LAB 11 (VIEWS)

Session: 2022-2026

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Course:

CS-262L Database Systems

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Contents

1 Create SQL VIEW in SQL Serve

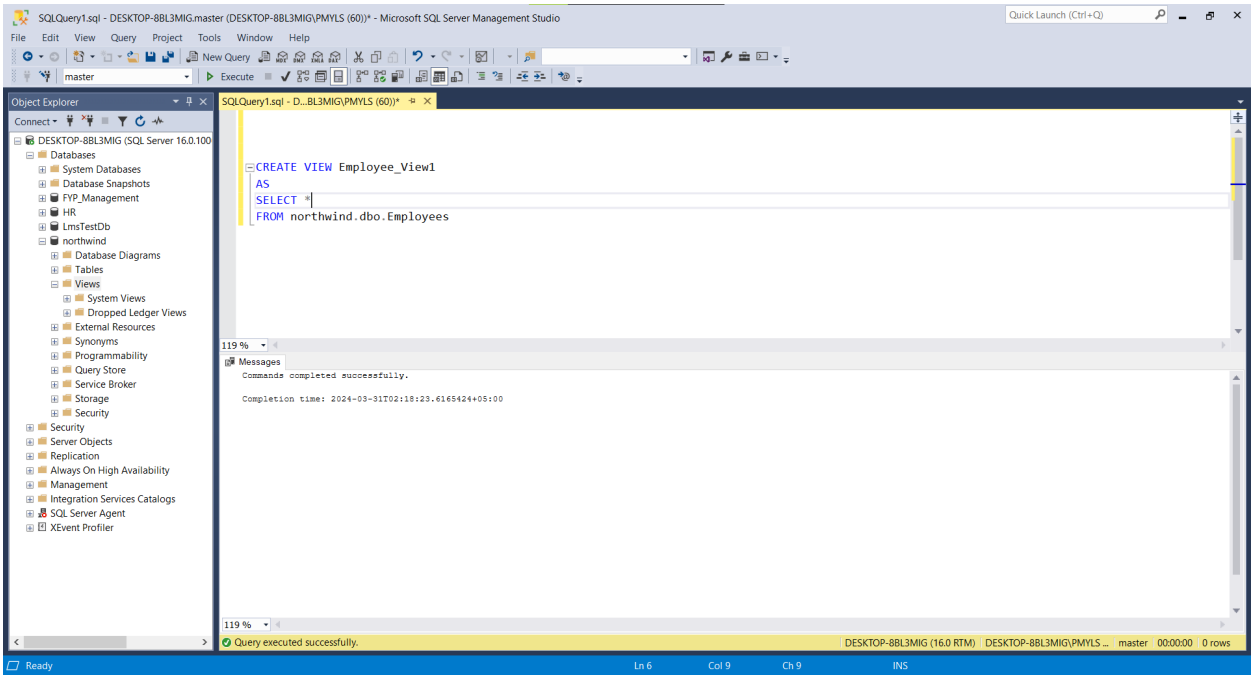
Click on your Database and expand the view item there you'll find the user stored views and system-defined views. Now open a new query create a view and execute it. It will automatically be made in the view section after refreshing views.

1.1 Method 1

We can select all columns of a table.

```
CREATE VIEW Employee_View1
AS
SELECT *
FROM Employee_Details
```

The following example demonstrates that:

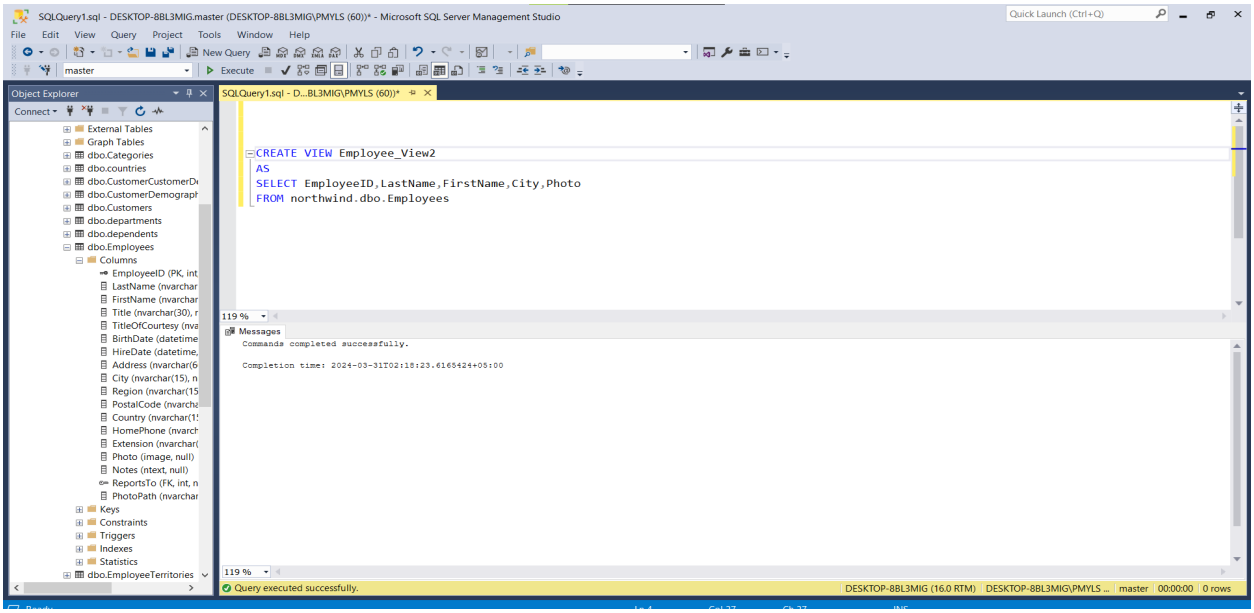


1.2 Method 2

We can select specific columns of a table.

```
CREATE VIEW Employee_View2
AS
SELECT Emp_Id, Emp_Name, Emp_City
FROM Employee_Details
```

The following example demonstrates that:

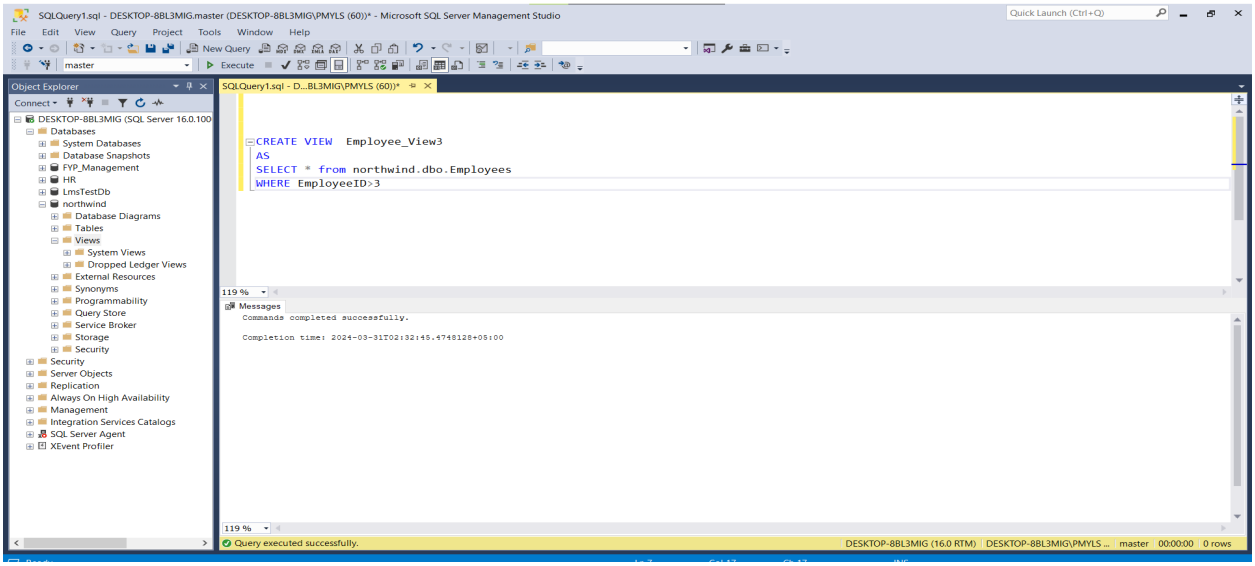


1.3 Method 3

We can select columns from a table with specific conditions.

```
CREATE VIEW Employee_View3
AS
SELECT * from Employee_Details
WHERE Emp_Id>3
```

The following example demonstrates that:

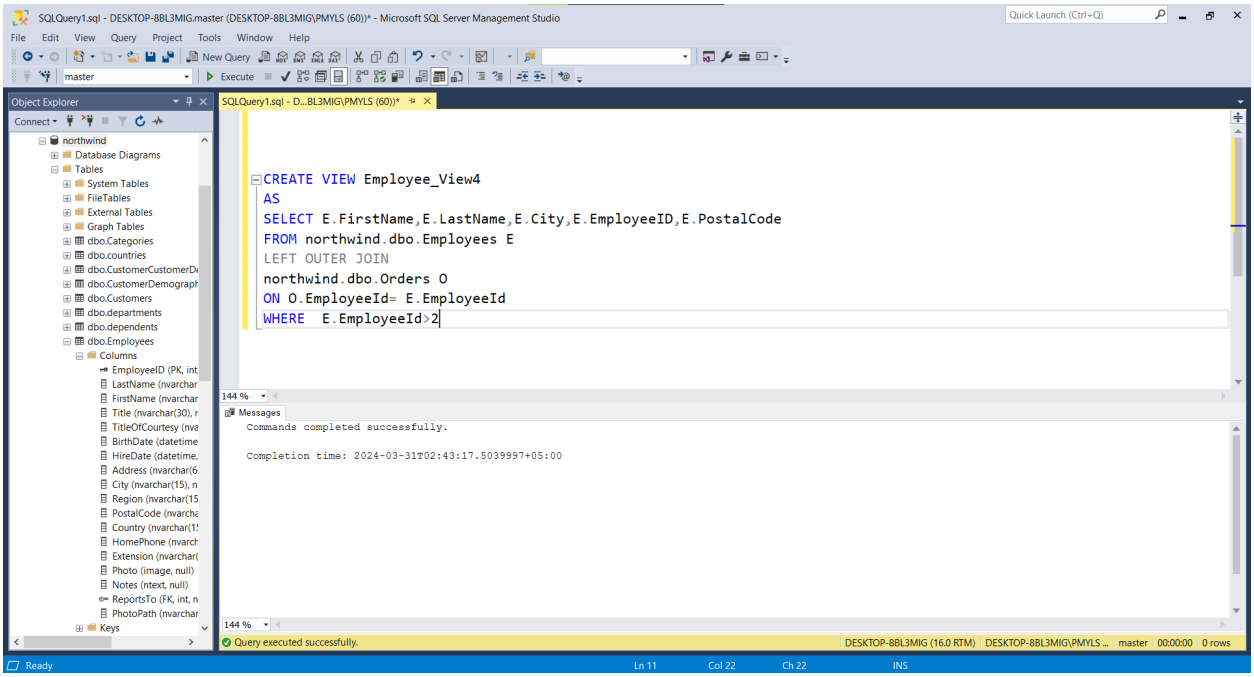


1.4 Method 4

We can create a view that will hold the columns of different tables.

```
CREATE VIEW Employee_View4
AS
SELECT Employee_Details.Emp_Id, Employee_Details.Emp_Name, Employee_Detail
act.MobileNo from Employee_Details
LEFT OUTER JOIN
Employee_Contact
ON
Employee_Details .Emp_Id= Employee_Contact.Emp_Id
WHERE Employee_Details.Emp_Id>2
```

The following example demonstrates that:



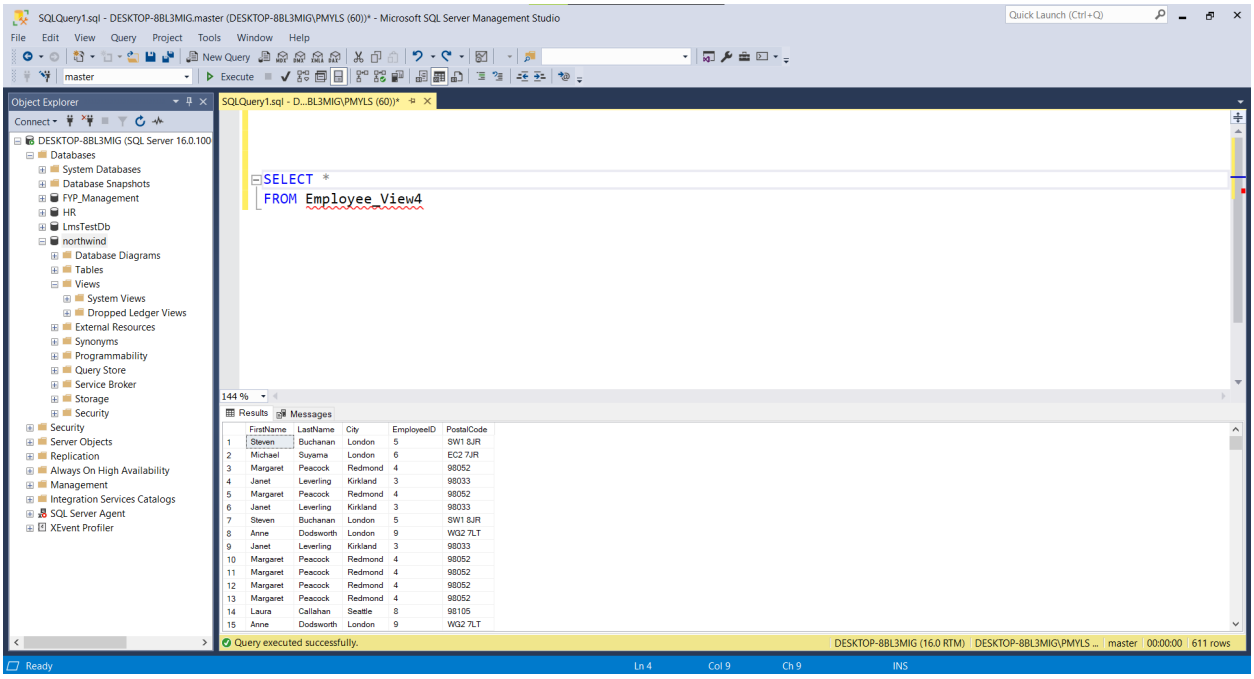
2 Retrieve Data From View in SQL Server

This SQL CREATE VIEW example would create a virtual table based on the result set of the select statement. Now we can retrieve data from a view as follows:

2.1 Method 1

This query shows that we can select all the columns

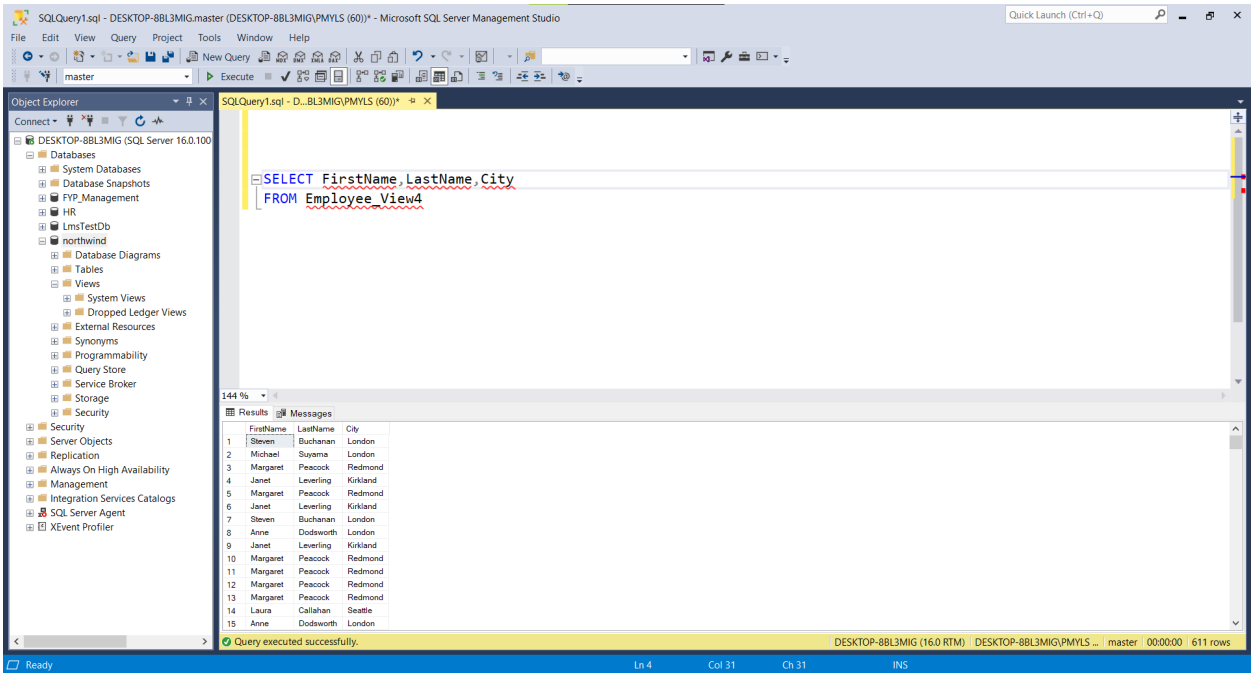
```
SELECT *
FROM Employee_View4
```



2.2 Method 2

This query shows that we can select all the columns

```
SELECT Emp_Id,Emp_Name,Emp_Salary
FROM Employee_View4
```



3 Dropping a View in SQL Server

We can use the `DROP` command to drop a view. For example, to drop the view `Employee_View1`, we can use the following statement:

3.1 Syntax

```
DROP VIEW Employee_View1;
```

4 Renaming the View in SQL Server

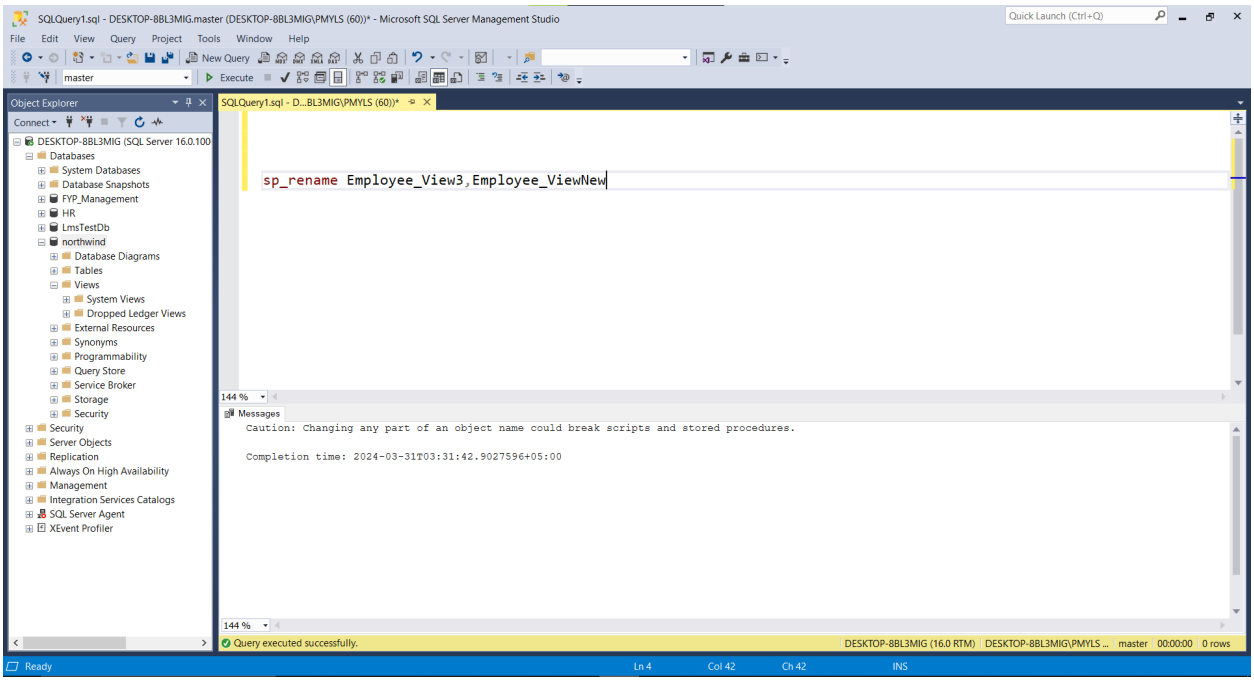
We can use the `sp_rename` system procedure to rename a view. The syntax of the `sp_rename` command is given below:

4.1 Syntax

```
sp_rename OldViewName, NewViewName;
```

4.2 Example

```
sp_rename Employee_View3,Employee_ViewNew;
```



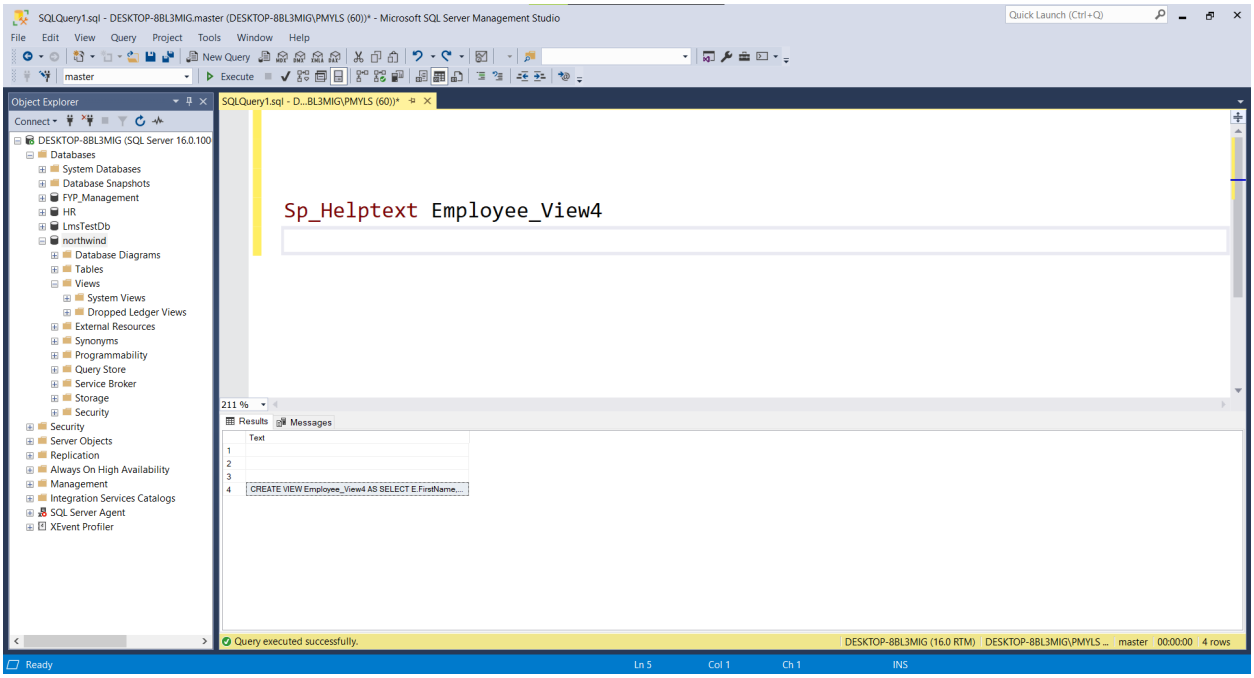
5 Getting Information about a view

We can retrieve all the information of a view using the `Sp_Helptext` system Stored Procedure.

5.1 Syntax

```
Sp_Helptext View_Name
```

5.2 Output



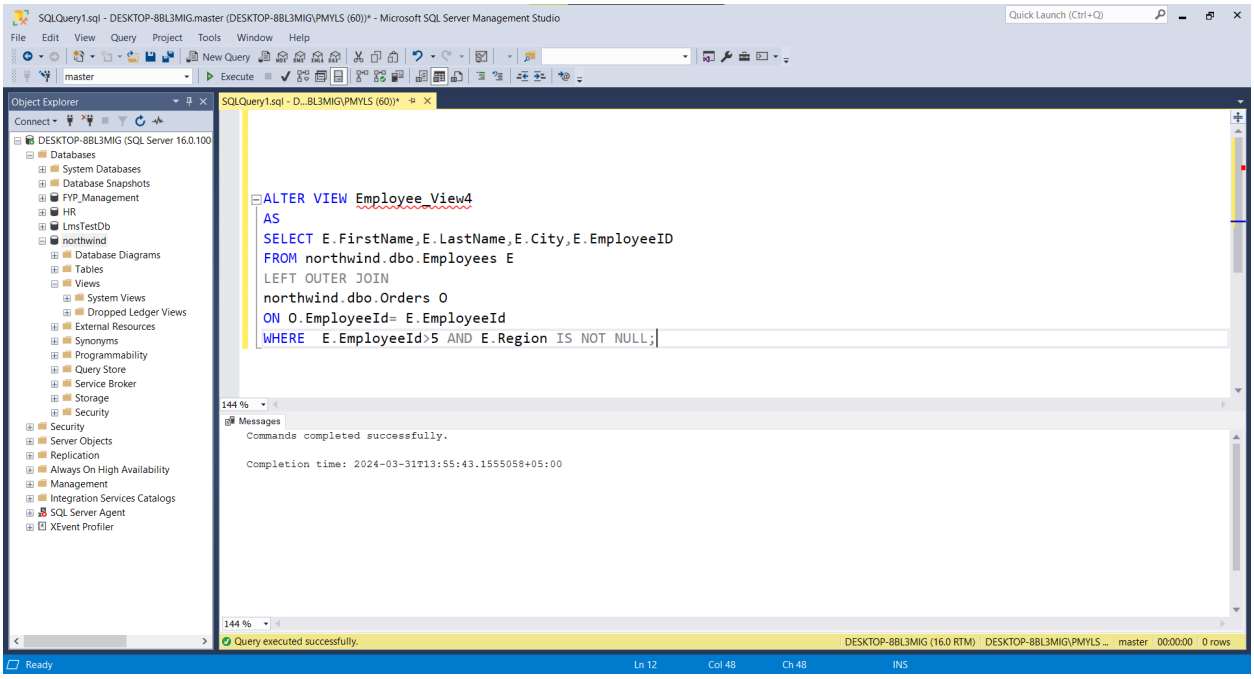
6 Alter View in SQL Server

We can alter the schema or structure of a view. In other words, we can add or remove some columns or change some conditions that are applied in a predefined view.

6.1 Syntax

```
Alter View Employee_View4
AS
SELECT Employee_Details.Emp_Id,Employee_Details,Emp_Name,
Employee_Details.Emp_Salary,Employee_Contact.MobileNo
FROM Employee_Details
LEFT OUTER JOIN
Employee_Contact
ON
Employee_Details .Emp_Id= Employee_Contact.Emp_Id
WHERE Employee_Details.Emp_Id>5
AND Employee_Details.Emp_City='Alwar'
```

6.2 Example



7 Refreshing a View in SQL Server

When a view is created, it represents a snapshot of the underlying tables' data at the time of its creation. If the original table is modified after the view is created, these changes are not automatically reflected in the view. Therefore, to synchronize the view with the latest data from the underlying table, we need to refresh it.

7.1 Refreshing the View

To refresh the view `Employee_View1`, you can use the following SQL command:

```
EXEC sp_refreshview Employee_View1;
```

This command refreshes the metadata for the specified view, ensuring that it reflects the latest schema changes in the underlying tables.

8 SchemaBinding a VIEW

We saw that if we add a new column into the table then we must refresh the view.

Such a way if we change the data type of any column in a table then we should refresh the view. If we want to prevent any type of change in a base table then we can use the concept

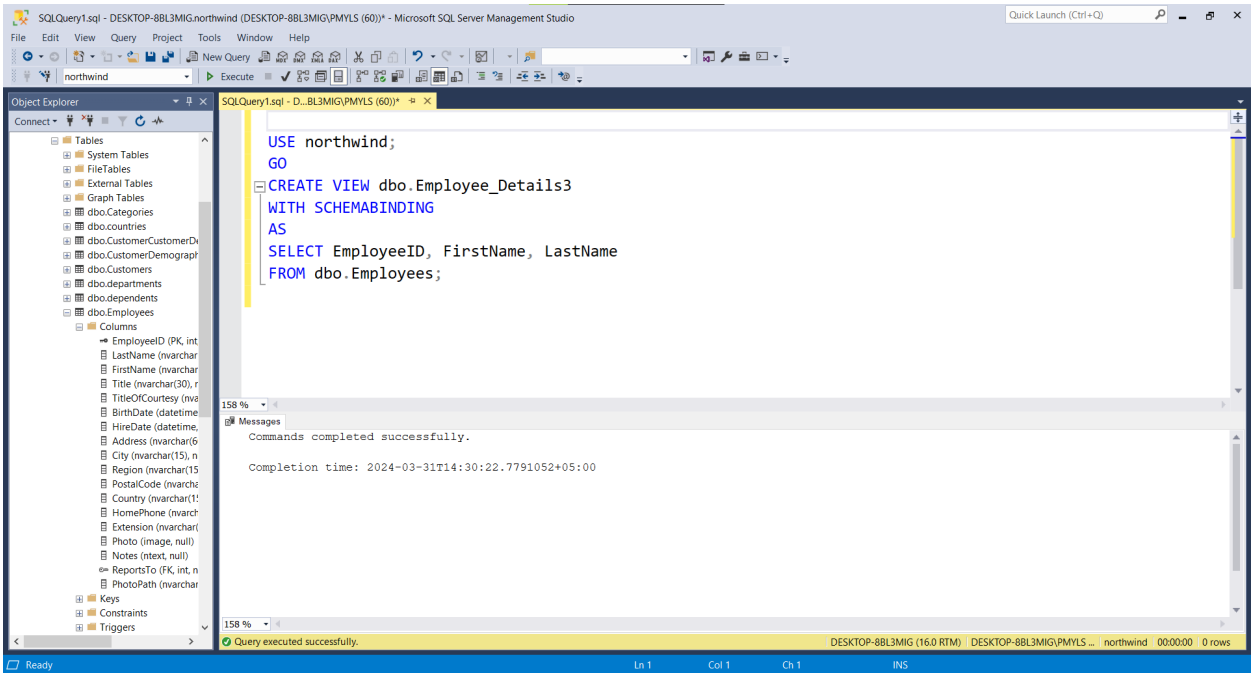
of SCHEMABINDING. It will lock the tables being referred to by the view and restrict all kinds of changes that may change the table schema (no Alter command).

We can't specify "Select * from tablename" with the query. We need to specify all the column names for reference

8.1 Query

```
CREATE VIEW Employee_Details3
WITH SCHEMABINDING
AS
SELECT Emp_Id,Emp_Name,Emp_Salary,Emp_City
FROM DBO.Employee_Details
```

8.2 Example



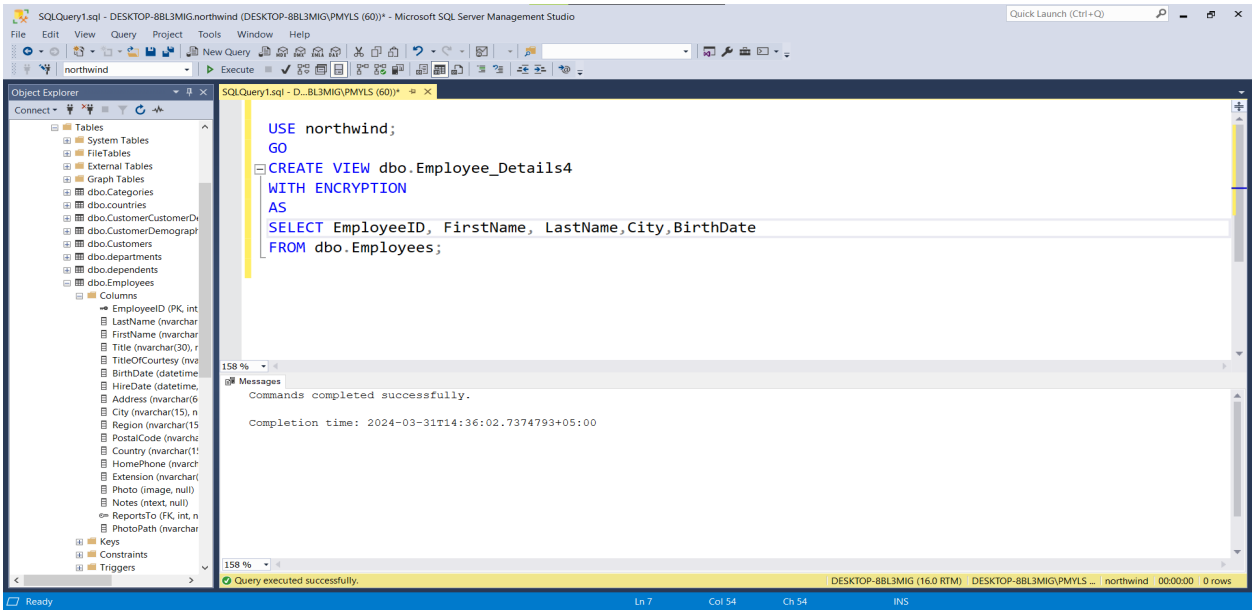
9 Encrypt a view in SQL Server

The "WITH ENCRYPTION" option can encrypt any views. That means it will not be visible via SP_HELPTEXT. This option encrypts the definition. This option encrypts the definition of the view. Users will not be able to see the definition of the view after it is created. This is the main advantage of the view where we can make it secure.

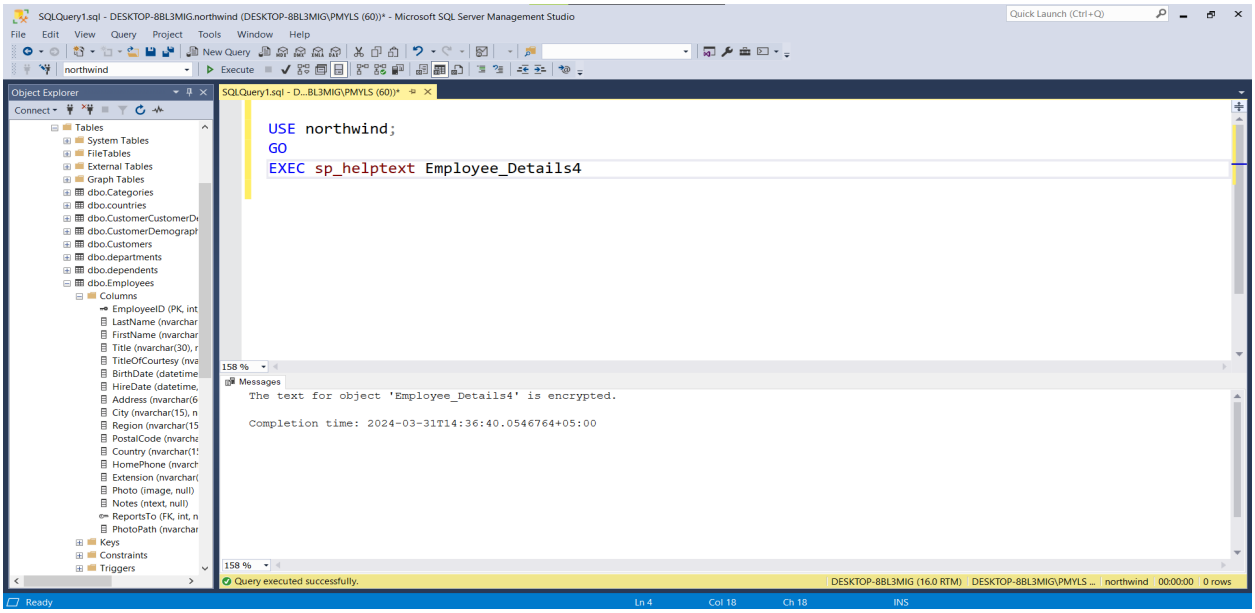
9.1 Query

```
CREATE VIEW dbo.Employee_Details4
WITH ENCRYPTION
AS
SELECT EmployeeID, FirstName, LastName,City,BirthDate
FROM dbo.Employees;
```

9.2 Example



Now we try to retrieve the definition of the view.

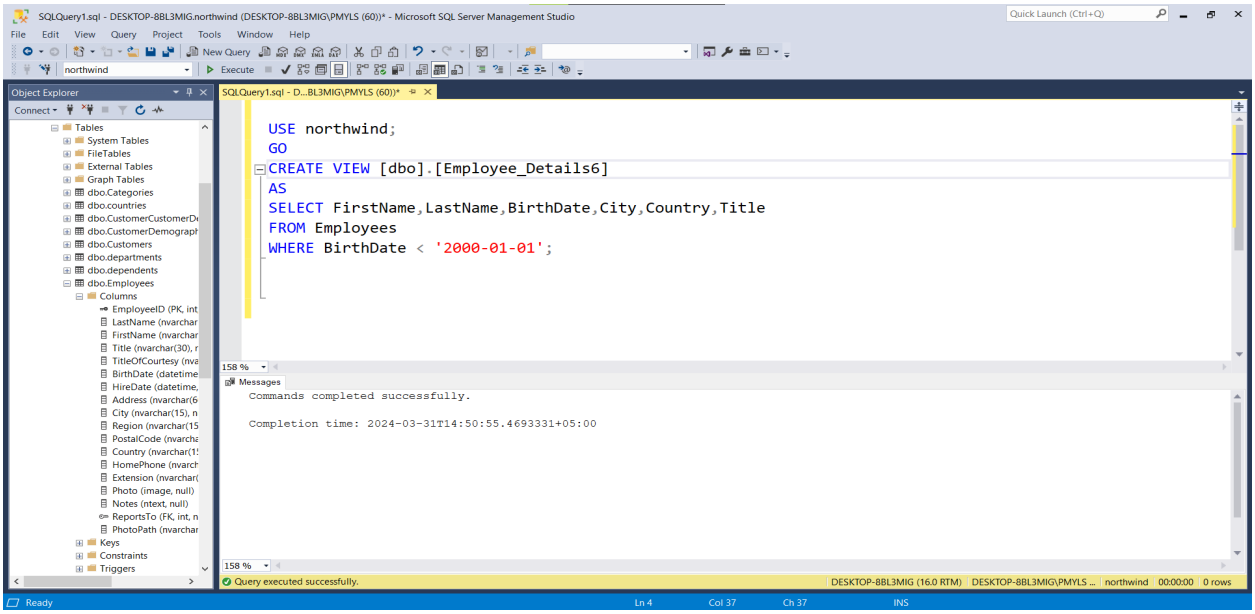


10 Check Option

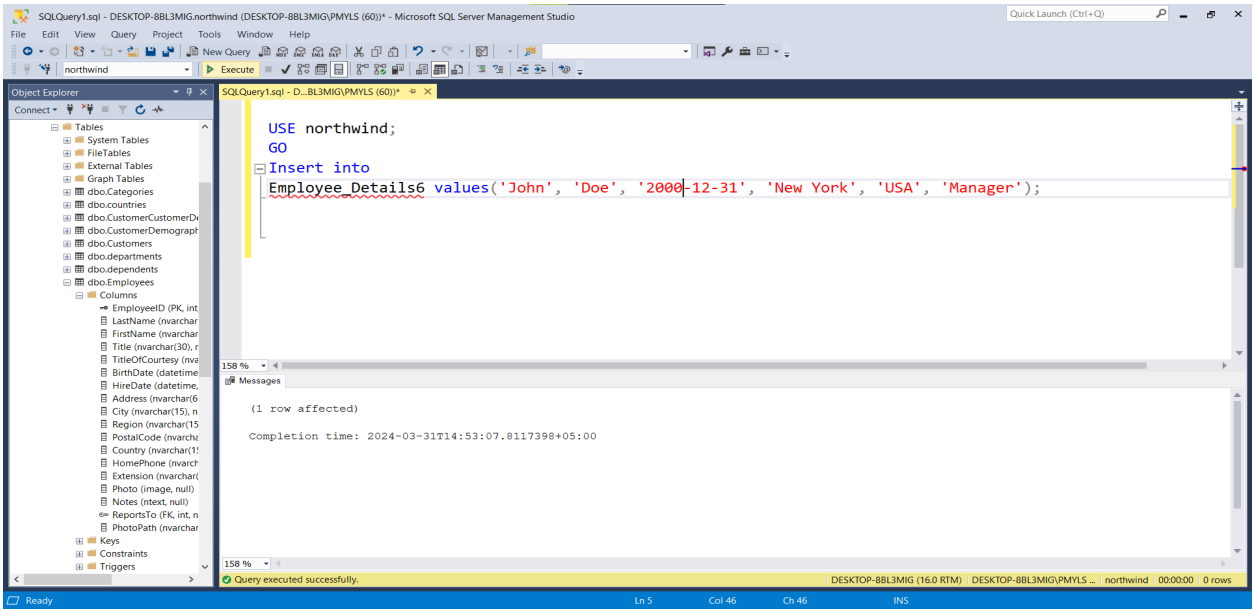
The use of the Check Option in a view is to ensure that all the Update and Insert commands must satisfy the condition in the view definition.

10.1 Example

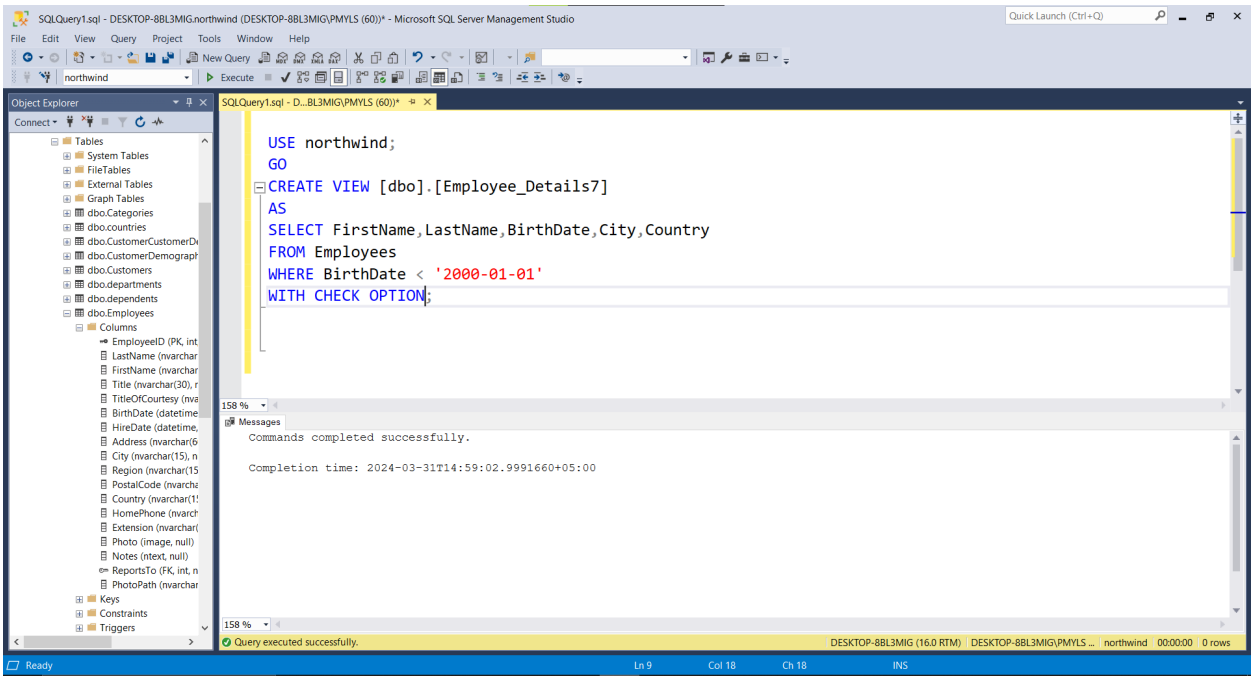
10.1.1 Without Check Option



In the preceding example, we create a view that contains all the data for which Birthdate<2000-01-01 but we can insert the data for a Birthdate greater than 2000-01-01 as follows.

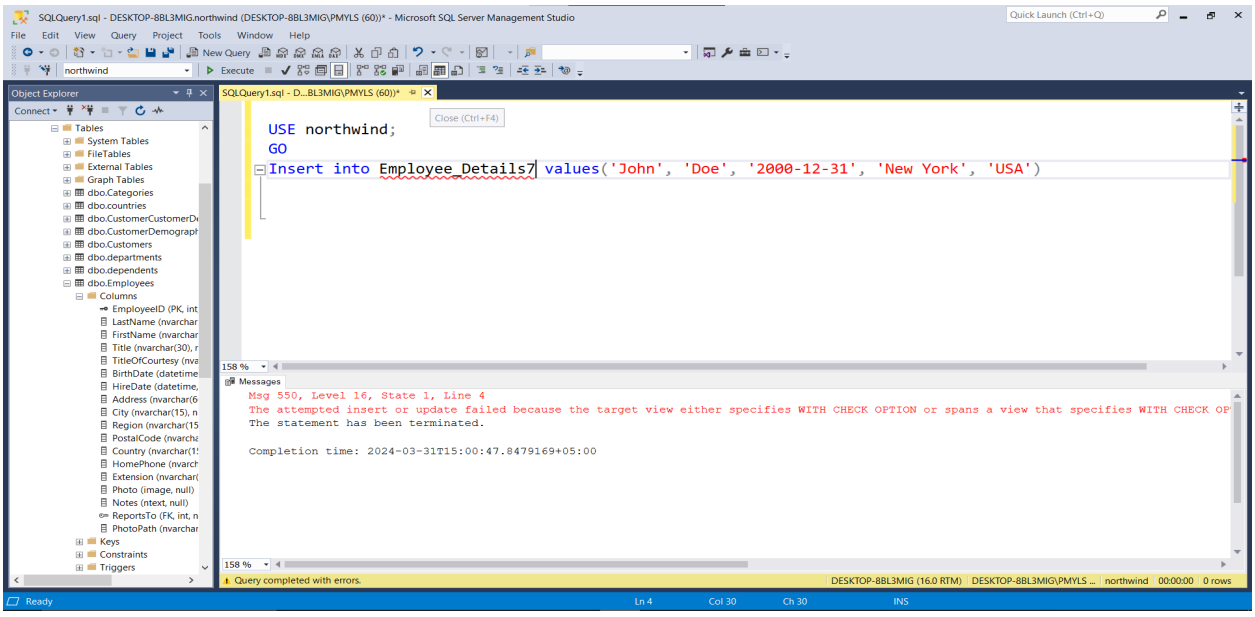


10.1.2 With Check Option



Now if we try to execute the preceding query then it will throw an error such as:

The attempted insert or update failed because the target view either specifies WITH CHECK OPTION or spans a view that specifies WITH CHECK OPTION and one or more rows resulting from the operation did not qualify under the CHECK OPTION constraint.



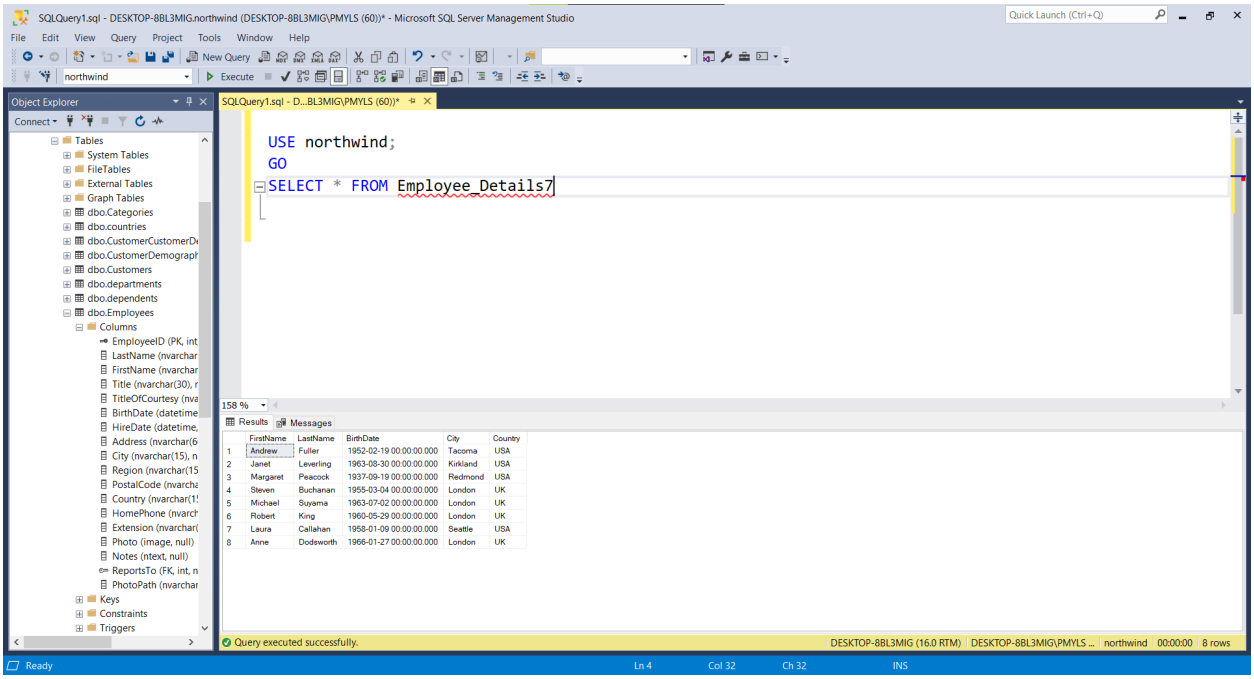
11 DML Query In View

11.1 Conditions for Implementing DML Queries in a View

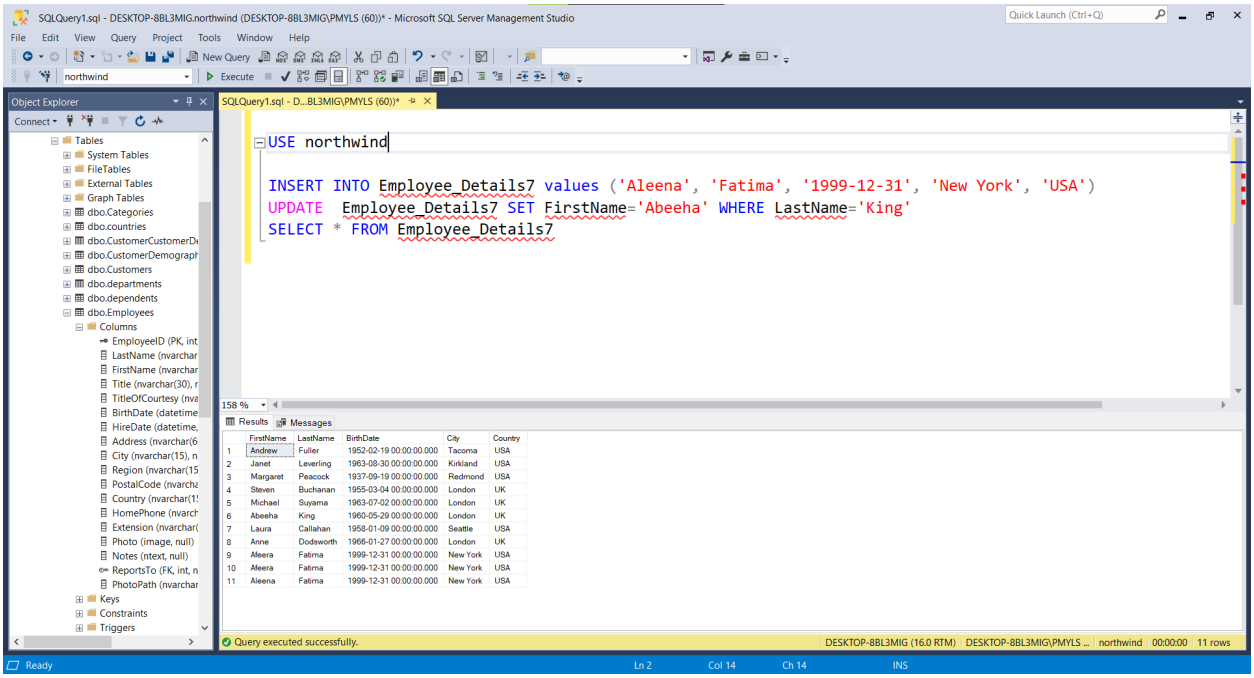
For a successful implementation of a DML (Data Manipulation Language) query in a view, the following conditions should be considered:

1. The view should not contain multiple tables.
2. The view should not contain set functions.
3. The view should not use the `DISTINCT` keyword.
4. The view should not contain `GROUP BY` or `HAVING` clauses.
5. The view should not contain subqueries.
6. The view should not use set operators.
7. All NOT NULL columns from the base table must be included in the view in order for the INSERT query to function.

11.2 Example



In a view we can implement many types of DML query like insert, update and delete



12 System Define Views

SQL Server also contains various predefined databases like Tempdb, Master, temp. Each database has their own properties and responsibility. Master data is a template database for all other user-defined databases. A Master database contains many `Predefine_View` that work as templates for other databases and tables. Master databases contain nearly 230 predefined views.

These predefined views are very useful to us. Mainly we divide system views into the following two parts.

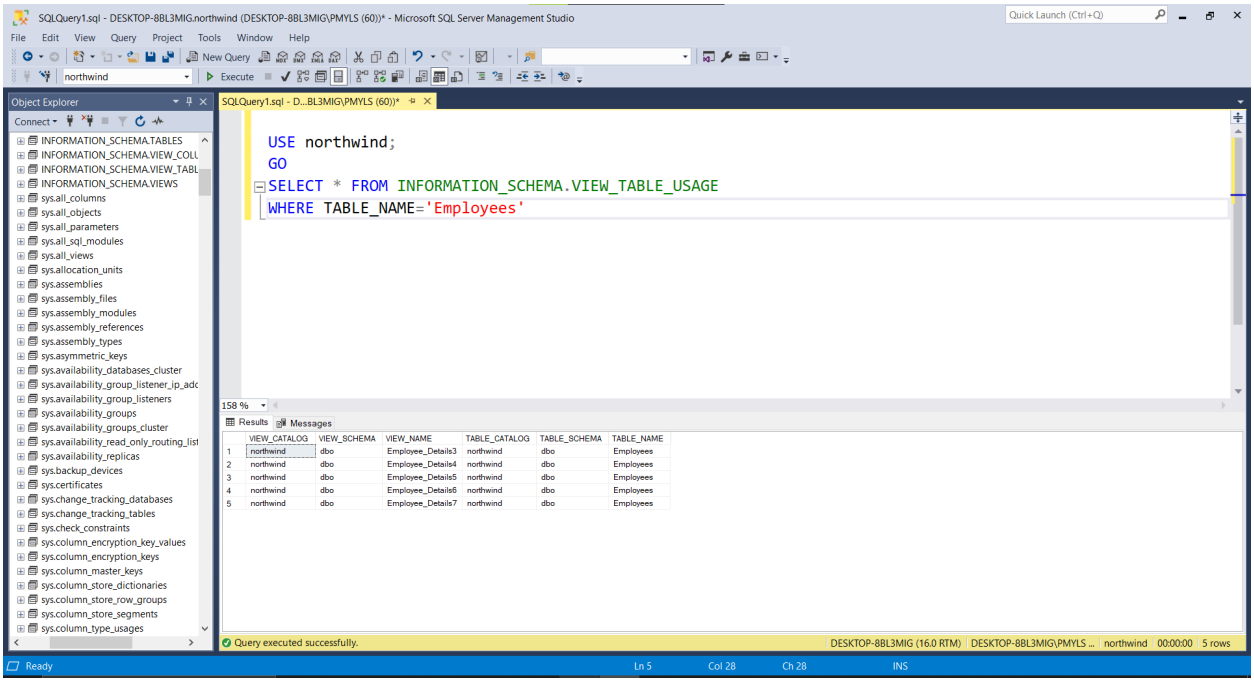
1. Information Schema
2. Catalog View

12.1 Information Schema

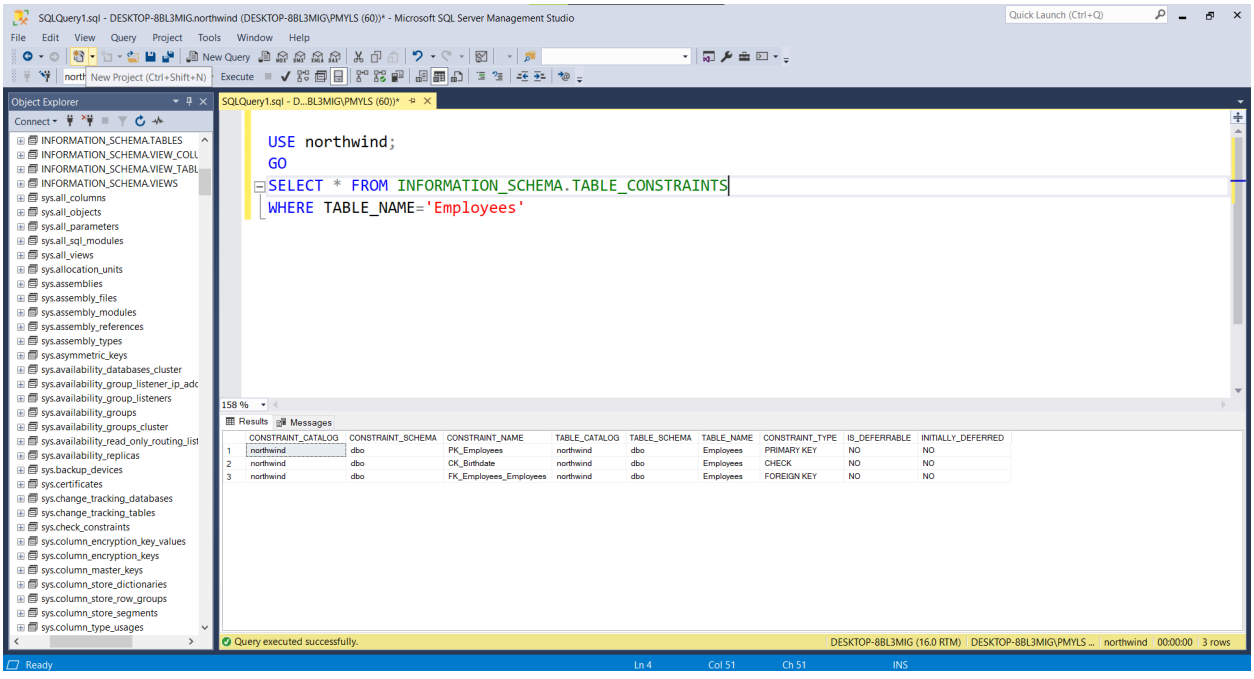
There are nearly 21 Information Schemas in the System. These are used for displaying the most physical information of a database, such as table and columns. An Information Schema starts from INFORMATION_SCHEMA.[View Name].

12.1.1 Example

Let us see an example: This Information Schema returns the details of all the views used by the table Employees



This Information Schema returns the information about the constraints of a table.

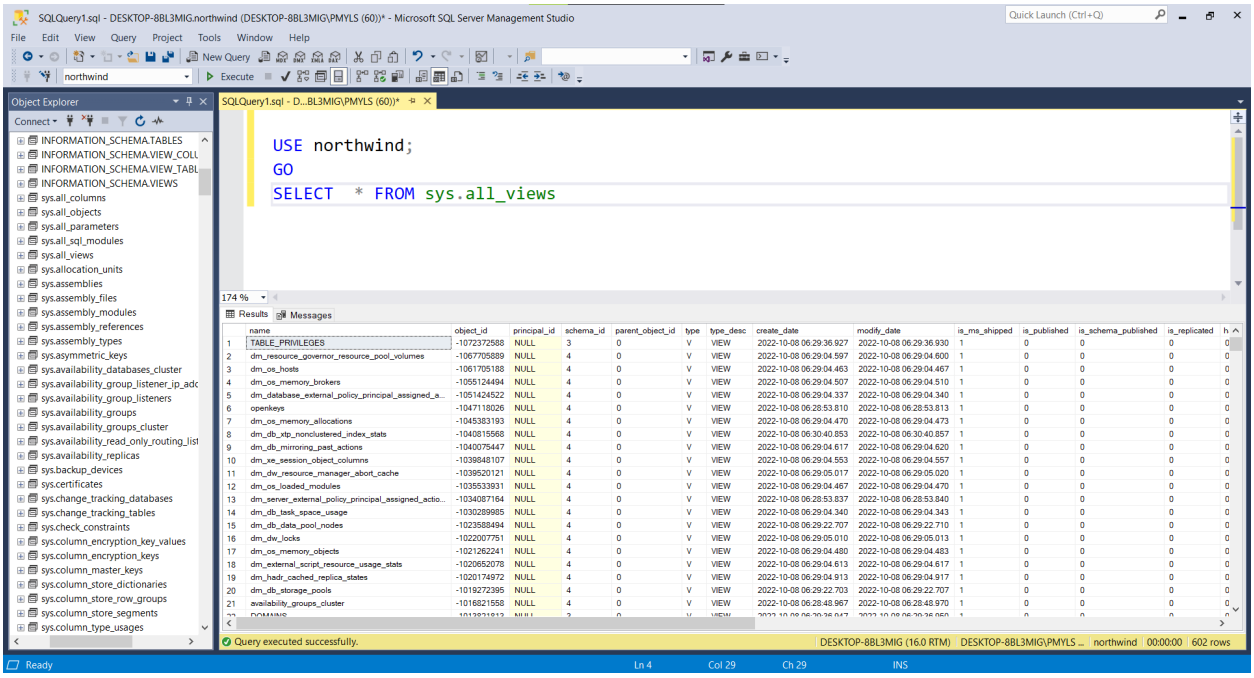


12.2 Catalog View

Catalog Views are categorized into various groups also. These are used to show the self-describing information of a database. These start with **"sys"**.

12.2.1 Example

This query provides information to all types of views using a database.



This query will provide the information about all the databases defined by the system, including user-defined and system defined database.