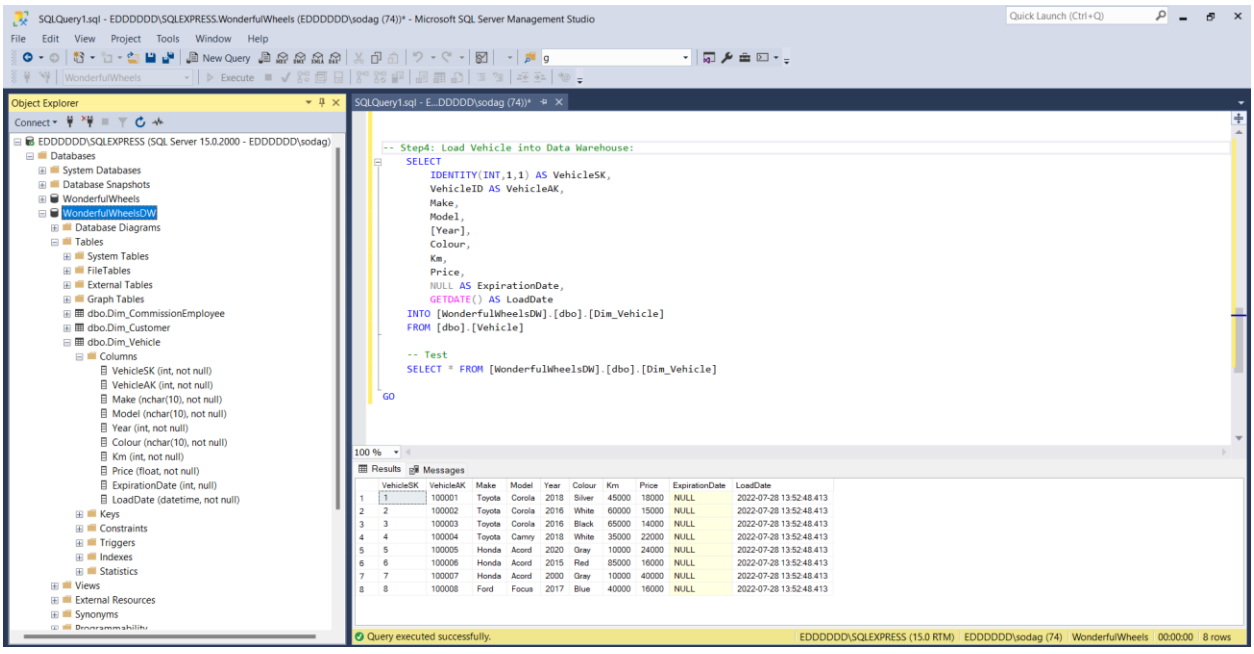

2: ETL into table Dim_CommissionEmployee



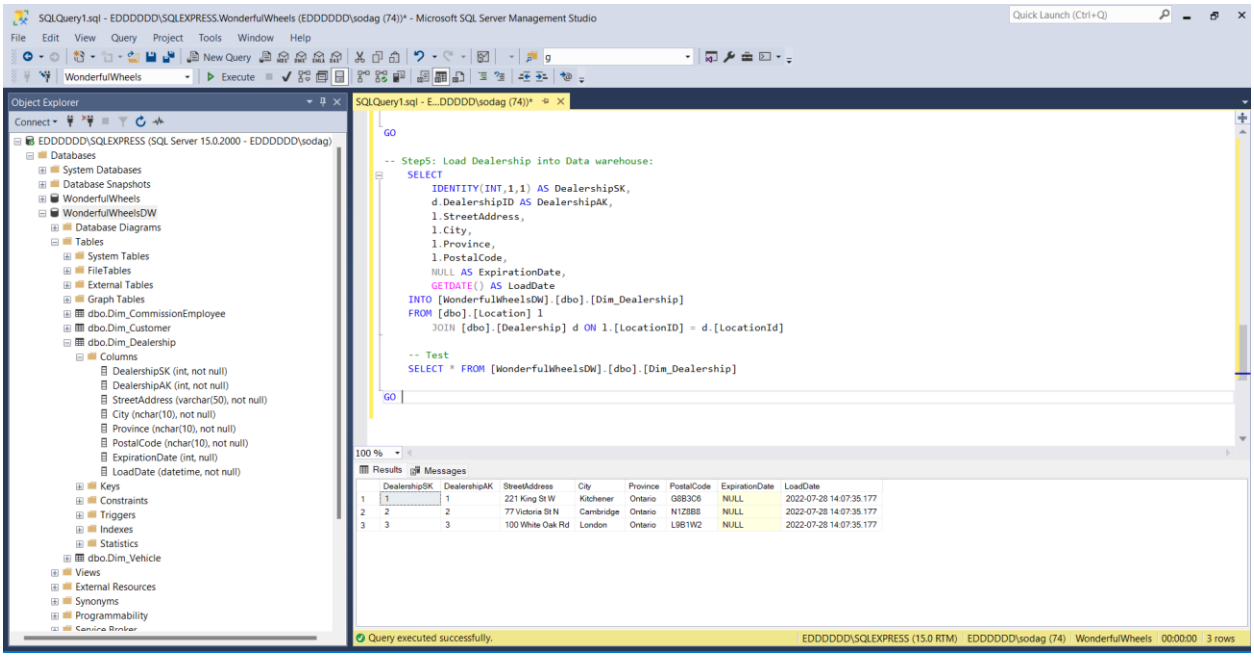
3: Load Customer into data warehouse.



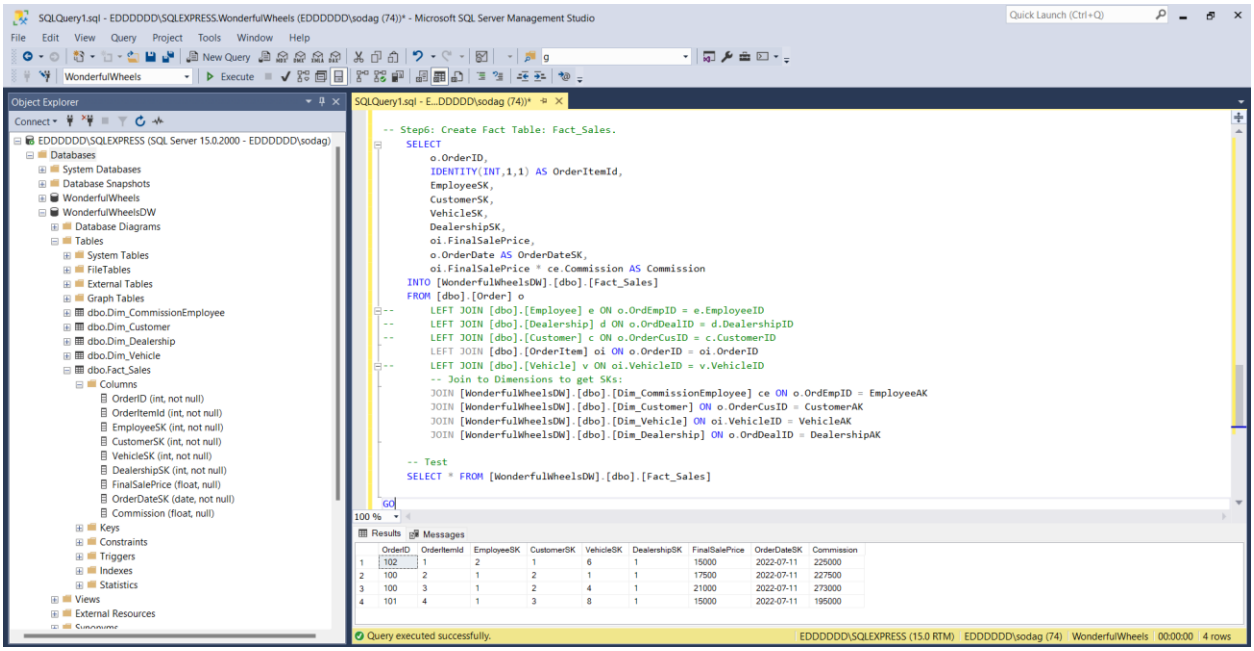

4: Load Vehicle into Data Warehouse:



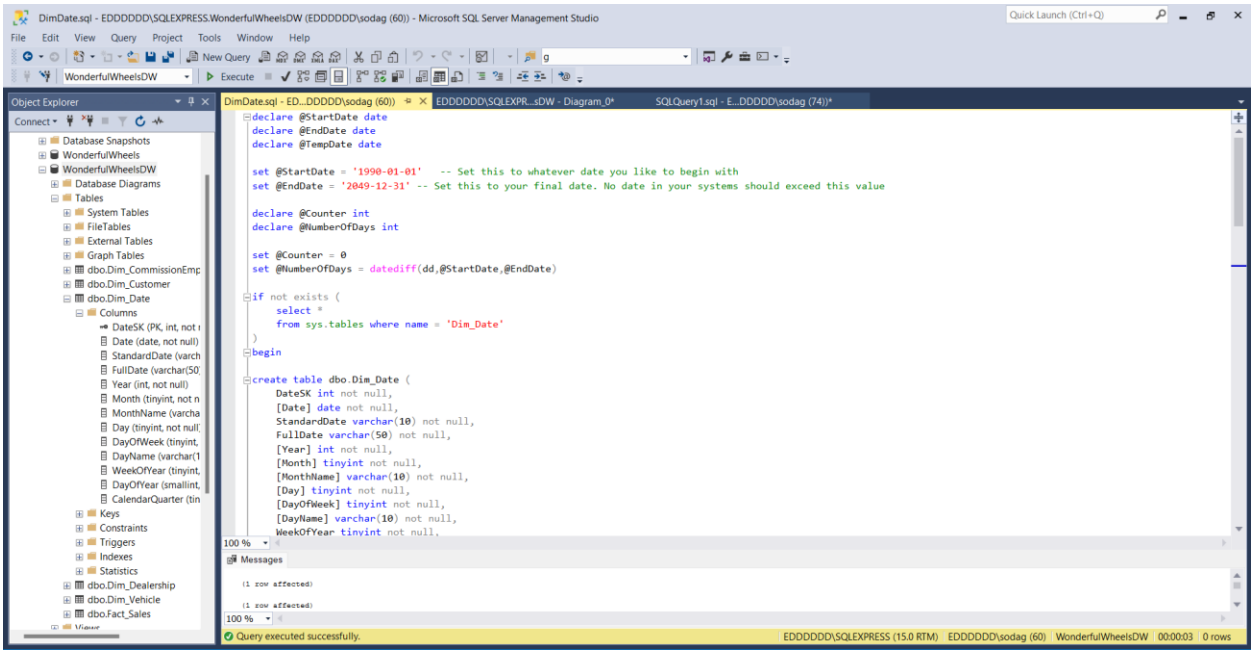
5: Load Dealership into Data warehouse:



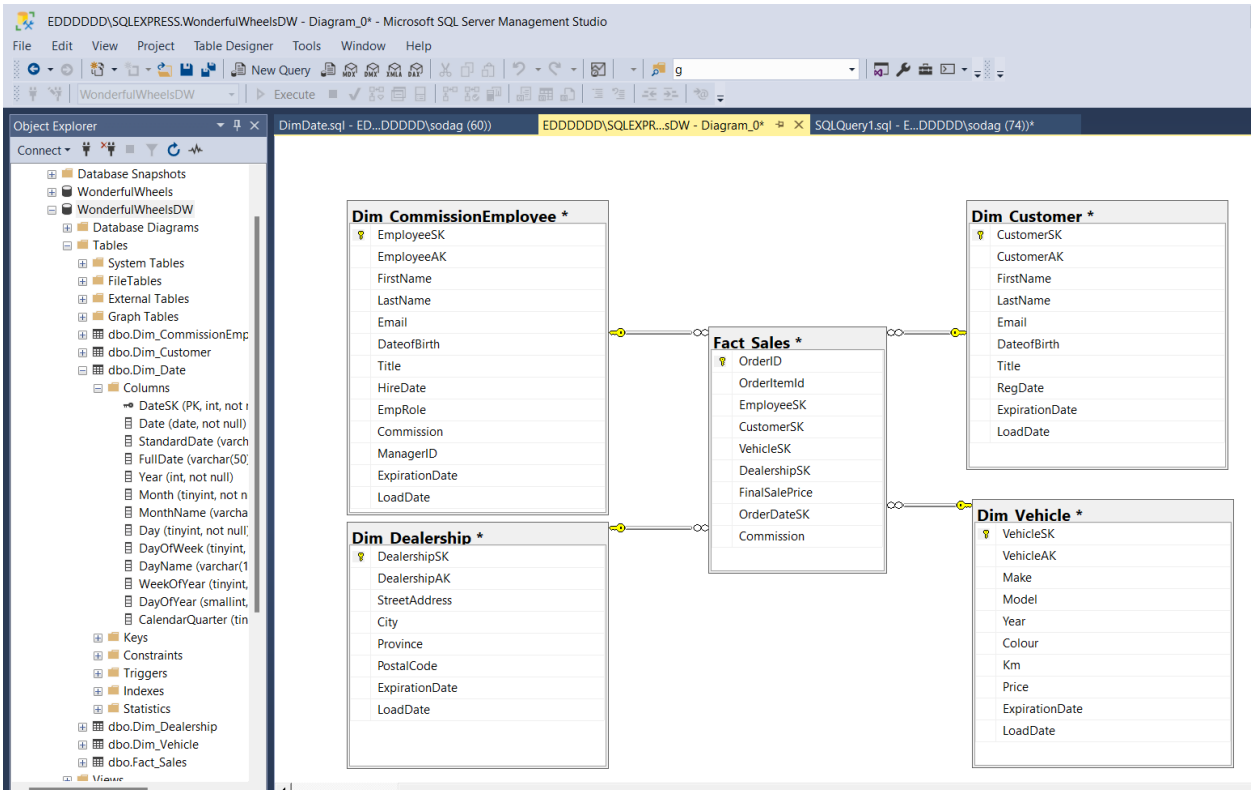

6: Create Fact Table: Fact_Sales.



7: Include Dim_Date table:



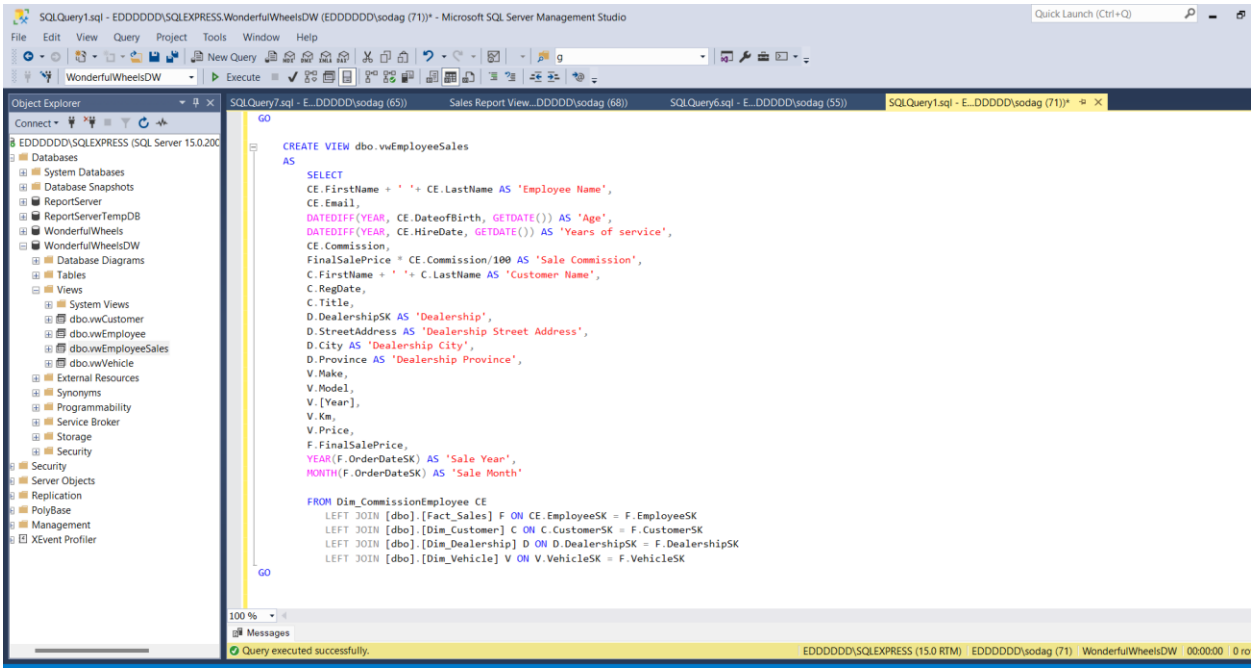

8: Star Schema



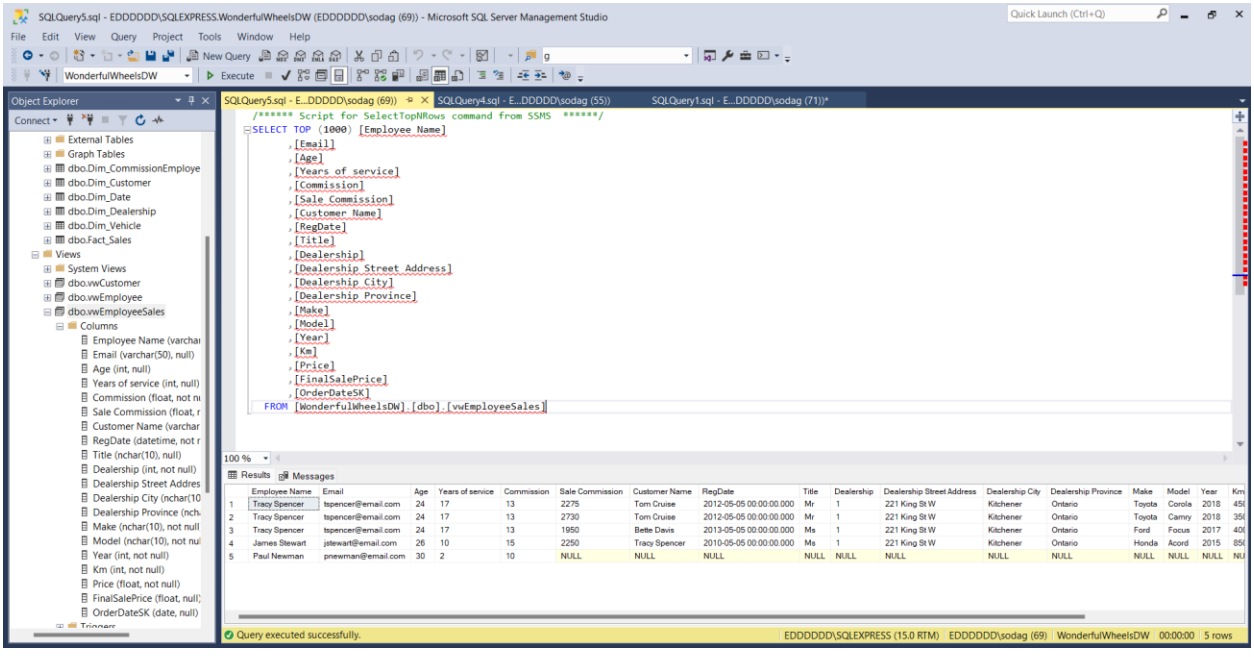
## Step5: Data Warehouse & BI

### IN SQL:

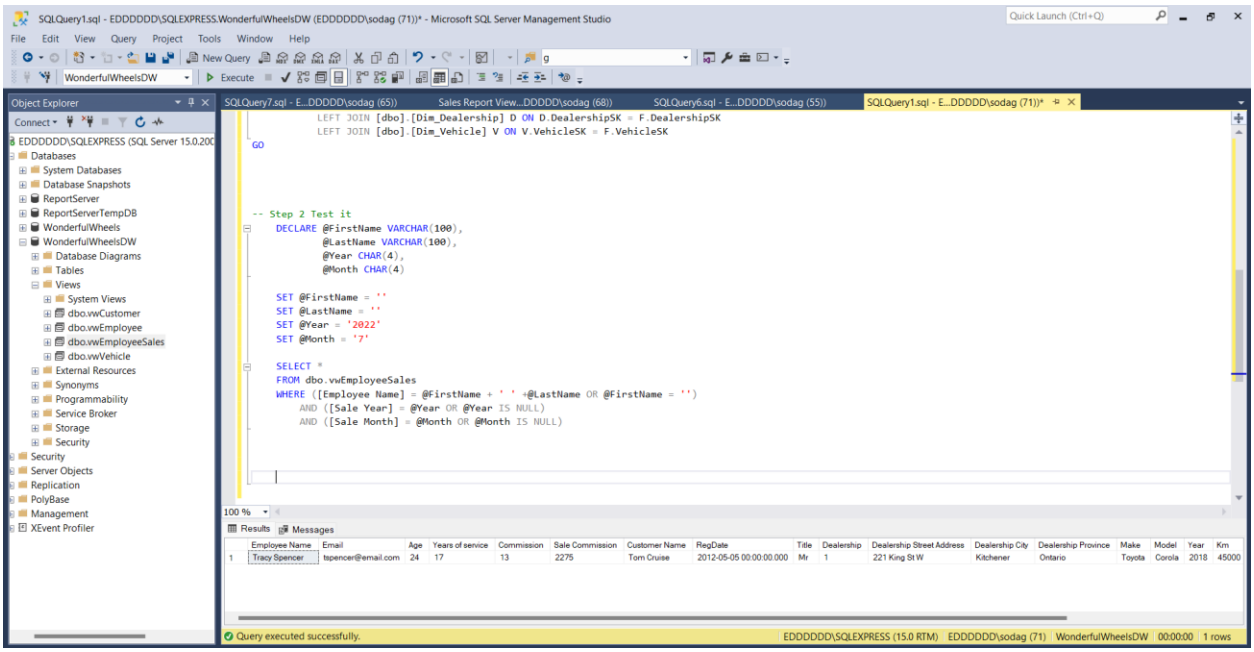
-Create view with Employee, Customer, and Vehicle Sales information:




-Check View Table:



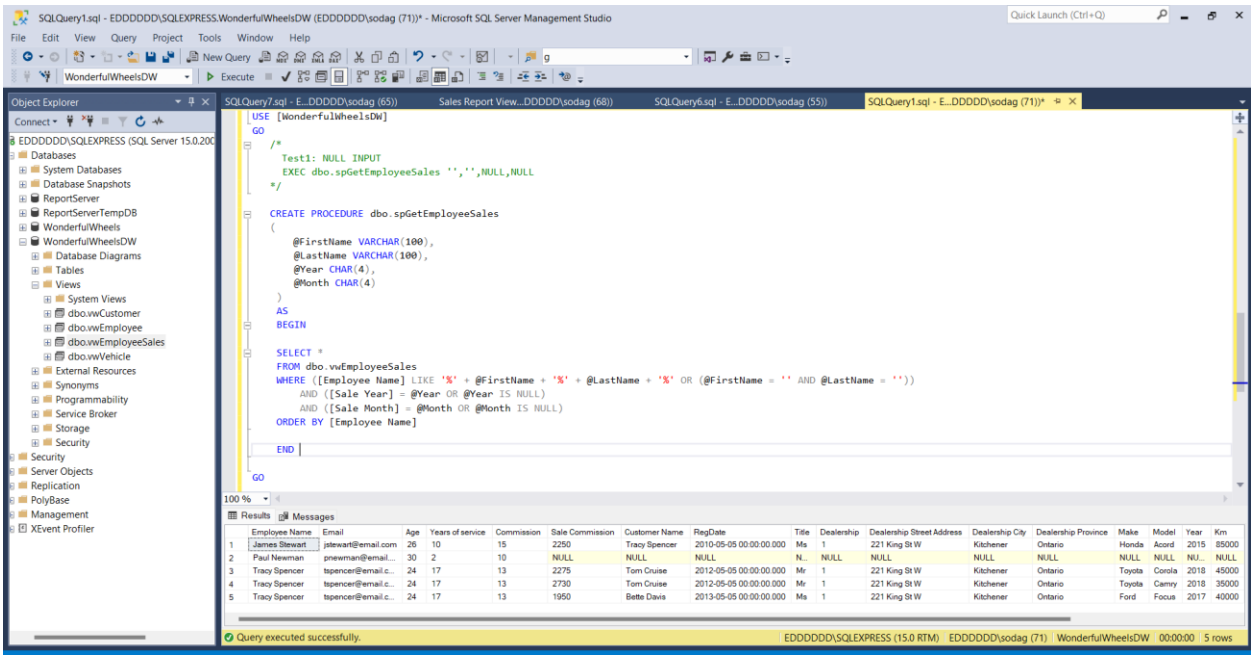

-Test View:




-Create Main Procedure:

And Run Test1: `EXEC dbo.spGetEmployeeSales '','',NULL,NULL`

Null value which returns all rows.



-Run Procedure Test2: `EXEC dbo.spGetEmployeeSales 'Ja','',NULL,NULL`
Which only returns James record.