

# TUIA

## BASES DE DATOS I – 2SEM2025 – C2

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## TUIA - BASES DE DATOS I

### RECUPERACIÓN DE DATOS

- Hasta el momento hemos visto cláusulas que nos permiten crear el **esquema** (CREATE, ALTER) y actualizar el **estado** (INSERT, UPDATE, DELETE) de las BD
- Nos ocuparemos ahora de la recuperación o consulta de los datos en las BD

# TUIA - BASES DE DATOS I

## RECUPERACIÓN DE DATOS

- Para los ejemplos en esta presentación utilizaremos la BD NorthWind
- [sql-server-samples/samples/databases/northwind-pubs at master · microsoft/sql-server-samples · GitHub](https://github.com/microsoft/sql-server-samples/tree/master/samples/databases/northwind-pubs)
- <https://raw.githubusercontent.com/microsoft/sql-server-samples/master/samples/databases/northwind-pubs/instnwnd.sql>

# TUIA - BASES DE DATOS I

## RECUPERACIÓN DE DATOS

- Comando SELECT – sintaxis básica:

```
SELECT select_list [ INTO new_table ]  
[ FROM table_source ]  
[ WHERE search_condition ]  
[ GROUP BY group_by_expression ]  
[ HAVING search_condition ]  
[ ORDER BY order_expression [ ASC | DESC ] ]
```

## TUIA - BASES DE DATOS I

### RECUPERACIÓN DE DATOS

- **SELECT:** lo único obligatoria es la `select_list`

```
SELECT @@VERSION
```

```
SELECT GETDATE()
```

# TUIA - BASES DE DATOS I

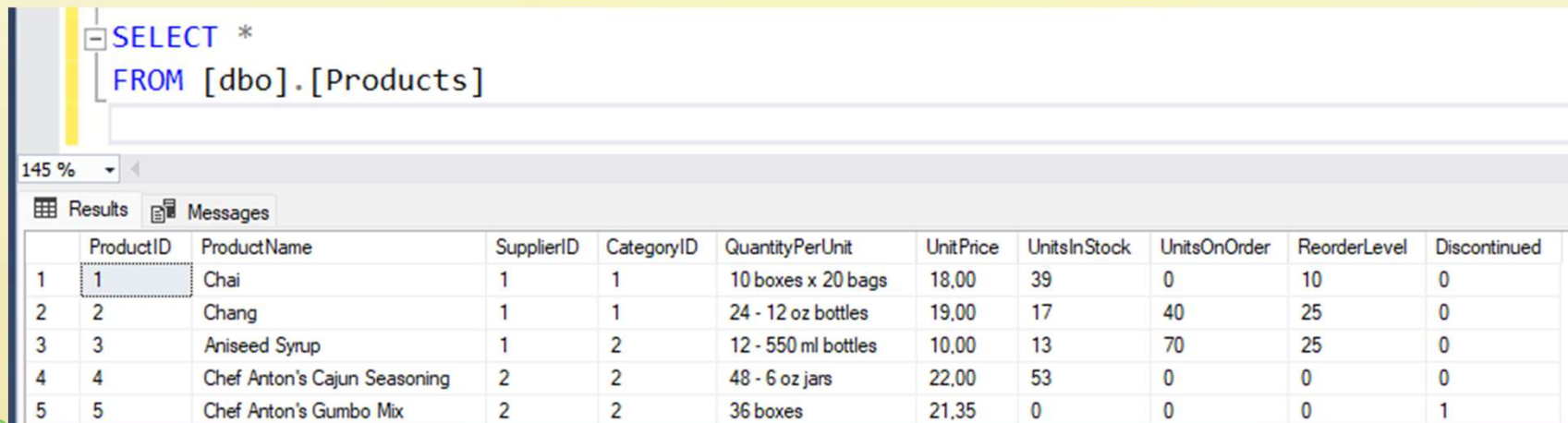
## RECUPERACIÓN DE DATOS

- SELECT: orden lógico de procesamiento
  - FROM
  - ON
  - JOIN
  - WHERE
  - GROUP BY
  - WITH CUBE or WITH ROLLUP
  - HAVING
  - SELECT
  - DISTINCT
  - ORDER BY
  - TOP

# TUIA - BASES DE DATOS I

## RECUPERACIÓN DE DATOS

- **SELECT:** Consulta simple



The screenshot shows a SQL query window with the following text:

```
SELECT *  
FROM [dbo].[Products]
```

Below the query window, the 'Results' tab is active, displaying a table with 11 columns and 5 rows of data. The columns are: ProductID, ProductName, SupplierID, CategoryID, QuantityPerUnit, UnitPrice, UnitsInStock, UnitsOnOrder, ReorderLevel, and Discontinued. The first row is highlighted.

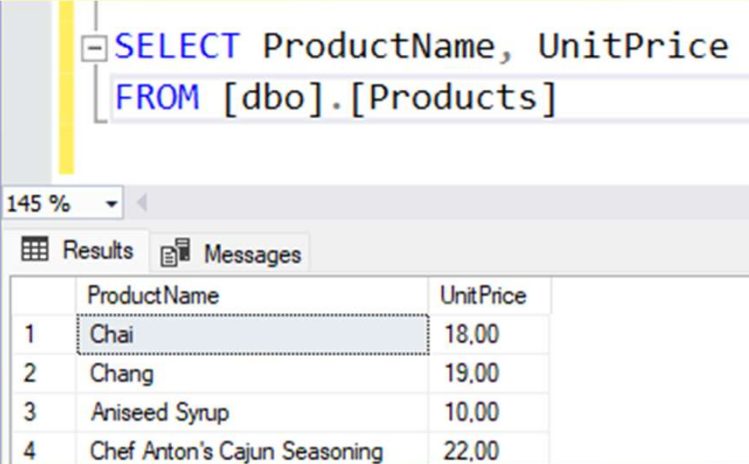
	ProductID	ProductName	SupplierID	CategoryID	QuantityPerUnit	UnitPrice	UnitsInStock	UnitsOnOrder	ReorderLevel	Discontinued
1	1	Chai	1	1	10 boxes x 20 bags	18,00	39	0	10	0
2	2	Chang	1	1	24 - 12 oz bottles	19,00	17	40	25	0
3	3	Aniseed Syrup	1	2	12 - 550 ml bottles	10,00	13	70	25	0
4	4	Chef Anton's Cajun Seasoning	2	2	48 - 6 oz jars	22,00	53	0	0	0
5	5	Chef Anton's Gumbo Mix	2	2	36 boxes	21,35	0	0	0	1

- **Select\_list \*** muestra todos los campos de la tabla

# TUIA - BASES DE DATOS I

## RECUPERACIÓN DE DATOS

- **SELECT:** Consulta simple



The screenshot shows a SQL query window with the following text:

```
SELECT ProductName, UnitPrice  
FROM [dbo].[Products]
```

Below the query window, the 'Results' tab is active, displaying a table with 2 columns: 'ProductName' and 'UnitPrice'. The table contains 4 rows of data:

	ProductName	UnitPrice
1	Chai	18,00
2	Chang	19,00
3	Aniseed Syrup	10,00
4	Chef Anton's Cajun Seasoning	22,00

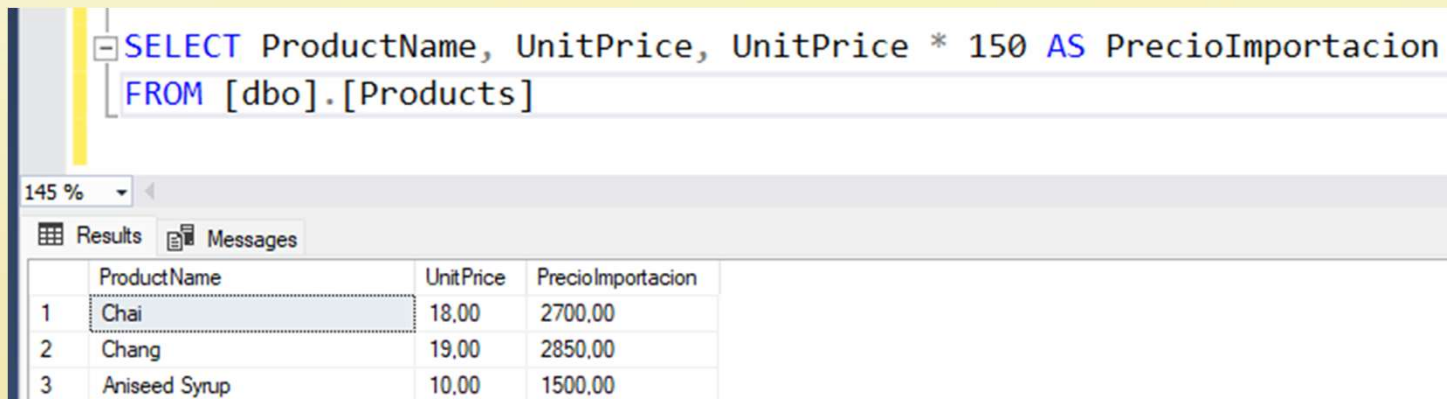
- **Select\_list:** podemos especificar los campos que vamos a traer
- **FROM:** puede ser una o varias tablas o cualquier cosa que devuelva una relación



# TUIA - BASES DE DATOS I

## RECUPERACIÓN DE DATOS

- **SELECT:** Consulta simple



The screenshot shows a SQL query window with the following text:

```
SELECT ProductName, UnitPrice, UnitPrice * 150 AS PrecioImportacion  
FROM [dbo].[Products]
```

Below the query window, the 'Results' tab is active, displaying a table with 3 rows and 4 columns. The columns are ProductName, UnitPrice, and PrecioImportacion. The first row is highlighted.

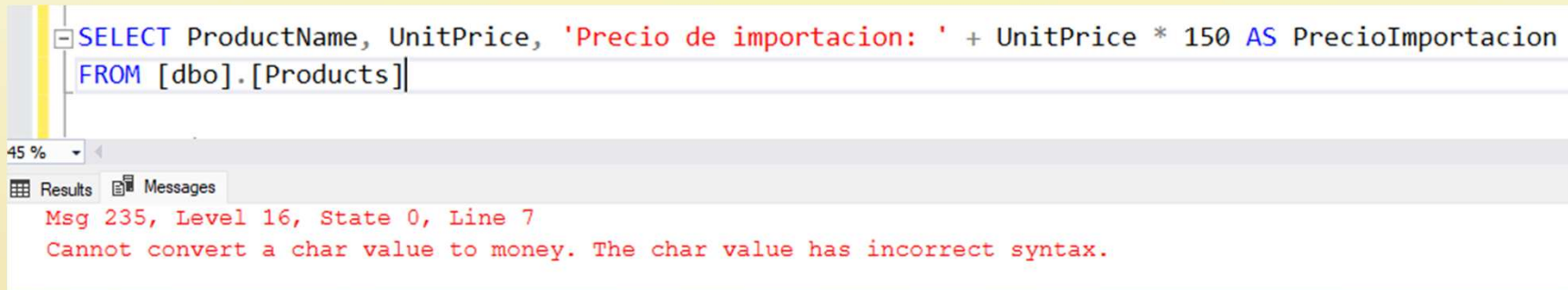
	ProductName	UnitPrice	PrecioImportacion
1	Chai	18,00	2700,00
2	Chang	19,00	2850,00
3	Aniseed Syrup	10,00	1500,00

- **Select\_list:** podemos tener campos calculados

# TUIA - BASES DE DATOS I

## RECUPERACIÓN DE DATOS

- **SELECT:** Consulta simple



The screenshot shows a SQL query window with the following text:

```
SELECT ProductName, UnitPrice, 'Precio de importacion: ' + UnitPrice * 150 AS PrecioImportacion  
FROM [dbo].[Products]
```

Below the query window, the 'Messages' tab is selected, displaying the following error message:

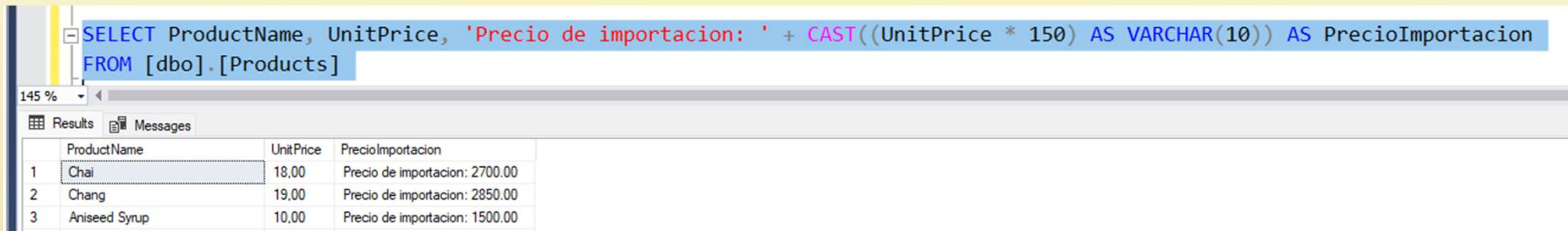
```
Msg 235, Level 16, State 0, Line 7  
Cannot convert a char value to money. The char value has incorrect syntax.
```

- **Select\_list:** podemos concatenar campos o cadenas (pero no hay conversión *'automática'*)

# TUIA - BASES DE DATOS I

## RECUPERACIÓN DE DATOS

- **SELECT:** Consulta simple



The screenshot shows a SQL query window with the following query:

```
SELECT ProductName, UnitPrice, 'Precio de importacion: ' + CAST((UnitPrice * 150) AS VARCHAR(10)) AS PrecioImportacion
FROM [dbo].[Products]
```

Below the query, the 'Results' tab is active, displaying a table with 3 rows and 3 columns: ProductName, UnitPrice, and PrecioImportacion.

	ProductName	UnitPrice	PrecioImportacion
1	Chai	18,00	Precio de importacion: 2700.00
2	Chang	19,00	Precio de importacion: 2850.00
3	Aniseed Syrup	10,00	Precio de importacion: 1500.00

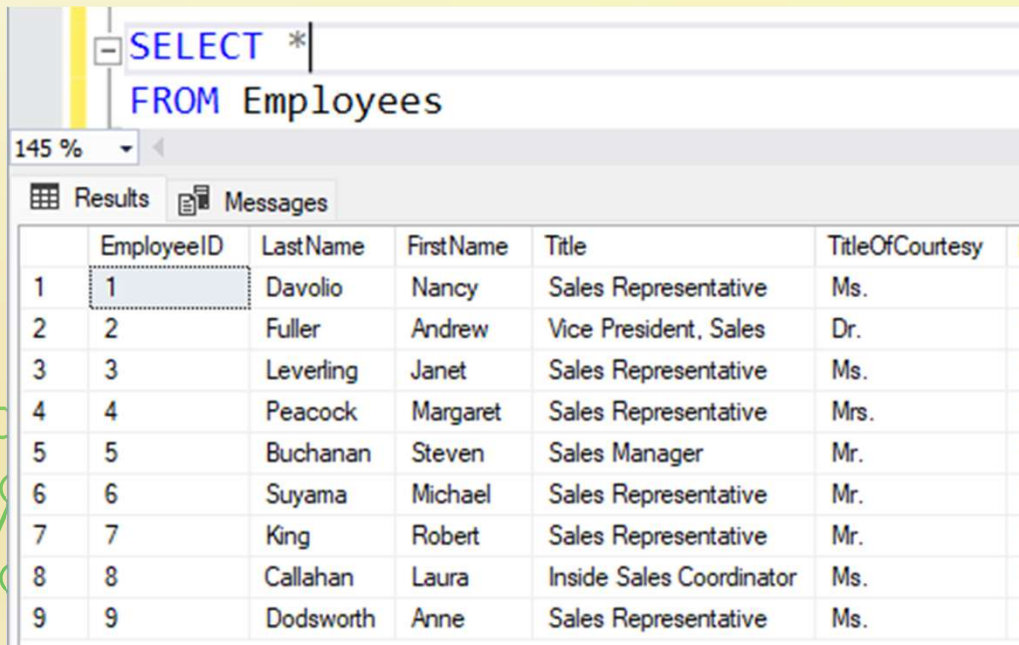
'Precio de importacion: ' + CAST((UnitPrice \* 150) AS VARCHAR(10)) AS PrecioImportacion

- **Select\_list:** podemos concatenar campos o cadenas (pero no hay conversión *'automática'*)

# TUIA - BASES DE DATOS I

## RECUPERACIÓN DE DATOS

- **SELECT:** Consulta simple - DISTINCT



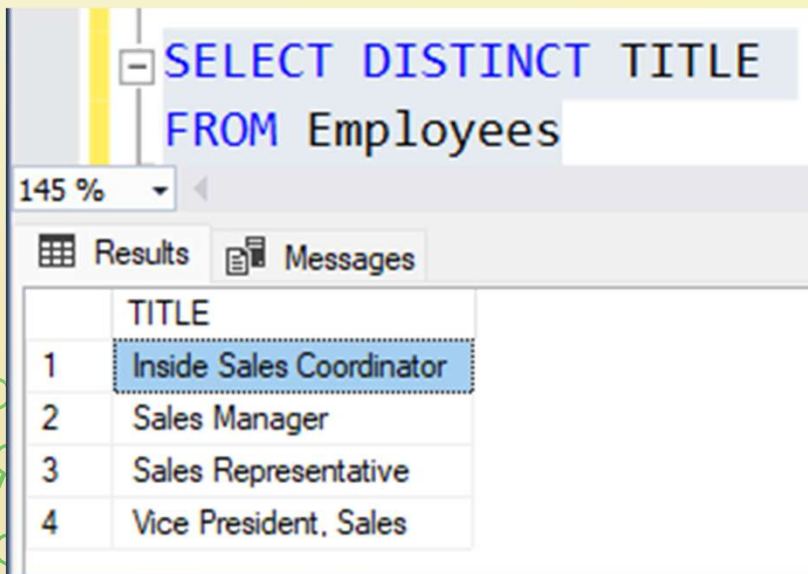
The screenshot shows a SQL query execution window. The query entered is `SELECT * FROM Employees`. The results are displayed in a table with columns: EmployeeID, LastName, FirstName, Title, TitleOfCourtesy, and BirthDate. The first row is highlighted.

	EmployeeID	LastName	FirstName	Title	TitleOfCourtesy	BirthDate
1	1	Davolio	Nancy	Sales Representative	Ms.	1947-07-04
2	2	Fuller	Andrew	Vice President, Sales	Dr.	1952-02-19
3	3	Leverling	Janet	Sales Representative	Ms.	1973-08-19
4	4	Peacock	Margaret	Sales Representative	Mrs.	1947-09-19
5	5	Buchanan	Steven	Sales Manager	Mr.	1955-03-03
6	6	Suyama	Michael	Sales Representative	Mr.	1963-05-05
7	7	King	Robert	Sales Representative	Mr.	1960-05-09
8	8	Callahan	Laura	Inside Sales Coordinator	Ms.	1958-01-09
9	9	Dodsworth	Anne	Sales Representative	Ms.	1966-08-01

# TUIA - BASES DE DATOS I

## RECUPERACIÓN DE DATOS

- **SELECT:** Consulta simple - DISTINCT



The screenshot shows a SQL query execution window. The query entered is `SELECT DISTINCT TITLE FROM Employees`. The results are displayed in a table with two columns: an index and the title. The first row is highlighted.

	TITLE
1	Inside Sales Coordinator
2	Sales Manager
3	Sales Representative
4	Vice President, Sales

# TUIA - BASES DE DATOS I

## RECUPERACIÓN DE DATOS

- **SELECT:** Consulta calificada

```
SELECT *  
FROM [dbo].[Products]  
WHERE UnitPrice > 50  
AND Discontinued = 0
```

145 %

Results Messages

	ProductID	ProductName	SupplierID	CategoryID	QuantityPerUnit	UnitPrice	UnitsInStock	UnitsOnOrder	ReorderLevel	Discontinued
1	18	Camaron Tigers	7	8	16 kg pkg.	62,50	42	0	0	0
2	20	Sir Rodney's Marmalade	8	3	30 gift boxes	81,00	40	0	0	0
3	38	Côte de Blaye	18	1	12 - 75 cl bottles	263,50	17	0	15	0
4	51	Manjimup Dried Apples	24	7	50 - 300 g pkgs.	53,00	20	0	10	0
5	59	Raclette Courdavault	28	4	5 kg pkg.	55,00	79	0	0	0

- **Clausula WHERE:** Para establecer filtros

# TUIA - BASES DE DATOS I

## RECUPERACIÓN DE DATOS

- **SELECT:** Consulta calificada
- **Clausula WHERE:**
  - La condición se denomina '**predicado**' (también presentes en el ON y JOIN) y devuelve **TRUE, FALSE** o **UNKNOWN**
  - Se evalúa a nivel de registro
  - Mostrará todos los registros que satisfagan la condición

# TUIA - BASES DE DATOS I

## RECUPERACIÓN DE DATOS

- **SELECT:** Consulta calificada
- Predicados, pueden contener:
  - Operadores de comparación
  - Operadores lógicos
  - LIKE
  - BETWEEN
  - IN
  - Detección de nulos



# TUIA - BASES DE DATOS I

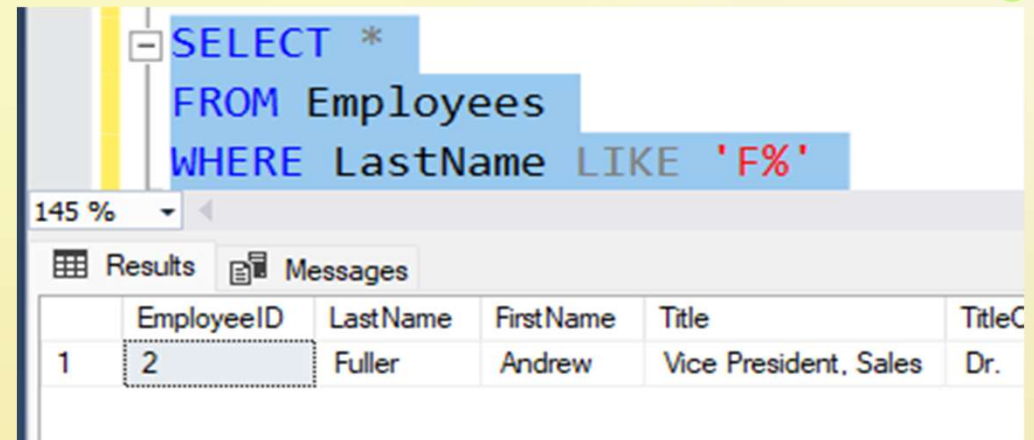
## RECUPERACIÓN DE DATOS

- **SELECT:** Consulta calificada

- **LIKE:**

- Wildcards

- % cadena de long aleatoria
    - \_ un carácter cualquiera
    - [x-y] carácter dentro del rango x-y
    - [^x-y] carácter fuera dentro del rango x-y



The screenshot shows a SQL query editor with the following text:

```
SELECT *  
FROM Employees  
WHERE LastName LIKE 'F%'
```

Below the query editor, there is a zoom level of 145 % and two tabs: "Results" and "Messages". The "Results" tab is active, displaying a table with the following data:

	EmployeeID	LastName	FirstName	Title	TitleC
1	2	Fuller	Andrew	Vice President, Sales	Dr.

## TUIA - BASES DE DATOS I

### RECUPERACIÓN DE DATOS

- **SELECT:** Consulta calificada
- **BETWEEN**
  - Determina si un valor está comprendido entre otros
  - Expr1 [NOT] BETWEEN expr2 AND expr3

# TUIA - BASES DE DATOS I

## RECUPERACIÓN DE DATOS

- **SELECT:** Consulta calificada
- **IN**
  - Determina si un valor **está** o **no** dentro de una lista

```
SELECT *  
FROM [dbo].[Products]  
WHERE SupplierID NOT IN (1, 6, 8)
```

145 %

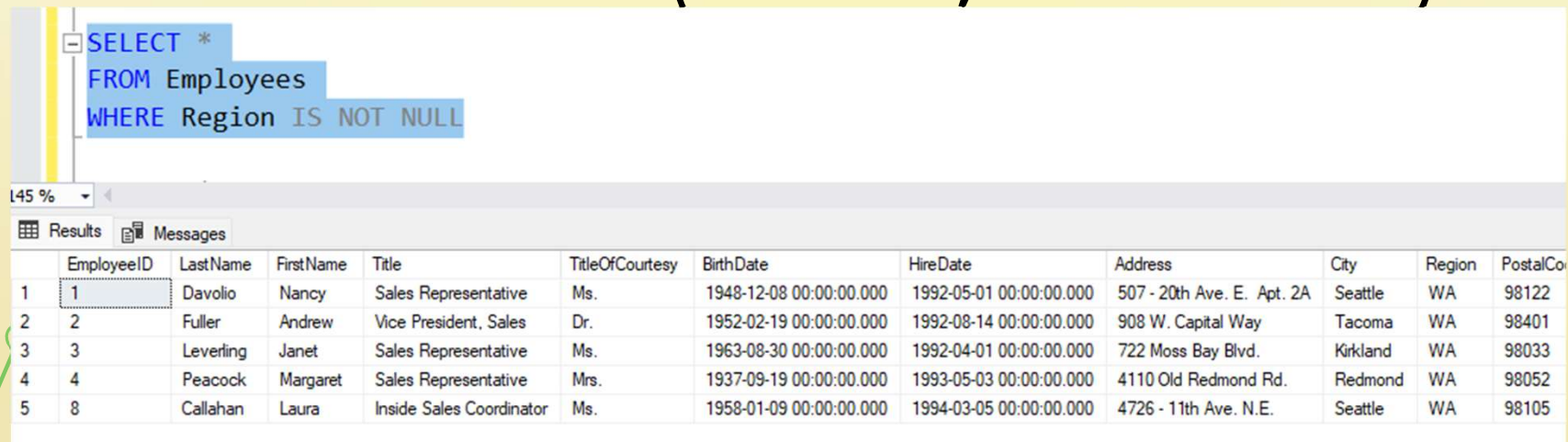
Results Messages

	ProductID	ProductName	SupplierID	CategoryID	QuantityPerUnit	UnitPrice	UnitsInStock	UnitsOnOrder	ReorderLevel	Discontinued
1	4	Chef Anton's Cajun Seasoning	2	2	48 - 6 oz jars	22.00	53	0	0	0
2	5	Chef Anton's Gumbo Mix	2	2	36 boxes	21.35	0	0	0	1
3	6	Grandma's Boysenberry Spread	3	2	12 - 8 oz jars	25.00	120	0	25	0
4	7	Uncle Bob's Organic Dried Pears	3	7	12 - 1 lb pkgs.	30.00	15	0	10	0
5	8	Northwoods Cranberry Sauce	3	2	12 - 12 oz jars	40.00	6	0	0	0
6	9	Mishi Kobe Niku	4	6	18 - 500 g pkgs.	97.00	29	0	0	1

# TUIA - BASES DE DATOS I

## RECUPERACIÓN DE DATOS

- **SELECT:** Consulta calificada
- detección de nulos (IS NULL , IS NOT NULL)



The screenshot shows a SQL query editor with the following text:

```
SELECT *  
FROM Employees  
WHERE Region IS NOT NULL
```

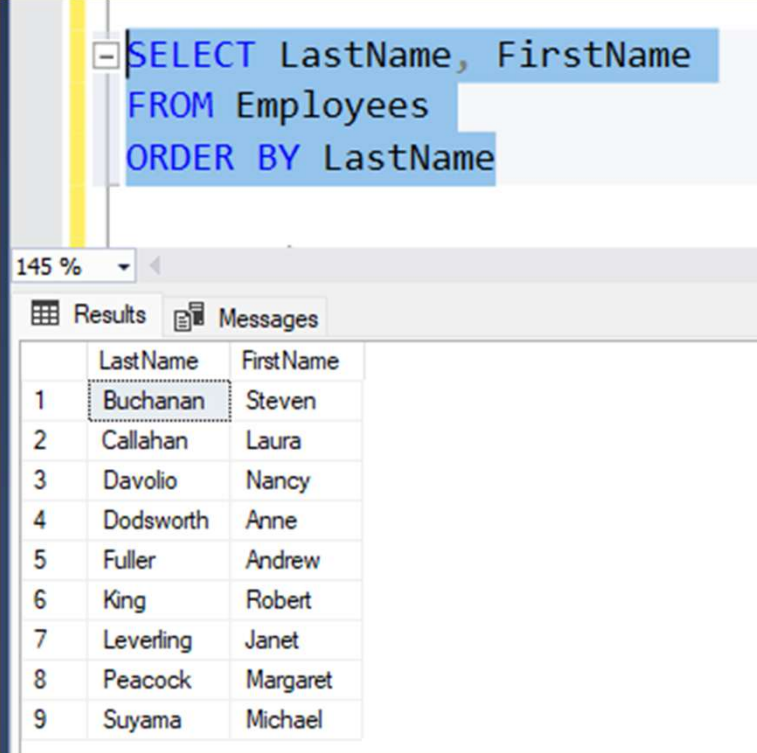
Below the query editor, the 'Results' tab is active, displaying a table with 12 columns and 5 rows of data. The columns are: EmployeeID, LastName, FirstName, Title, TitleOfCourtesy, BirthDate, HireDate, Address, City, Region, and PostalCode. The first row is highlighted.

	EmployeeID	LastName	FirstName	Title	TitleOfCourtesy	BirthDate	HireDate	Address	City	Region	PostalCode
1	1	Davolio	Nancy	Sales Representative	Ms.	1948-12-08 00:00:00.000	1992-05-01 00:00:00.000	507 - 20th Ave. E. Apt. 2A	Seattle	WA	98122
2	2	Fuller	Andrew	Vice President, Sales	Dr.	1952-02-19 00:00:00.000	1992-08-14 00:00:00.000	908 W. Capital Way	Tacoma	WA	98401
3	3	Leverling	Janet	Sales Representative	Ms.	1963-08-30 00:00:00.000	1992-04-01 00:00:00.000	722 Moss Bay Blvd.	Kirkland	WA	98033
4	4	Peacock	Margaret	Sales Representative	Mrs.	1937-09-19 00:00:00.000	1993-05-03 00:00:00.000	4110 Old Redmond Rd.	Redmond	WA	98052
5	8	Callahan	Laura	Inside Sales Coordinator	Ms.	1958-01-09 00:00:00.000	1994-03-05 00:00:00.000	4726 - 11th Ave. N.E.	Seattle	WA	98105

# TUIA - BASES DE DATOS I

## RECUPERACIÓN DE DATOS

- **SELECT:** Consulta calificada
- **ORDENAMIENTO**



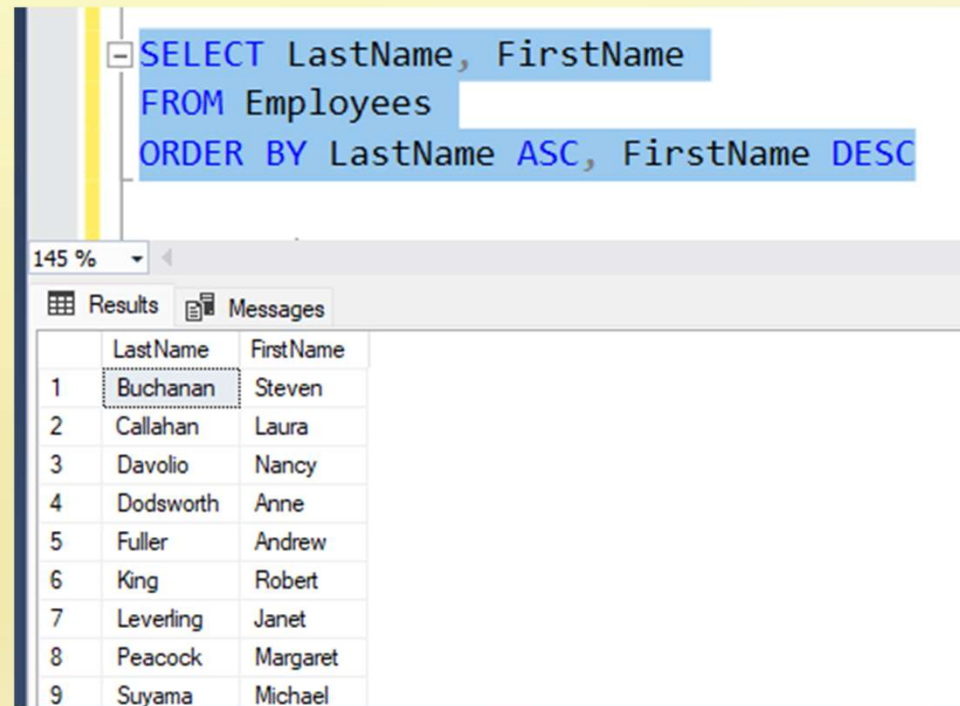
```
SELECT LastName, FirstName
FROM Employees
ORDER BY LastName
```

	LastName	FirstName
1	Buchanan	Steven
2	Callahan	Laura
3	Davolio	Nancy
4	Dodsworth	Anne
5	Fuller	Andrew
6	King	Robert
7	Leverling	Janet
8	Peacock	Margaret
9	Suyama	Michael

# TUIA - BASES DE DATOS I

## RECUPERACIÓN DE DATOS

- **SELECT:** Consulta calificada
- **ORDENAMIENTO**



The screenshot shows a SQL query editor with the following query:

```
SELECT LastName, FirstName  
FROM Employees  
ORDER BY LastName ASC, FirstName DESC
```

Below the query editor, the 'Results' tab is active, displaying a table with 9 rows. The first row is highlighted. The table has two columns: 'LastName' and 'FirstName'.

	LastName	FirstName
1	Buchanan	Steven
2	Callahan	Laura
3	Davolio	Nancy
4	Dodsworth	Anne
5	Fuller	Andrew
6	King	Robert
7	Leverling	Janet
8	Peacock	Margaret
9	Suyama	Michael

## TUIA - BASES DE DATOS I

### RECUPERACIÓN DE DATOS

- **SELECT:** Consulta calificada
- **ORDENAMIENTO**
  - Por defecto el ordenamiento es ascendente, pero se puede cambiar ( ASC, DESC)
  - Se puede ordenar por más de una columna

## TUIA - BASES DE DATOS I

### RECUPERACIÓN DE DATOS

- **SELECT:** Consulta de reunión
  - Mas de una tabla en el FROM (producto cartesiano)
  - Usamos el WHERE para filtrar



# TUIA - BASES DE DATOS I

## RECUPERACIÓN DE DATOS

- **SELECT:** Consulta de reunión

```
SELECT *  
FROM Orders AS O, Employees AS E  
WHERE E.EmployeeID = O.EmployeeID
```

145 %

Results Messages

	OrderID	CustomerID	EmployeeID	OrderDate	RequiredDate	ShippedDate
1	10248	VINET	5	1996-07-04 00:00:00.000	1996-08-01 00:00:00.000	1996-07-16 00:00:00.000
2	10249	TOMSP	6	1996-07-05 00:00:00.000	1996-08-16 00:00:00.000	1996-07-10 00:00:00.000
3	10250	HANAR	4	1996-07-08 00:00:00.000	1996-08-05 00:00:00.000	1996-07-12 00:00:00.000
4	10251	VICTE	3	1996-07-08 00:00:00.000	1996-08-05 00:00:00.000	1996-07-15 00:00:00.000
5	10252	SUPRD	4	1996-07-09 00:00:00.000	1996-08-06 00:00:00.000	1996-07-11 00:00:00.000

# TUIA - BASES DE DATOS I

## RECUPERACIÓN DE DATOS

- **SELECT:** Consulta de reunión (con JOIN)

```
SELECT *  
FROM Orders AS O  
INNER JOIN Employees AS E ON E.EmployeeID = O.EmployeeID
```

	OrderID	CustomerID	EmployeeID	OrderDate	RequiredDate	ShippedDate	ShipVia	Freight	ShipName	ShipAddress	ShipCity
1	10248	VINET	5	1996-07-04 00:00:00.000	1996-08-01 00:00:00.000	1996-07-16 00:00:00.000	3	32,38	Vins et alcools Chevalier	59 rue de l'Abbaye	Reims
2	10249	TOMSP	6	1996-07-05 00:00:00.000	1996-08-16 00:00:00.000	1996-07-10 00:00:00.000	1	11,61	Toms Spezialitäten	Luisenstr. 48	Münster
3	10250	HANAR	4	1996-07-08 00:00:00.000	1996-08-05 00:00:00.000	1996-07-12 00:00:00.000	2	65,83	Hanari Cames	Rua do Paço, 67	Rio de Janeiro
4	10251	VICTE	3	1996-07-08 00:00:00.000	1996-08-05 00:00:00.000	1996-07-15 00:00:00.000	1	41,34	Victuailles en stock	2, rue du Commerce	Lyon
5	10252	SUPRD	4	1996-07-09 00:00:00.000	1996-08-06 00:00:00.000	1996-07-11 00:00:00.000	2	51,30	Suprêmes délices	Boulevard Tirou, 255	Charleroi
6	10253	HANAR	3	1996-07-10 00:00:00.000	1996-07-24 00:00:00.000	1996-07-16 00:00:00.000	2	58,17	Hanari Cames	Rua do Paço, 67	Rio de Janeiro