

TUIA - BASES DE DATOS I

RECUPERACIÓN DE DATOS

Hasta el momento hemos visto sentencias que nos permiten crear el **esquema** (CREATE, ALTER) y actualizar el **estado** (INSERT, UPDATE, DELETE) de las Bases de Datos.

Nos ocuparemos ahora de la recuperación o consulta de los datos en las Bases de Datos.

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Para esta presentación utilizaremos como ejemplo la Base de Datos NorthWind:

<https://github.com/microsoft/sql-server-samples/blob/master/samples/databases/northwind-pubs/instnwnd.sql>

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Sentencia 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 ] ]
```

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SELECT: lo único obligatoria es la select_list

```
SELECT @@VERSION
```

```
SELECT GETDATE()
```

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RECUPERACIÓN DE DATOS

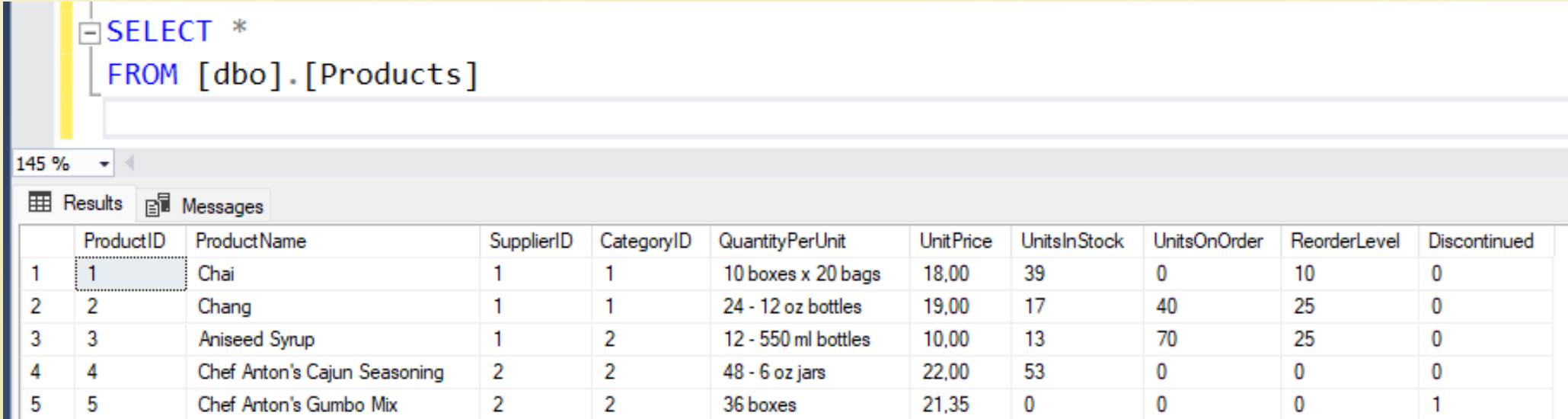
SELECT - Orden lógico de procesamiento:

1. FROM
2. ON
3. JOIN
4. WHERE
5. GROUP BY
6. WITH CUBE or WITH ROLLUP
7. HAVING
8. SELECT
9. DISTINCT
10. ORDER BY
11. TOP

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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 first row is highlighted with a dotted border.

	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

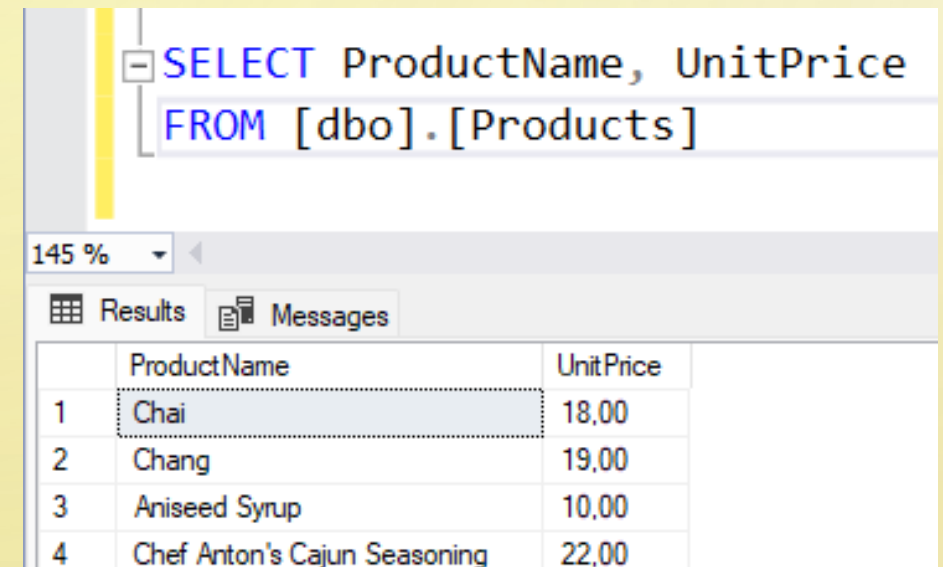
Usando * muestra todos los campos de la tabla.

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SELECT: Consulta simple

- Select_list: podemos especificar los campos que vamos a traer
- FROM: puede ser una o varias tablas o cualquier cosa que devuelva una relación.



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

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

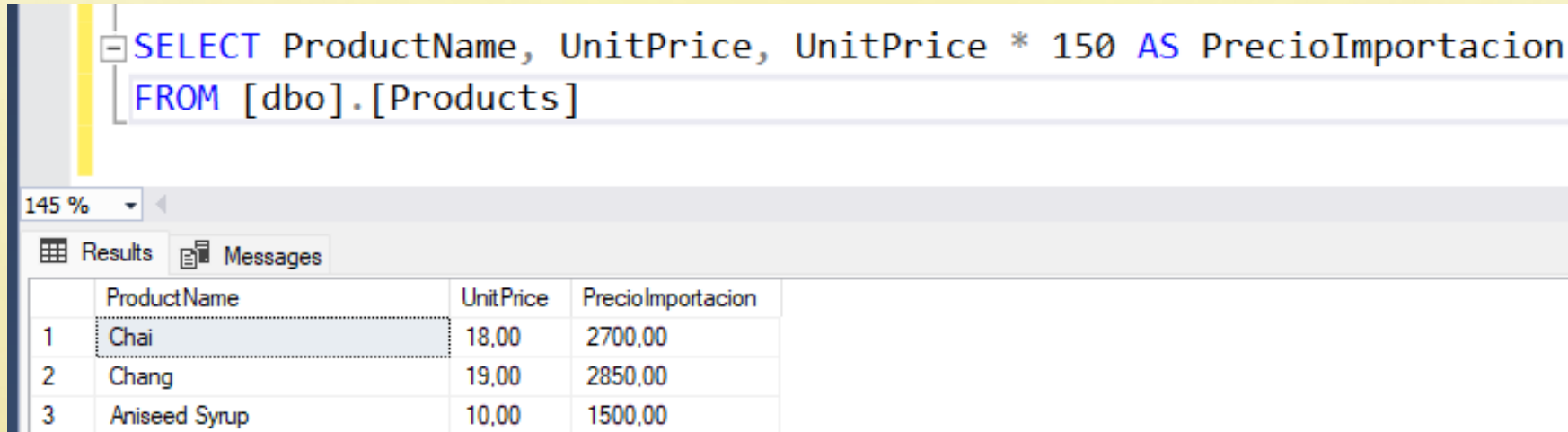
Below the query window, the 'Results' tab is active, displaying a table with 4 rows and 2 columns: ProductName and UnitPrice. The first row is highlighted.

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

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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.

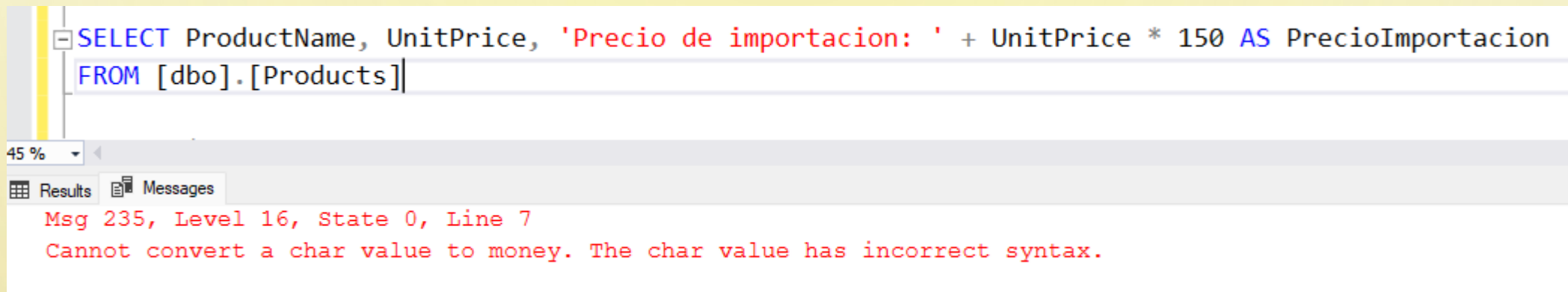
	ProductName	UnitPrice	PrecioImportacion
1	Chai	18,00	2700,00
2	Chang	19,00	2850,00
3	Aniseed Syrup	10,00	1500,00

- Select_list: podemos tener campos calculados (expresiones)

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SELECT: Consulta simple

A screenshot of the SQL Server Enterprise Manager interface. The top pane shows a SQL query: `SELECT ProductName, UnitPrice, 'Precio de importacion: ' + UnitPrice * 150 AS PrecioImportacion FROM [dbo].[Products]`. The bottom pane shows the 'Messages' tab with an error message: `Msg 235, Level 16, State 0, Line 7 Cannot convert a char value to money. The char value has incorrect syntax.`

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

45 %

Results Messages

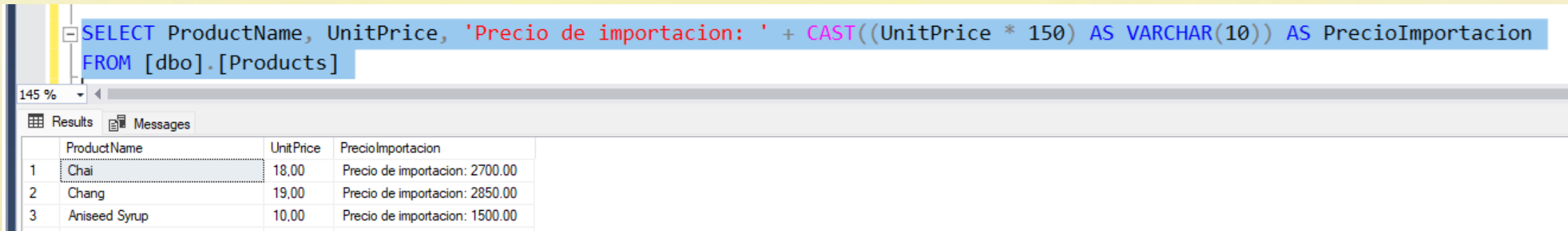
Msg 235, Level 16, State 0, Line 7
Cannot convert a char value to money. The char value has incorrect syntax.

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

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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 window, 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

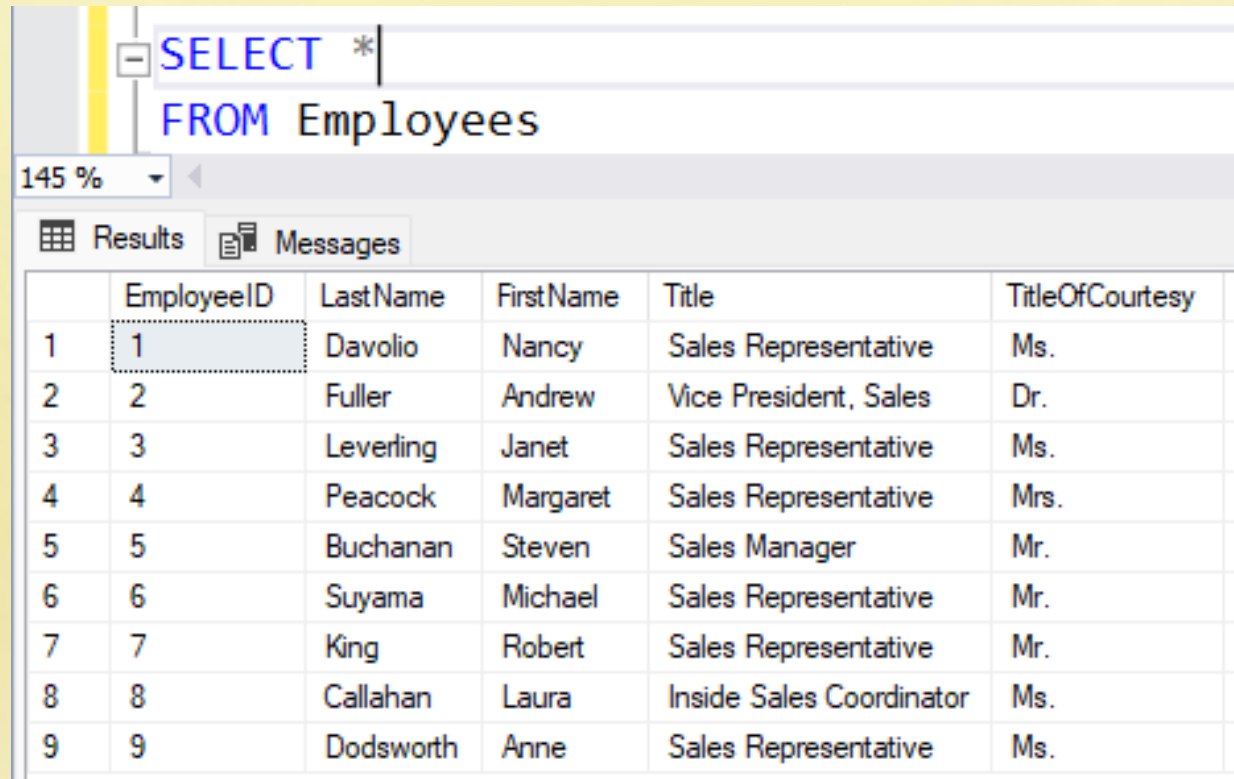
'Precio de importacion: ' + CAST((UnitPrice * 150) AS VARCHAR(10)) AS PrecioImportacion

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

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SELECT: Consulta simple - DISTINCT



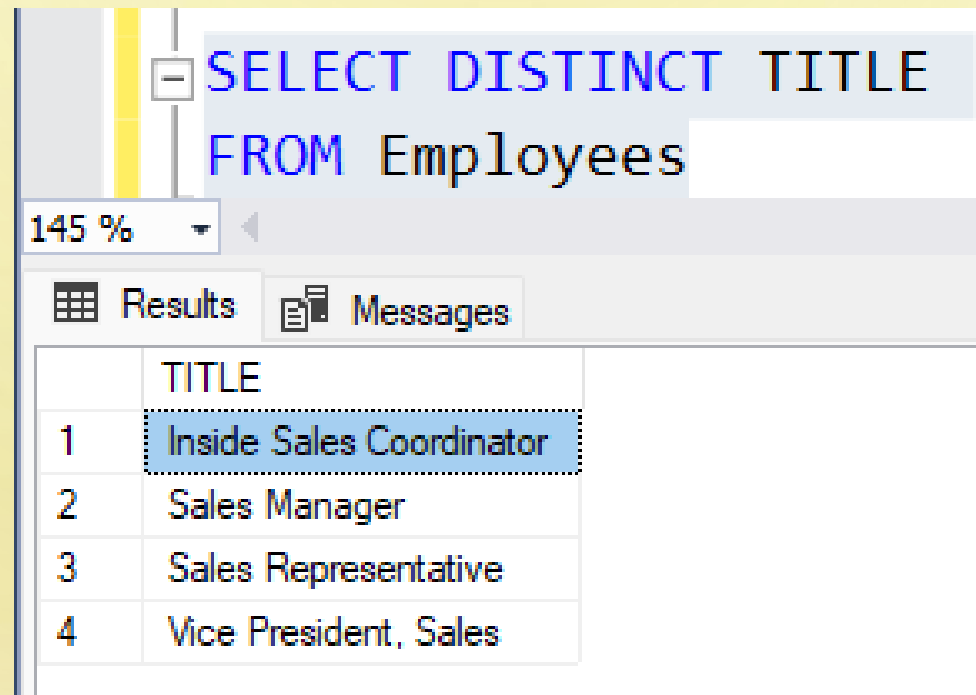
The screenshot shows a SQL query execution window. The query entered is `SELECT * FROM Employees`. The results are displayed in a table with 7 columns: EmployeeID, LastName, FirstName, Title, TitleOfCourtesy, and BirthDate. The first 9 rows of data are visible, with the first row (EmployeeID 1) highlighted. The window also shows a zoom level of 145% and tabs for 'Results' and 'Messages'.

	EmployeeID	LastName	FirstName	Title	TitleOfCourtesy	BirthDate
1	1	Davolio	Nancy	Sales Representative	Ms.	1947-12-08
2	2	Fuller	Andrew	Vice President, Sales	Dr.	1952-02-19
3	3	Leverling	Janet	Sales Representative	Ms.	1973-08-30
4	4	Peacock	Margaret	Sales Representative	Mrs.	1962-09-19
5	5	Buchanan	Steven	Sales Manager	Mr.	1955-03-19
6	6	Suyama	Michael	Sales Representative	Mr.	1963-05-05
7	7	King	Robert	Sales Representative	Mr.	1960-05-29
8	8	Callahan	Laura	Inside Sales Coordinator	Ms.	1958-01-09
9	9	Dodsworth	Anne	Sales Representative	Ms.	1964-01-18

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SELECT: Consulta simple - DISTINCT



The screenshot shows a SQL query editor window. The query text is "SELECT DISTINCT TITLE FROM Employees". Below the query, there is a zoom level of "145 %". The results are displayed in a table with two tabs: "Results" and "Messages". The "Results" tab is active, showing a table with one column "TITLE" and four rows of data. The first row, "1 Inside Sales Coordinator", is highlighted with a blue background.

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

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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

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SELECT: Consulta calificada

- Clausula WHERE:
 - La condición se denomina '**predicado**' (también presentes en el ON y JOIN) y devuelve **TRUE**, **FALSE** o **UNKNOWN**.
 - Mostrará todos los registros que satisfagan la condición (el resultado sea **TRUE**).

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RECUPERACIÓN DE DATOS

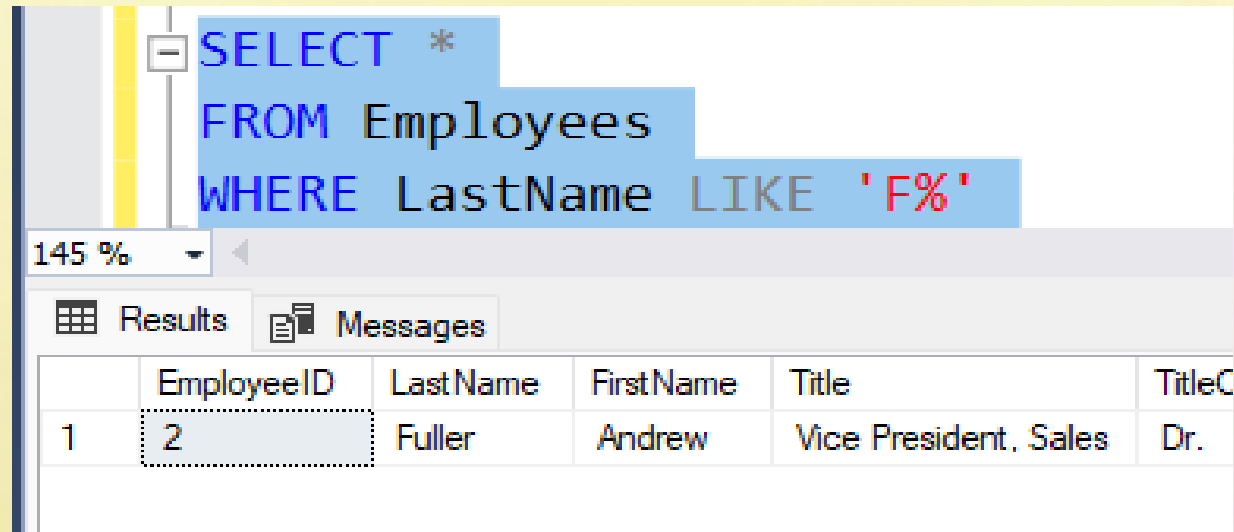
SELECT: Consulta calificada

- Los PREDICADOS pueden contener:
 - Operadores de comparación
 - Operadores lógicos
 - LIKE
 - BETWEEN
 - IN
 - Detección de nulos

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RECUPERACIÓN DE DATOS

SELECT: Consulta calificada



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

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

Below the query, 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.

- LIKE (acepta Wildcards / comodines)
 - % cadena de longitud aleatoria
 - _ un carácter cualquiera
 - [x-y] carácter dentro del rango x-y
 - [^x-y] carácter fuera dentro del rango x-y

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SELECT: Consulta calificada

- BETWEEN
 - Determina si un valor está comprendido entre otros dos (incluyendo los extremos).

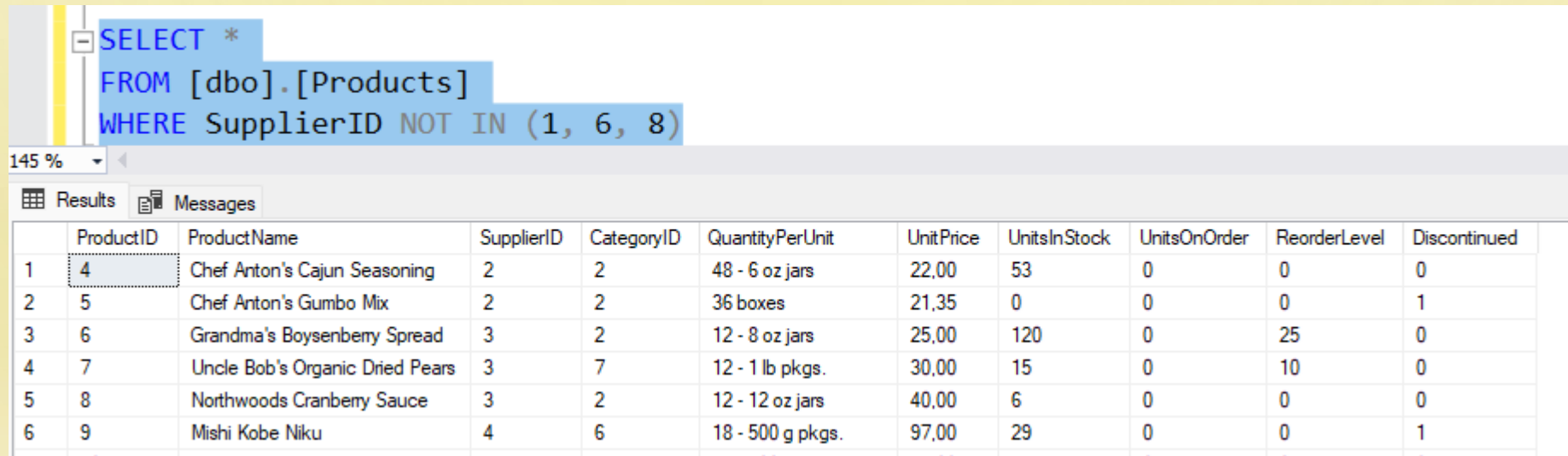
Expr1 [NOT] BETWEEN expr2 AND expr3

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SELECT: Consulta calificada

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



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

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

Below the query window, the 'Results' tab is active, displaying a table with 11 columns and 6 rows of data. The first row is highlighted.

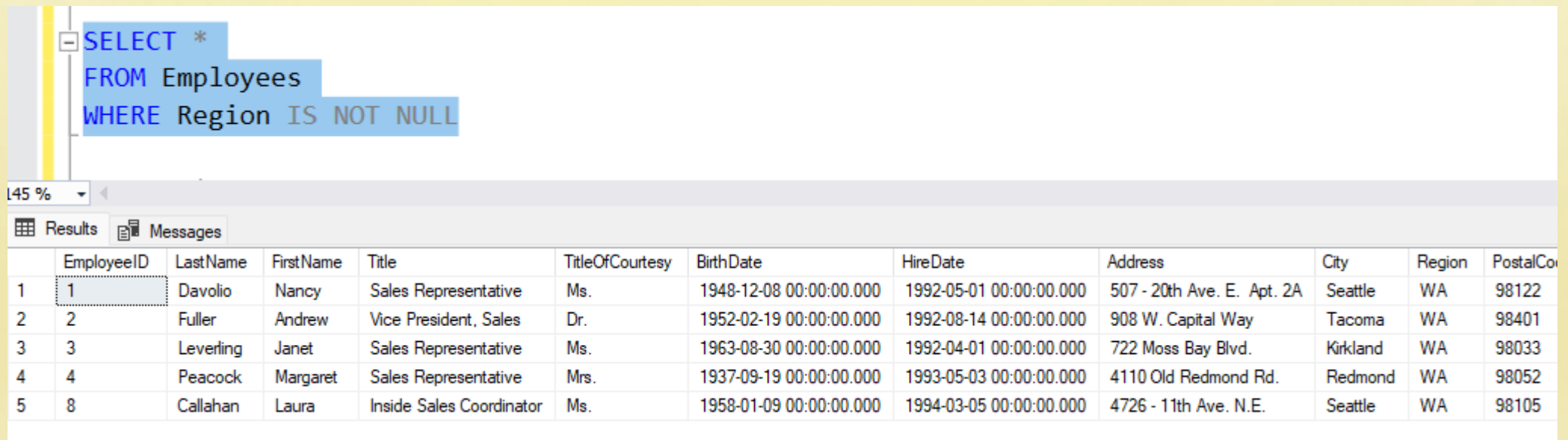
	ProductID	ProductName	SupplierID	CategoryID	QuantityPerUnit	UnitPrice	UnitsInStock	UnitsOnOrder	ReorderLevel	Discontinued
1	4	Chef Anton's Cajun Seasoning	2	2	48 - 6 oz jars	22,00	53	0	0	0
2	5	Chef Anton's Gumbo Mix	2	2	36 boxes	21,35	0	0	0	1
3	6	Grandma's Boysenberry Spread	3	2	12 - 8 oz jars	25,00	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

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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 are displayed in a table. The table has 12 columns: EmployeeID, LastName, FirstName, Title, TitleOfCourtesy, BirthDate, HireDate, Address, City, Region, and PostalCode. The results show 5 rows of data.

	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

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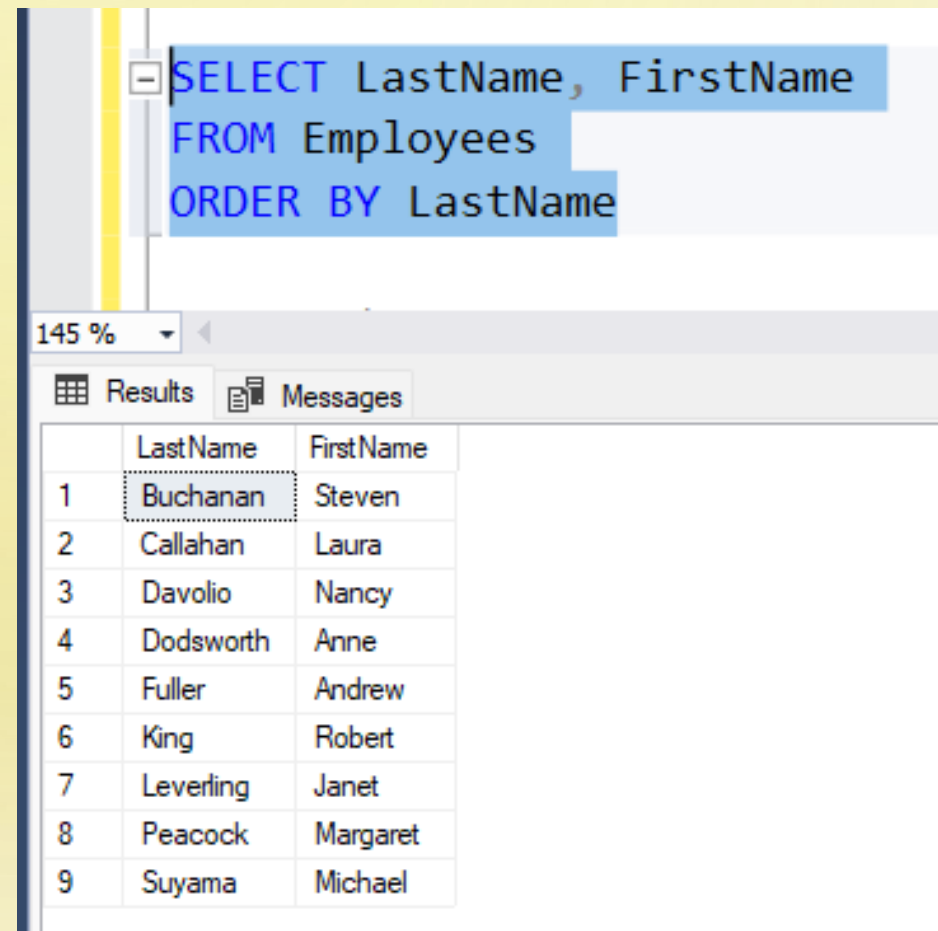
RECUPERACIÓN DE DATOS

SELECT: Consulta calificada

- ORDENAMIENTO

- Por defecto es en forma ascendente, pero se puede cambiar (ASC, DESC).

- Se puede ordenar por más de una columna.



The screenshot shows a SQL query editor with a query window at the top and a results pane below. The query is: `SELECT LastName, FirstName FROM Employees ORDER BY LastName`. The results pane shows a table with 9 rows of employee data, ordered by last name. The first row is highlighted.

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


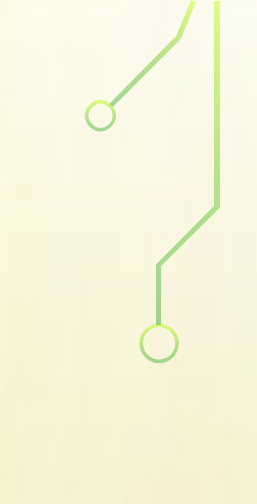
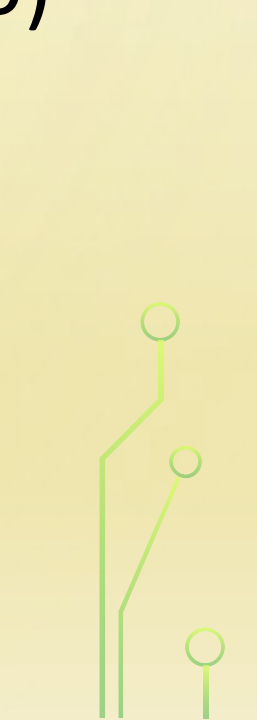
	LastName	FirstName
1	Buchanan	Steven
2	Callahan	Laura
3	Davolio	Nancy
4	Dodsworth	Anne
5	Fuller	Andrew
6	King	Robert
7	Leverling	Janet
8	Peacock	Margaret
9	Suyama	Michael



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SELECT: Consulta de reunión (JOIN)

- Mas de una tabla en el FROM (producto cartesiano)
 - Luego usamos la cláusula WHERE para filtrar.
- 
- 
- 

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SELECT: Consulta de reunión (JOIN)

```
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