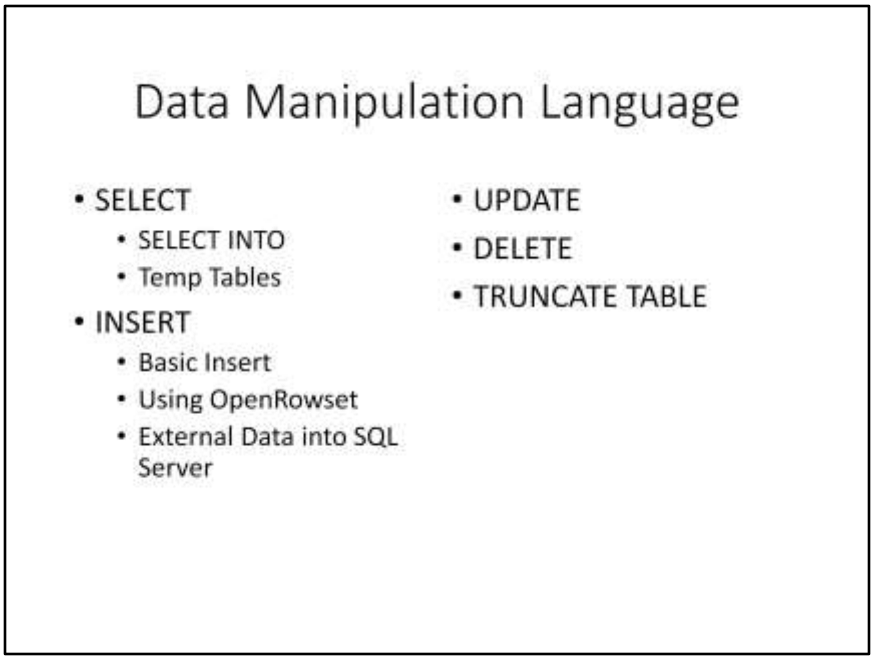
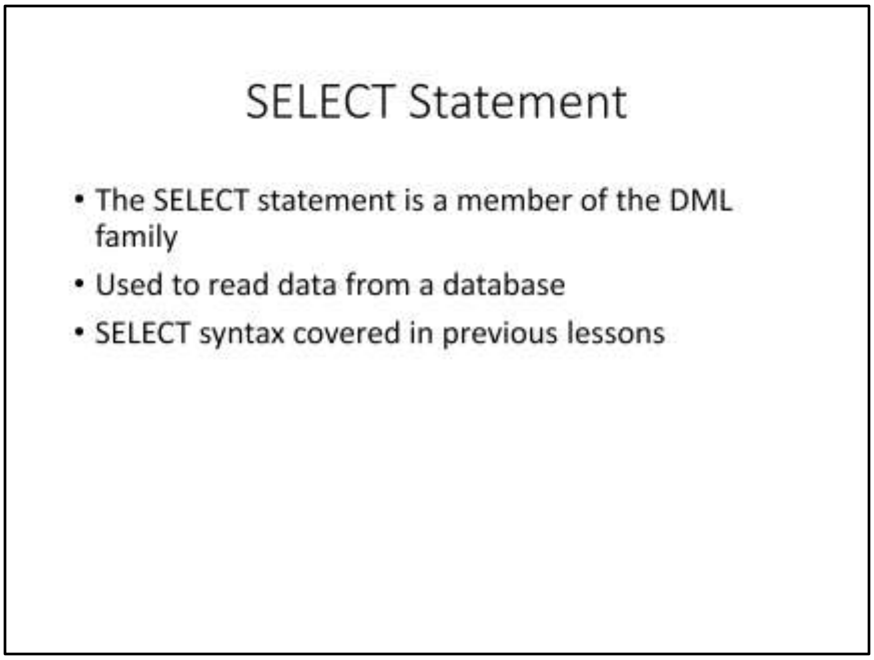


Data Manipulation Language

- SELECT
  - SELECT INTO
  - Temp Tables
- INSERT
  - Basic Insert
  - Using OpenRowset
  - External Data into SQL Server
- UPDATE
- DELETE
- TRUNCATE TABLE

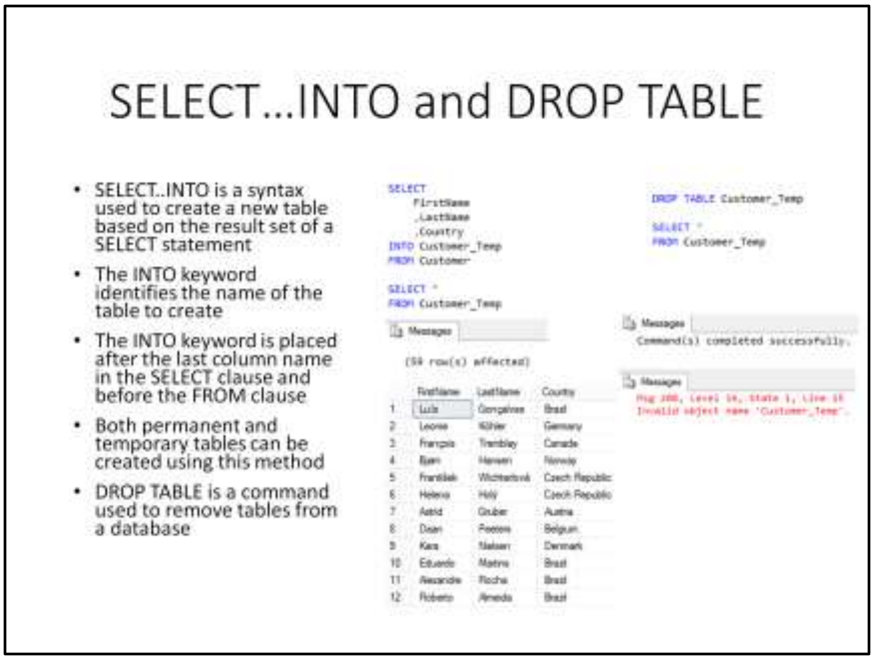
This presentation will cover SQL Server's data manipulation language. The DML includes the SELECT, INSERT, UPDATE and DELETE statements. I will also talk a little bit about temporary tables, and pulling data from external data sources.



SELECT Statement

- The SELECT statement is a member of the DML family
- Used to read data from a database
- SELECT syntax covered in previous lessons

I have covered SELECT statement syntax in previous presentations but it is important to note that the SELECT statement is part of the data manipulation language family. It is used to read data from a database and is by far the most commonly used statement in the SQL language.



SELECT…INTO and DROP TABLE

- SELECT..INTO is a syntax used to create a new table based on the result set of a SELECT statement
- The INTO keyword identifies the name of the table to create
- The INTO keyword is placed after the last column name in the SELECT clause and before the FROM clause
- Both permanent and temporary tables can be created using this method
- DROP TABLE is a command used to remove tables from a database

```
SELECT
    FirstName
    ,LastName
    ,Country
INTO Customer_Temp
FROM Customer

SELECT *
FROM Customer_Temp
```

Messages

```
(59 row(s) affected)
```

	FirstName	LastName	Country
1	Luís	Gonçalves	Brazil
2	Leonie	Köhler	Germany
3	François	Tremblay	Canada
4	Bjørn	Hansen	Norway
5	František	Wichterlová	Czech Republic
6	Helena	Holý	Czech Republic
7	Astrid	Gruber	Austria
8	Daan	Peeters	Belgium
9	Kara	Nielsen	Denmark
10	Eduardo	Martins	Brazil
11	Alexandre	Rocha	Brazil
12	Roberto	Almeida	Brazil

```
DROP TABLE Customer_Temp

SELECT *
FROM Customer_Temp
```

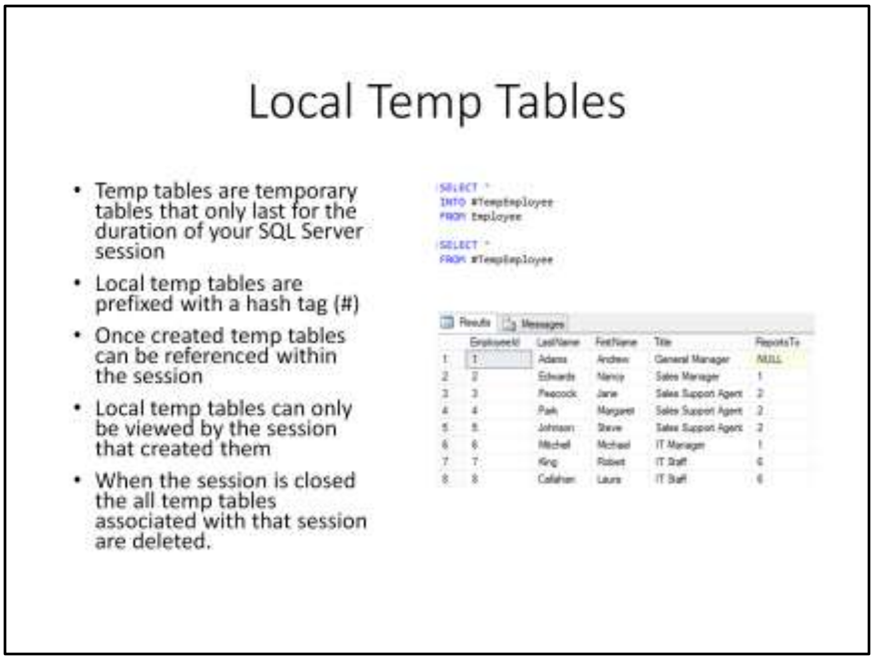
Messages

```
Command(s) completed successfully.
```

Messages

```
Msg 208, Level 16, State 1, Line 18
Invalid object name 'Customer_Temp'.
```

The SELECT INTO statement is used to quickly create a new table based on the query output of the SELECT statement. The INTO keyword is placed between the last column and the FROM clause. You enter the name of the table to create immediately after the INTO keyword. The table created will have datatypes based on the column datatypes of the result set. Both permanent and temporary tables can be created this way. I'll cover temp tables in the next slides. If you wish to remove a table entirely from the database, use the DROP TABLE command followed by the table name. See the example for details.



Local Temp Tables

- Temp tables are temporary tables that only last for the duration of your SQL Server session
- Local temp tables are prefixed with a hash tag (#)
- Once created temp tables can be referenced within the session
- Local temp tables can only be viewed by the session that created them
- When the session is closed the all temp tables associated with that session are deleted.

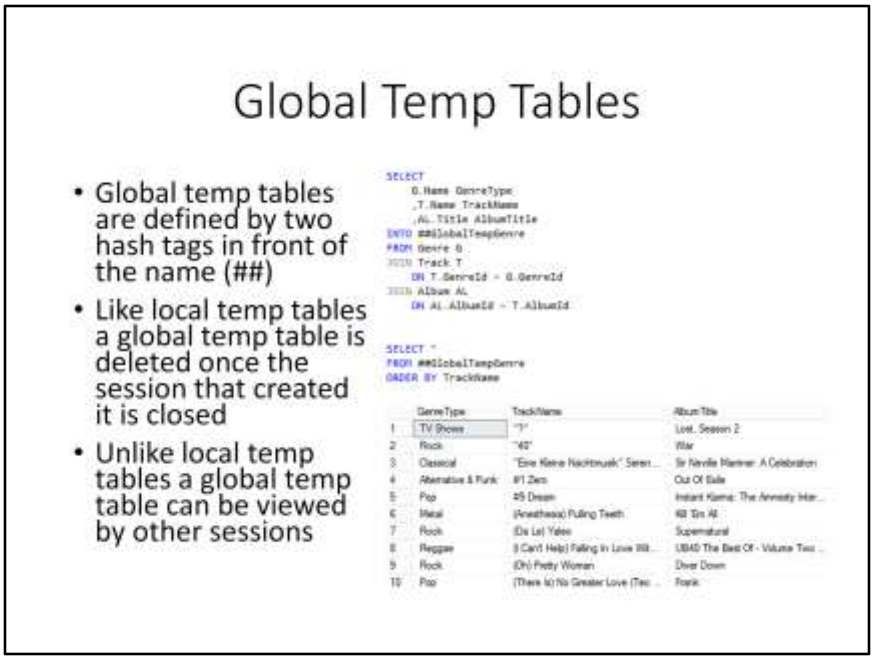
```
SELECT *
INTO #TempEmployee
FROM Employee

SELECT *
FROM #TempEmployee
```

Results | Messages

	EmployeeId	LastName	FirstName	Title	ReportsTo
1	1	Adams	Andrew	General Manager	NULL
2	2	Edwards	Nancy	Sales Manager	1
3	3	Peacock	Jane	Sales Support Agent	2
4	4	Park	Margaret	Sales Support Agent	2
5	5	Johnson	Steve	Sales Support Agent	2
6	6	Mitchell	Michael	IT Manager	1
7	7	King	Robert	IT Staff	6
8	8	Callahan	Laura	IT Staff	6

Temporary tables are tables that are created in a SQL Server session and only exist as long as the session remains active. A local temp table is created by inserting a single hash mark at the beginning of the table name. Once a local temp table is created it can be referenced by the subsequent queries executed in the same session. This is an important point to remember. A local temp table cannot be queried by any sessions other than the one that initially created it. Once the session is closed, the temp table is automatically deleted.



Global Temp Tables

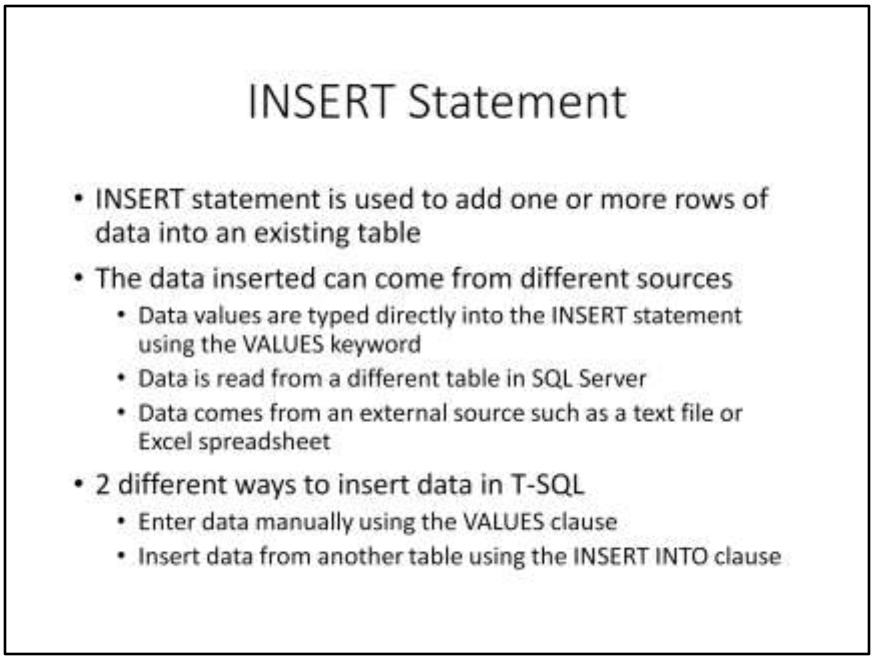
- Global temp tables are defined by two hash tags in front of the name (##)
- Like local temp tables a global temp table is deleted once the session that created it is closed
- Unlike local temp tables a global temp table can be viewed by other sessions

```
SELECT
    G.Name GenreType
    ,T.Name TrackName
    ,AL.Title AlbumTitle
INTO ##GlobalTempGenre
FROM Genre G
JOIN Track T
    ON T.GenreId = G.GenreId
JOIN Album AL
    ON AL.AlbumId = T.AlbumId


SELECT *
FROM ##GlobalTempGenre
ORDER BY TrackName
```

	GenreType	TrackName	AlbumTitle
1	TV Shows	"?"	Lost, Season 2
2	Rock	"40"	War
3	Classical	"Eine Kleine Nachtmusik" Seren...	Sir Neville Marriner: A Celebration
4	Alternative & Punk	#1 Zero	Out Of Exile
5	Pop	#9 Dream	Instant Karma: The Amnesty Inter...
6	Metal	(Anesthesia) Pulling Teeth	Kill 'Em All
7	Rock	(Da Le) Yaleo	Supernatural
8	Reggae	(I Can't Help) Falling In Love Wit...	UB40 The Best Of - Volume Two ...
9	Rock	(Oh) Pretty Woman	Diver Down
10	Pop	(There Is) No Greater Love (Tee...	Frank

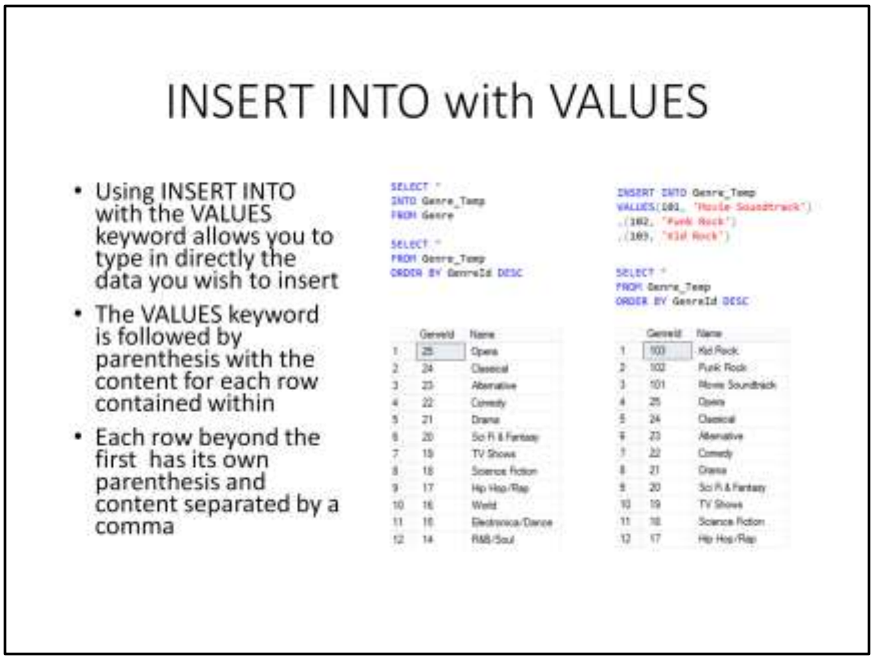
A global temporary table is created by adding two hash marks to the front of the table name. It is similar to a local temp table in that it is active only as long as the session that created it is active. Once the session is closed, the global temp table is deleted. However a global temp table differs from a local temp in that it can be queried by other sessions connected to the database. This means if you create a global temp table in your database session, all other users connected to the database will be able to access, view, and even modify the global temp table.



INSERT Statement

- INSERT statement is used to add one or more rows of data into an existing table
- The data inserted can come from different sources
  - Data values are typed directly into the INSERT statement using the VALUES keyword
  - Data is read from a different table in SQL Server
  - Data comes from an external source such as a text file or Excel spreadsheet
- 2 different ways to insert data in T-SQL
  - Enter data manually using the VALUES clause
  - Insert data from another table using the INSERT INTO clause

The INSERT statement is used to add additional data rows to a table that already exists in your SQL server. The data you wish to insert can be manually typed into the INSERT statement itself, it can come from another table in SQL Server, or it can come from a data source entirely external to SQL Server such as a spreadsheet, XML, or text file.



INSERT INTO with VALUES

- Using INSERT INTO with the VALUES keyword allows you to type in directly the data you wish to insert
- The VALUES keyword is followed by parenthesis with the content for each row contained within
- Each row beyond the first has its own parenthesis and content separated by a comma

```
SELECT *
INTO Genre_Temp
FROM Genre

SELECT *
FROM Genre_Temp
ORDER BY GenreId DESC
```

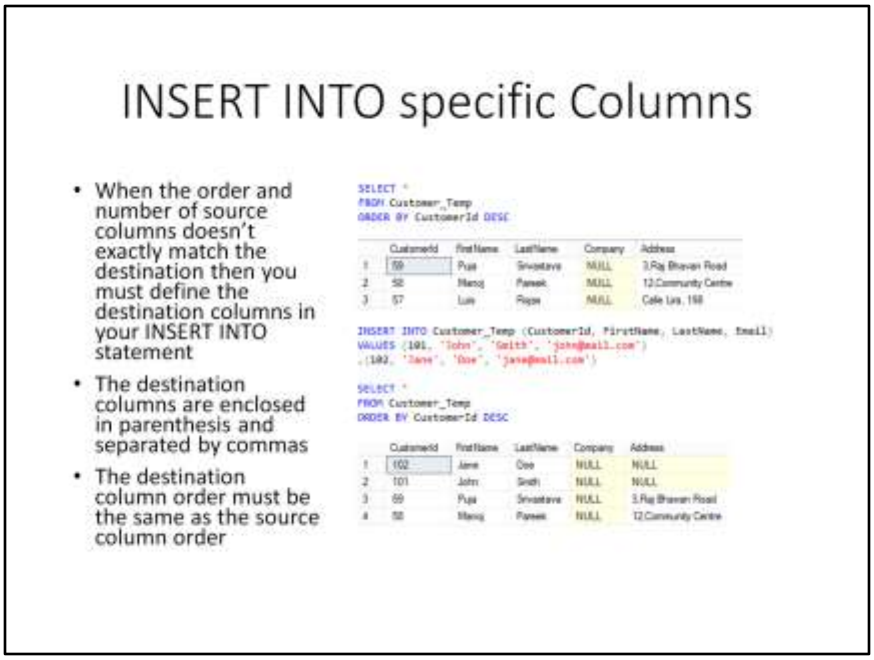
	GenreId	Name
1	25	Opera
2	24	Classical
3	23	Alternative
4	22	Comedy
5	21	Drama
6	20	Sci Fi & Fantasy
7	19	TV Shows
8	18	Science Fiction
9	17	Hip Hop/Rap
10	16	World
11	15	Electronica/Dance
12	14	R&B/Soul

```
INSERT INTO Genre_Temp
VALUES(101, 'Movie Soundtrack')
,(102, 'Funk Rock')
,(103, 'Kid Rock')

SELECT *
FROM Genre_Temp
ORDER BY GenreId DESC
```

	GenreId	Name
1	103	Kid Rock
2	102	Funk Rock
3	101	Movie Soundtrack
4	25	Opera
5	24	Classical
6	23	Alternative
7	22	Comedy
8	21	Drama
9	20	Sci Fi & Fantasy
10	19	TV Shows
11	18	Science Fiction
12	17	Hip Hop/Rap

An INSERT statement begins with the INSERT keyword followed by the optional INTO keyword and the name of the table into which you are inserting the data. If you wish to include the data values to be inserted in your SQL script, you need to use the VALUES keyword. The VALUES keyword tells the SQL Server that one or more rows of data are to follow. Each row to be inserted must be enclosed in parenthesis with commas separating multiple columns. In addition each row must also be separated by a comma. It is important that the number and order of the columns in the VALUE statements match the number and order of columns in the insertion table.



INSERT INTO specific Columns

- When the order and number of source columns doesn't exactly match the destination then you must define the destination columns in your INSERT INTO statement
- The destination columns are enclosed in parenthesis and separated by commas
- The destination column order must be the same as the source column order

```
SELECT *
FROM Customer_Temp
ORDER BY CustomerId DESC
```

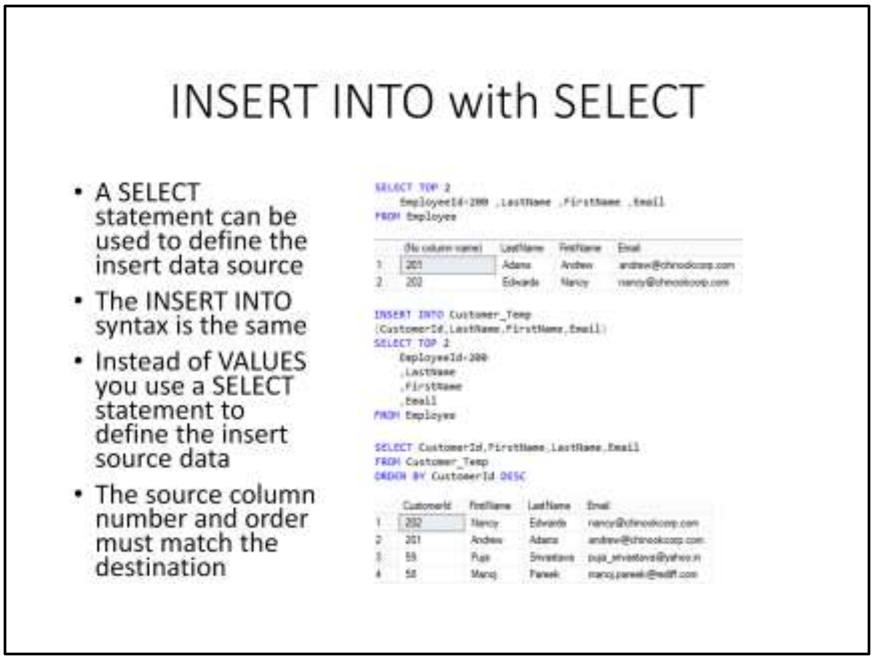
	CustomerId	FirstName	LastName	Company	Address
1	59	Puja	Srivastava	NULL	3,Raj Bhavan Road
2	58	Manoj	Pareek	NULL	12,Community Centre
3	57	Luis	Rojas	NULL	Calle Lira, 198

```
INSERT INTO Customer_Temp (CustomerId, FirstName, LastName, Email)
VALUES (101, 'John', 'Smith', 'john@mail.com')
,(102, 'Jane', 'Doe', 'jane@mail.com')

SELECT *
FROM Customer_Temp
ORDER BY CustomerId DESC
```

	CustomerId	FirstName	LastName	Company	Address
1	102	Jane	Doe	NULL	NULL
2	101	John	Smith	NULL	NULL
3	59	Puja	Srivastava	NULL	3,Raj Bhavan Road
4	58	Manoj	Pareek	NULL	12,Community Centre

Sometimes the columns of data you wish to insert are less than the total number of columns in the table, or the columns may not be in the right order. When this is the case you need to define the columns on the destination table into which you will be inserting. You do this by entering the table's columns after the table name, separated by commas and enclosed in parenthesis. Only the columns you enter will get data inserted into them. The order of the destination columns needs to be the same as the order of the source column values.



INSERT INTO with SELECT

- A SELECT statement can be used to define the insert data source
- The INSERT INTO syntax is the same
- Instead of VALUES you use a SELECT statement to define the insert source data
- The source column number and order must match the destination

```
SELECT TOP 2
    EmployeeId+200 ,LastName ,FirstName ,Email
FROM Employee
```

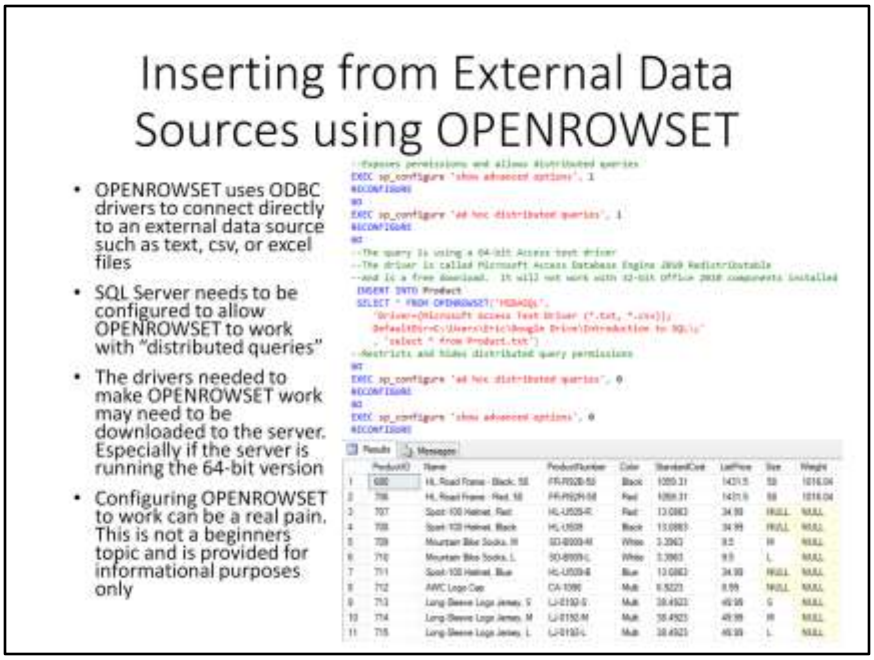
	(No column name)	LastName	FirstName	Email
1	201	Adams	Andrew	andrew@chinookcorp.com
2	202	Edwards	Nancy	nancy@chinookcorp.com

```
INSERT INTO Customer_Temp
(CustomerId,LastName,FirstName,Email)
SELECT TOP 2
    EmployeeId+200
    ,LastName
    ,FirstName
    ,Email
FROM Employee

SELECT CustomerId,FirstName,LastName,Email
FROM Customer_Temp
ORDER BY CustomerId DESC
```

	CustomerId	FirstName	LastName	Email
1	202	Nancy	Edwards	nancy@chinookcorp.com
2	201	Andrew	Adams	andrew@chinookcorp.com
3	59	Puja	Srivastava	puja_srivastava@yahoo.in
4	58	Manoj	Pareek	manoj.pareek@rediff.com

A SELECT statement can be used as the source for data to insert into a table. Instead of typing the values in your SQL script, you execute a SELECT statement and the results of that statement are used as the input for the INSERT statement. The syntax for the INSERT statement line is the same. However you replace the VALUES statement with a standard SELECT statement. Column number and order is still important. You need to make sure the source columns match up with the destination columns otherwise the query will error out, or worse, insert data into the wrong columns.



Inserting from External Data Sources using OPENROWSET

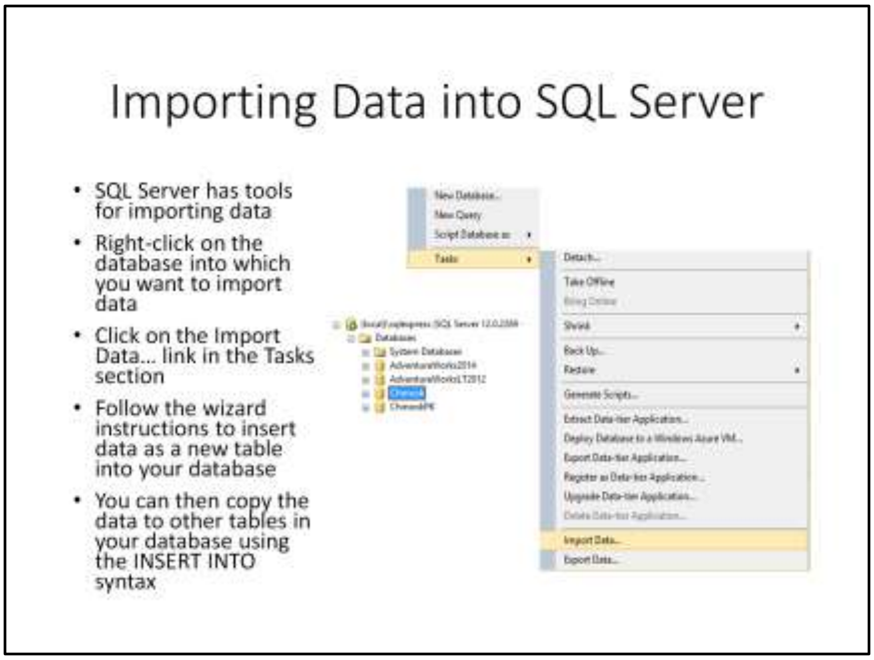
- OPENROWSET uses ODBC drivers to connect directly to an external data source such as text, csv, or excel files
- SQL Server needs to be configured to allow OPENROWSET to work with "distributed queries"
- The drivers needed to make OPENROWSET work may need to be downloaded to the server. Especially if the server is running the 64-bit version
- Configuring OPENROWSET to work can be a real pain. This is not a beginners topic and is provided for informational purposes only

```
--Exposes permissions and allows distributed queries
EXEC sp_configure 'show advanced options', 1
RECONFIGURE
GO
EXEC sp_configure 'ad hoc distributed queries', 1
RECONFIGURE
GO
--The query is using a 64-bit Access text driver
--The driver is called Microsoft Access Database Engine 2010 Redistributable
--And is a free download.  It will not work with 32-bit Office 2010 components installed
 INSERT INTO Product
 SELECT * FROM OPENROWSET('MSDASQL',
   'Driver={Microsoft Access Text Driver (*.txt, *.csv)};
   DefaultDir=C:\Users\Eric\Google Drive\Introduction to SQL\;'
   , 'select * from Product.txt')
--Restricts and hides distributed query permissions
GO
EXEC sp_configure 'ad hoc distributed queries', 0
RECONFIGURE
GO
EXEC sp_configure 'show advanced options', 0
RECONFIGURE
```

Results | Messages

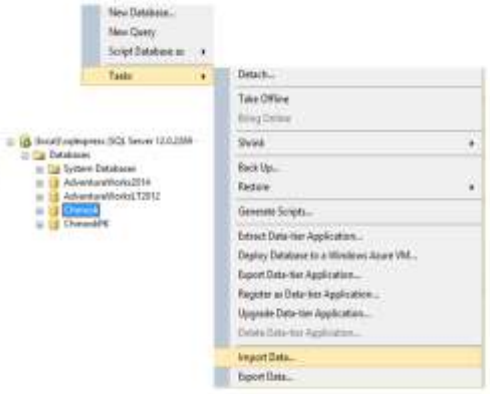
	ProductID	Name	ProductNumber	Color	StandardCost	ListPrice	Size	Weight
1	680	HL Road Frame - Black, 58	FR-R92B-58	Black	1059.31	1431.5	58	1016.04
2	706	HL Road Frame - Red, 58	FR-R92R-58	Red	1059.31	1431.5	58	1016.04
3	707	Sport-100 Helmet, Red	HL-U509-R	Red	13.0863	34.99	NULL	NULL
4	708	Sport-100 Helmet, Black	HL-U509	Black	13.0863	34.99	NULL	NULL
5	709	Mountain Bike Socks, M	SO-B909-M	White	3.3963	9.5	M	NULL
6	710	Mountain Bike Socks, L	SO-B909-L	White	3.3963	9.5	L	NULL
7	711	Sport-100 Helmet, Blue	HL-U509-B	Blue	13.0863	34.99	NULL	NULL
8	712	AWC Logo Cap	CA-1098	Multi	6.9223	8.99	NULL	NULL
9	713	Long-Sleeve Logo Jersey, S	LJ-0192-S	Multi	38.4923	49.99	S	NULL
10	714	Long-Sleeve Logo Jersey, M	LJ-0192-M	Multi	38.4923	49.99	M	NULL
11	715	Long-Sleeve Logo Jersey, L	LJ-0192-L	Multi	38.4923	49.99	L	NULL

It is possible insert data into a table from an external data source such as an Excel or text file. This can be accomplished by using the OPENROWSET function. The OPENROWSET function takes an external data source and allows it to be read as if it were a table in the FROM clause. To get OPENROWSET to work, you need to have the correct ODBC driver installed on your computer and you need to enable SQL Server to allow query connections to external data sources. This can be a real pain to set up, and it can have security implications if left open. This is an advanced SQL Server topic, but I present it here so you can see what is possible.

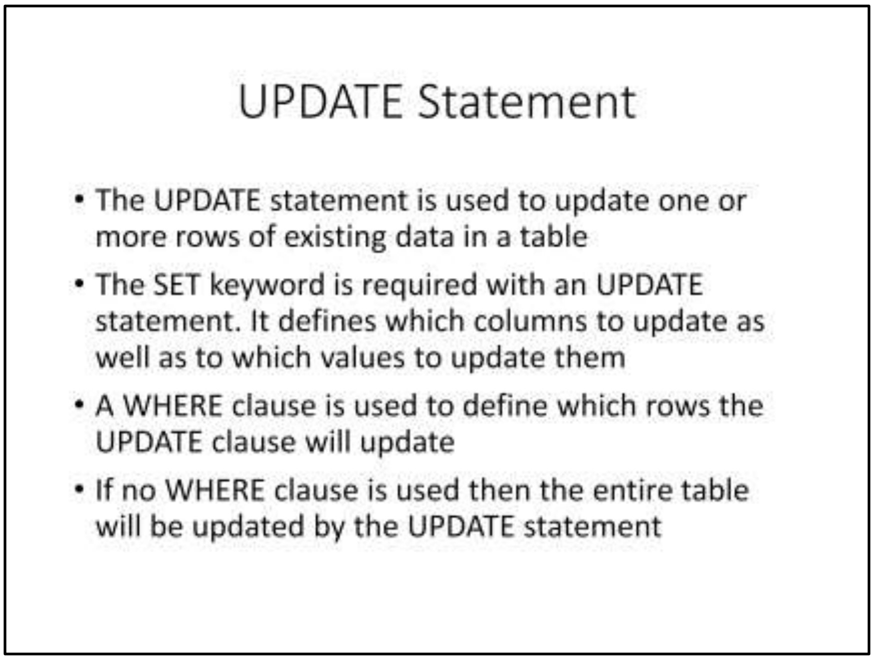


Importing Data into SQL Server

- SQL Server has tools for importing data
- Right-click on the database into which you want to import data
- Click on the Import Data… link in the Tasks section
- Follow the wizard instructions to insert data as a new table into your database
- You can then copy the data to other tables in your database using the INSERT INTO syntax


New Database...
New Query
Script Database as
Tasks
(localdb)\sqlexpress (SQL Server 12.0.2000
Databases
System Databases
AdventureWorks2014
AdventureWorksLT2012
ChinookPK
Detach...
Take Offline
Bring Online
Shrink
Back Up...
Restore
Generate Scripts...
Extract Data-tier Application...
Deploy Database to a Windows Azure VM...
Export Data-tier Application...
Register as Data-tier Application...
Upgrade Data-tier Application...
Delete Data-tier Application...
Import Data...
Export Data...

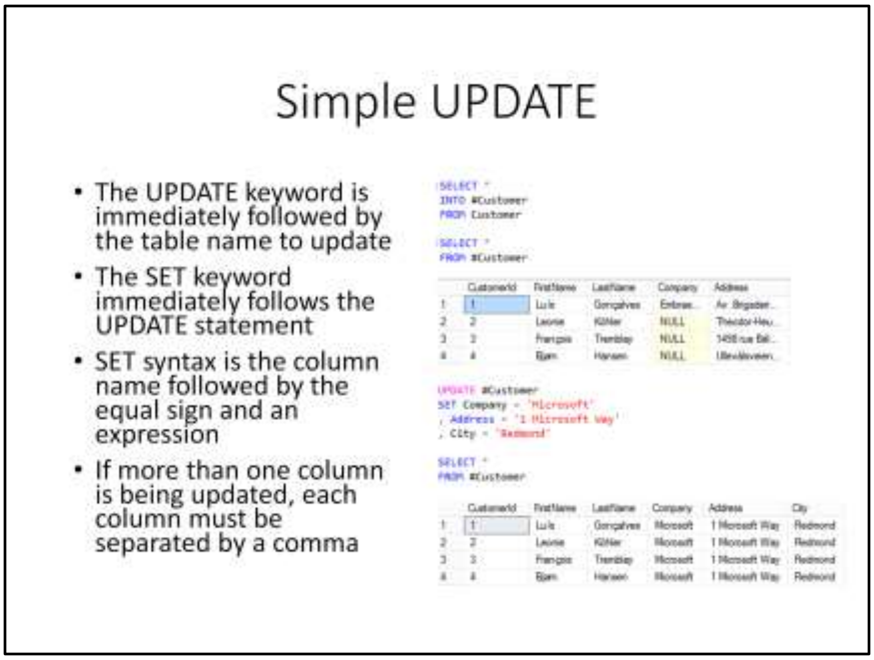
SQL Server Management Studio provides a built-in tool for importing data into SQL Server. You can access the import wizard by right-clicking on the name of the database into which you are importing on the Object Explorer window. You then select Tasks from the dropdown menu then Import Data to open the import wizard. The wizard will prompt you for the data source type you will be importing as well as the destination on your SQL Server. My preferred method is to import the external data into a new table, then run one or more INSERT INTO statements to copy the data into my existing database tables.



UPDATE Statement

- The UPDATE statement is used to update one or more rows of existing data in a table
- The SET keyword is required with an UPDATE statement. It defines which columns to update as well as to which values to update them
- A WHERE clause is used to define which rows the UPDATE clause will update
- If no WHERE clause is used then the entire table will be updated by the UPDATE statement

The UPDATE statement is used to update data that already exists in a table. With the UPDATE statement you can select which columns to update using the SET keyword and which rows to update using a standard WHERE clause. The SET keyword is required but not the WHERE clause. If you omit the WHERE clause then all the rows in the table will be updated.



Simple UPDATE

- The UPDATE keyword is immediately followed by the table name to update
- The SET keyword immediately follows the UPDATE statement
- SET syntax is the column name followed by the equal sign and an expression
- If more than one column is being updated, each column must be separated by a comma

```
SELECT *
INTO #Customer
FROM Customer

SELECT *
FROM #Customer
```

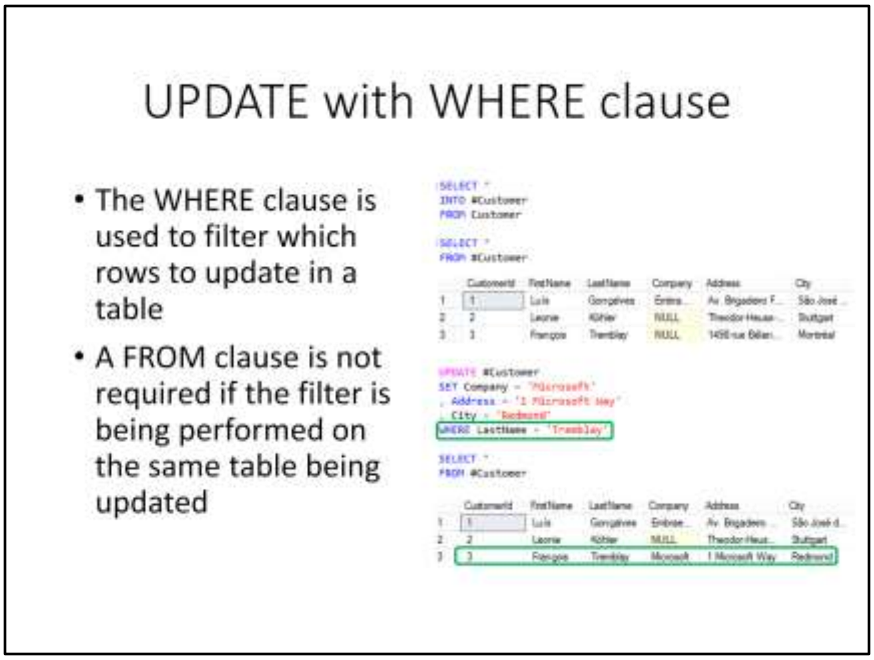
	CustomerId	FirstName	LastName	Company	Address
1	1	Luís	Gonçalves	Embrae...	Av. Brigadeir...
2	2	Leonie	Köhler	NULL	Theodor-Heu...
3	3	François	Tremblay	NULL	1498 rue Bél...
4	4	Bjørn	Hansen	NULL	Ullevålsveien...

```
UPDATE #Customer
SET Company = 'Microsoft'
, Address = '1 Microsoft Way'
, City = 'Redmond'

SELECT *
FROM #Customer
```

	CustomerId	FirstName	LastName	Company	Address	City
1	1	Luís	Gonçalves	Microsoft	1 Microsoft Way	Redmond
2	2	Leonie	Köhler	Microsoft	1 Microsoft Way	Redmond
3	3	François	Tremblay	Microsoft	1 Microsoft Way	Redmond
4	4	Bjørn	Hansen	Microsoft	1 Microsoft Way	Redmond

The syntax for an UPDATE statement starts with the UPDATE keyword followed by the name of the table to update. Afterwards you enter the SET keyword followed by the columns you wish to update. Each column name is followed by an equal sign and the expression to which you want the column updated. If there is more than one column, they need to be separated by commas.



UPDATE with WHERE clause

- The WHERE clause is used to filter which rows to update in a table
- A FROM clause is not required if the filter is being performed on the same table being updated

```
SELECT *
INTO #Customer
FROM Customer

SELECT *
FROM #Customer
```

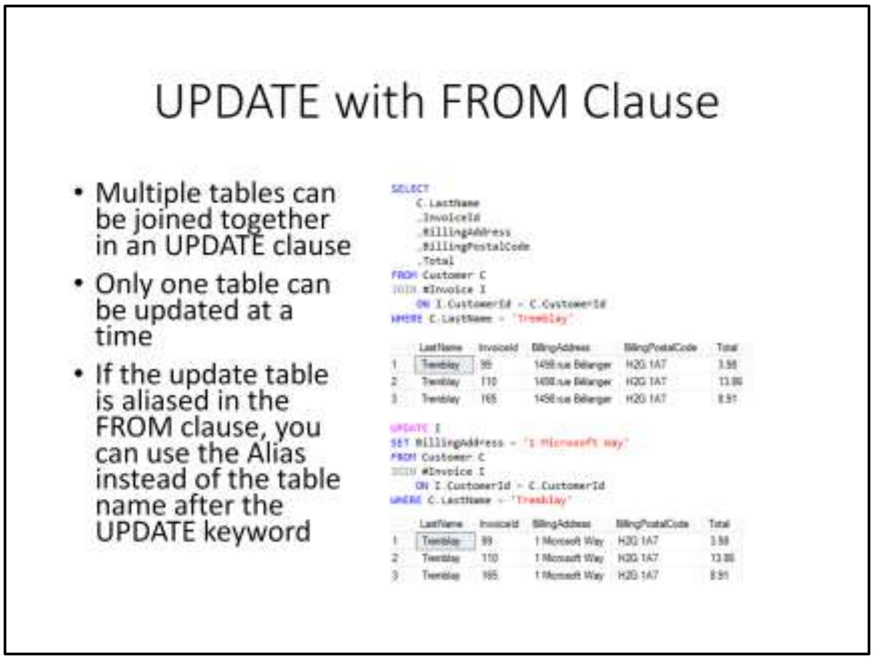
	CustomerId	FirstName	LastName	Company	Address	City
1	1	Luís	Gonçalves	Embra...	Av. Brigadeiro F...	São José ...
2	2	Leonie	Köhler	NULL	Theodor-Heuss-...	Stuttgart
3	3	François	Tremblay	NULL	1498 rue Bélan...	Montréal

```
UPDATE #Customer
SET Company = 'Microsoft'
, Address = '1 Microsoft Way'
, City = 'Redmond'
WHERE LastName = 'Tremblay'

SELECT *
FROM #Customer
```

	CustomerId	FirstName	LastName	Company	Address	City
1	1	Luís	Gonçalves	Embrae...	Av. Brigadeiro ...	São José d...
2	2	Leonie	Köhler	NULL	Theodor-Heus...	Stuttgart
3	3	François	Tremblay	Microsoft	1 Microsoft Way	Redmond

If you only want to update specific rows in your table, then your UPDATE statement needs to include a WHERE clause. The WHERE clause will identify which rows in the table to update.



UPDATE with FROM Clause

- Multiple tables can be joined together in an UPDATE clause
- Only one table can be updated at a time
- If the update table is aliased in the FROM clause, you can use the Alias instead of the table name after the UPDATE keyword

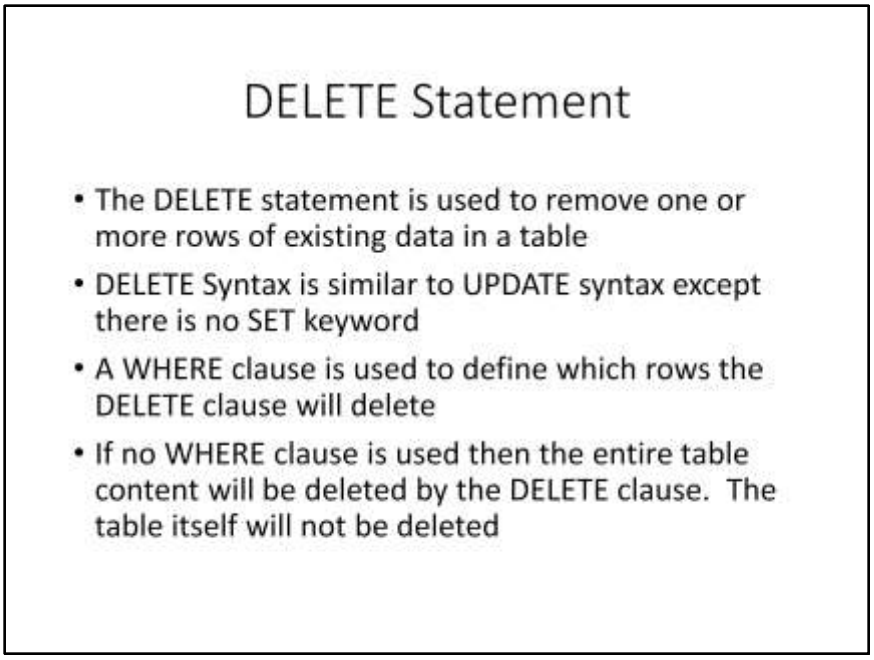
```
SELECT
    C.LastName
    ,InvoiceId
    ,BillingAddress
    ,BillingPostalCode
    ,Total
FROM Customer C
JOIN #Invoice I
    ON I.CustomerId = C.CustomerId
WHERE C.LastName = 'Tremblay'
```

	LastName	InvoiceId	BillingAddress	BillingPostalCode	Total
1	Tremblay	99	1498 rue Bélanger	H2G 1A7	3.98
2	Tremblay	110	1498 rue Bélanger	H2G 1A7	13.86
3	Tremblay	165	1498 rue Bélanger	H2G 1A7	8.91

```
UPDATE I
SET BillingAddress = '1 Microsoft Way'
FROM Customer C
JOIN #Invoice I
    ON I.CustomerId = C.CustomerId
WHERE C.LastName = 'Tremblay'
```

	LastName	InvoiceId	BillingAddress	BillingPostalCode	Total
1	Tremblay	99	1 Microsoft Way	H2G 1A7	3.98
2	Tremblay	110	1 Microsoft Way	H2G 1A7	13.86
3	Tremblay	165	1 Microsoft Way	H2G 1A7	8.91

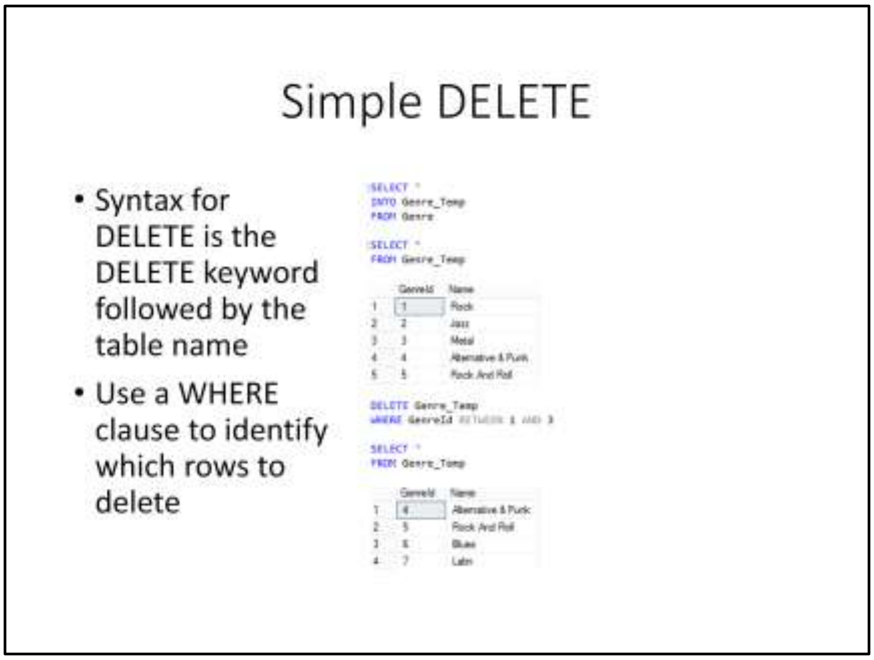
Only one table can be updated in a UPDATE statement, but it is possible to include multiple tables in the FROM clause. A FROM clause is optional and is usually included when the data you will be filtering on is not in the same table as the table you will be updating. If you use a from clause and you alias your tables, you can use the Alias name instead of the table name after the UPDATE keyword.



DELETE Statement

- The DELETE statement is used to remove one or more rows of existing data in a table
- DELETE Syntax is similar to UPDATE syntax except there is no SET keyword
- A WHERE clause is used to define which rows the DELETE clause will delete
- If no WHERE clause is used then the entire table content will be deleted by the DELETE clause. The table itself will not be deleted

The DELETE statement is used to remove one or more rows from a table in your database. The syntax for a DELETE statement is similar to that of an UPDATE statement. The major difference being that there is no SET keyword available. This makes sense because you can only delete rows with the DELETE statement. The WHERE clause is optional in a DELETE statement, but if you choose not to use one, then the entire contents of the table will be deleted.



Simple DELETE

- Syntax for DELETE is the DELETE keyword followed by the table name
- Use a WHERE clause to identify which rows to delete

```
SELECT *
INTO Genre_Temp
FROM Genre

SELECT *
FROM Genre_Temp
```

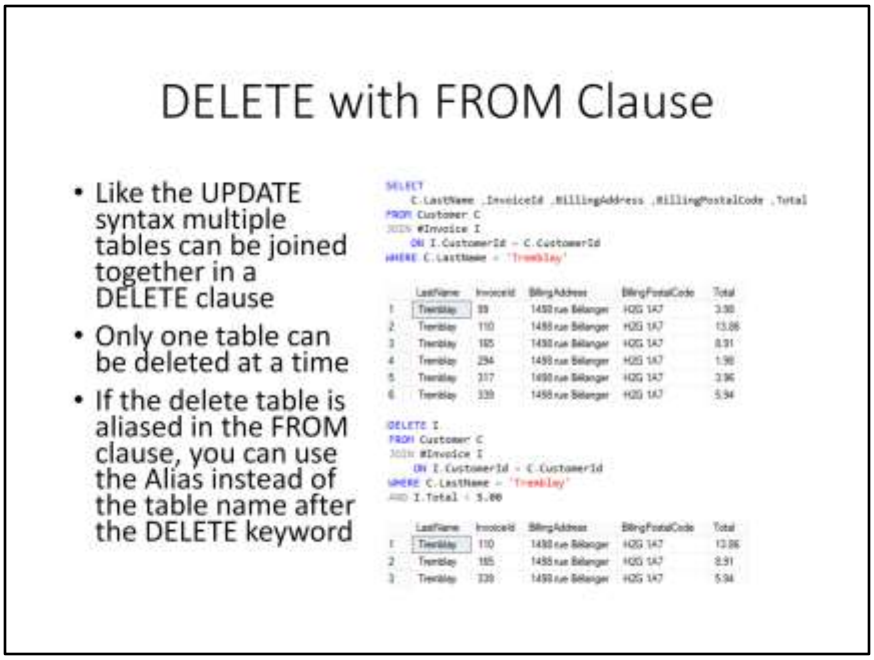
	GenreId	Name
1	1	Rock
2	2	Jazz
3	3	Metal
4	4	Alternative & Punk
5	5	Rock And Roll

```
DELETE Genre_Temp
WHERE GenreId BETWEEN 1 AND 3

SELECT *
FROM Genre_Temp
```

	GenreId	Name
1	4	Alternative & Punk
2	5	Rock And Roll
3	6	Blues
4	7	Latin

The syntax for a DELETE statement is relatively simple. You enter the DELETE keyword followed by the name of the table. The WHERE clause is optional and comes after the table name. It allows you to filter which records you want to delete.



DELETE with FROM Clause

- Like the UPDATE syntax multiple tables can be joined together in a DELETE clause
- Only one table can be deleted at a time
- If the delete table is aliased in the FROM clause, you can use the Alias instead of the table name after the DELETE keyword

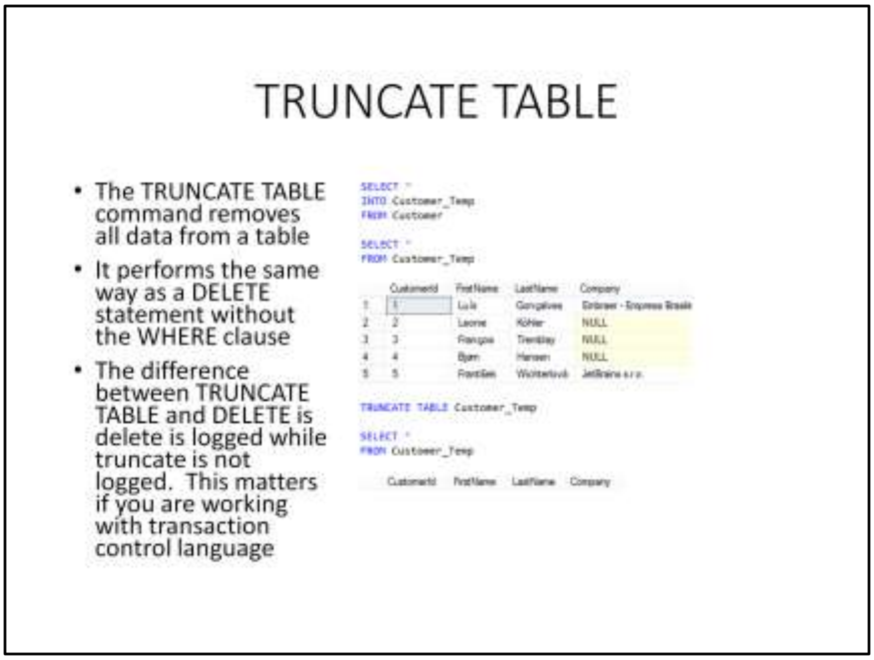
```
SELECT
    C.LastName ,InvoiceId ,BillingAddress ,BillingPostalCode ,Total
FROM Customer C
JOIN #Invoice I
    ON I.CustomerId = C.CustomerId
WHERE C.LastName = 'Tremblay'
```

	LastName	InvoiceId	BillingAddress	BillingPostalCode	Total
1	Tremblay	99	1498 rue Bélanger	H2G 1A7	3.98
2	Tremblay	110	1498 rue Bélanger	H2G 1A7	13.86
3	Tremblay	185	1498 rue Bélanger	H2G 1A7	8.91
4	Tremblay	294	1498 rue Bélanger	H2G 1A7	1.98
5	Tremblay	317	1498 rue Bélanger	H2G 1A7	3.96
6	Tremblay	339	1498 rue Bélanger	H2G 1A7	5.94

```
DELETE I
FROM Customer C
JOIN #Invoice I
    ON I.CustomerId = C.CustomerId
WHERE C.LastName = 'Tremblay'
AND I.Total < 5.00
```

	LastName	InvoiceId	BillingAddress	BillingPostalCode	Total
1	Tremblay	110	1498 rue Bélanger	H2G 1A7	13.86
2	Tremblay	185	1498 rue Bélanger	H2G 1A7	8.91
3	Tremblay	339	1498 rue Bélanger	H2G 1A7	5.94

Similar to an UDATE statement, a DELETE statement can have multiple tables in its FROM clause although you are only allowed to delete records from one table. Again the idea behind using a FROM clause is that you need to include data from a separate table for filtering that is not included in the deletion table itself. If you alias the table names in the FROM clause, you can use the alias name instead of the table name in the DELETE clause.



TRUNCATE TABLE

- The TRUNCATE TABLE command removes all data from a table
- It performs the same way as a DELETE statement without the WHERE clause
- The difference between TRUNCATE TABLE and DELETE is delete is logged while truncate is not logged. This matters if you are working with transaction control language

```
SELECT *
INTO Customer_Temp
FROM Customer

SELECT *
FROM Customer_Temp
```

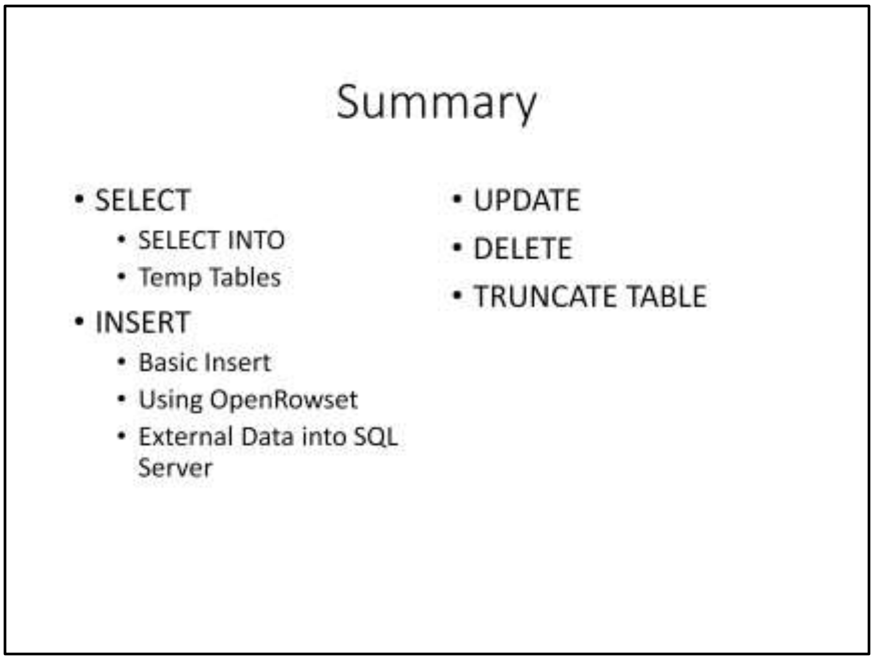
	CustomerId	FirstName	LastName	Company
1	1	Luís	Gonçalves	Embraer - Empresa Brasile
2	2	Leonie	Köhler	NULL
3	3	François	Tremblay	NULL
4	4	Bjørn	Hansen	NULL
5	5	František	Wichterlová	JetBrains s.r.o.

```
TRUNCATE TABLE Customer_Temp

SELECT *
FROM Customer_Temp
```

CustomerId	FirstName	LastName	Company

Another way to remove data from a table is by using the TRUNCATE TABLE statement. The TRUNCATE TABLE statement takes the table name for an argument and it deletes all data in the table. The effect on the table is identical to using a DELETE statement without a WHERE clause. The difference though is a TRUNCATE TABLE statement is not logged and therefore cannot be rolled back, unlike a DELETE statement. However the TRUNCATE TABLE statement is faster if you are deleting millions of rows and can save log space. I will talk about ROLLBACK and Transaction Control Language in a future presentation.



Summary

- SELECT
  - SELECT INTO
  - Temp Tables
- INSERT
  - Basic Insert
  - Using OpenRowset
  - External Data into SQL Server
- UPDATE
- DELETE
- TRUNCATE TABLE

This concludes the presentation on Data Manipulation Language.