



Odisee
DE CO-HOGESCHOOL

Les 2

WHERE



Druwé Matthias / Ophalvens Steven

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1. **Recap**
2. **Oefeningen vorige les**
3. **WHERE**
4. **Comparison operators**
5. **Logical operators**
6. **Specials**
7. **Functions**
8. **Distinct**
9. **Summary**

1.

Recap

Recap

BASIC SQL Query

SELECT column

FROM table;

Recap

ORDER BY

SELECT column

FROM table

ORDER BY column **ASC** | **DESC**;

2.

Oefeningen vorige les

Oefeningen vorige les

- Iedereen commit + push?
- Vragen?
- Waar had je het moeilijk mee?
- Wat was de moeilijkste vraag?

3.

WHERE

WHERE What?

- The **WHERE** clause is used to **filter** records.
- The **WHERE** clause is used to extract only those records that fulfill a specified condition.
- **Condition**

```
SELECT column1, column2, ...  
FROM table_name  
WHERE condition  
ORDER BY column ASC/DESC;
```

- **Geef alle klassen waar Matthias Druwé les aan geeft**
- **Geef alle auto's met een minimale uitstoot van 120 CO²**
- **Geef alle dorpen met een oppervlakte kleiner dan 200m²**
- **...**

4.

Comparison operators

Operators

=, <, >, <=, >=, <>, !=

[Comparison Operators - MariaDB Knowledge Base](#)

Comparison operators

Equals =

```
SELECT * FROM products  
WHERE SupplierID = 1;
```

ProductID	ProductName	SupplierID	CategoryID	Unit	Price
1	Chais	1	1	10 boxes x 20 bags	18
2	Chang	1	1	24 - 12 oz bottles	19
3	Aniseed Syrup	1	2	12 - 550 ml bottles	10
4	Chef Anton's Cajun Seasoning	2	2	48 - 6 oz jars	22
5	Chef Anton's Gumbo Mix	2	2	36 boxes	21.35
6	Grandma's Boysenberry Spread	3	2	12 - 8 oz jars	25
7	Uncle Bob's Organic Dried Pears	3	7	12 - 1 lb pkgs.	30
8	Northwoods Cranberry Sauce	3	2	12 - 12 oz jars	40
9	Mishi Kobe Niku	4	6	18 - 500 g pkgs.	97
10	Ikura	4	8	12 - 200 ml jars	31

ProductID	ProductName	SupplierID	CategoryID	Unit	Price
1	Chais	1	1	10 boxes x 20 bags	18
2	Chang	1	1	24 - 12 oz bottles	19
3	Aniseed Syrup	1	2	12 - 550 ml bottles	10

Comparison operators
Greater than

SELECT * FROM products
 WHERE SupplierID > 1;

ProductID	ProductName	SupplierID	CategoryID	Unit	Price
1	Chais	1	1	10 boxes x 20 bags	18
2	Chang	1	1	24 - 12 oz bottles	19
3	Aniseed Syrup	1	2	12 - 550 ml bottles	10
4	Chef Anton's Cajun Seasoning	2	2	48 - 6 oz jars	22
5	Chef Anton's Gumbo Mix	2	2	36 boxes	21.35
6	Grandma's Boysenberry Spread	3	2	12 - 8 oz jars	25
7	Uncle Bob's Organic Dried Pears	3	7	12 - 1 lb pkgs.	30
8	Northwoods Cranberry Sauce	3	2	12 - 12 oz jars	40
9	Mishi Kobe Niku	4	6	18 - 500 g pkgs.	97
10	Ikura	4	8	12 - 200 ml jars	31

ProductID	ProductName	SupplierID	CategoryID	Unit	Price
4	Chef Anton's Cajun Seasoning	2	2	48 - 6 oz jars	22
5	Chef Anton's Gumbo Mix	2	2	36 boxes	21.35
6	Grandma's Boysenberry Spread	3	2	12 - 8 oz jars	25
7	Uncle Bob's Organic Dried Pears	3	7	12 - 1 lb pkgs.	30
8	Northwoods Cranberry Sauce	3	2	12 - 12 oz jars	40
9	Mishi Kobe Niku	4	6	18 - 500 g pkgs.	97
10	Ikura	4	8	12 - 200 ml jars	31

Comparison operators

Less than

```
SELECT * FROM products  
WHERE Price < 20;
```

ProductID	ProductName	SupplierID	CategoryID	Unit	Price
1	Chais	1	1	10 boxes x 20 bags	18
2	Chang	1	1	24 - 12 oz bottles	19
3	Aniseed Syrup	1	2	12 - 550 ml bottles	10
4	Chef Anton's Cajun Seasoning	2	2	48 - 6 oz jars	22
5	Chef Anton's Gumbo Mix	2	2	36 boxes	21.35
6	Grandma's Boysenberry Spread	3	2	12 - 8 oz jars	25
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ProductID	ProductName	SupplierID	CategoryID	Unit	Price
1	Chais	1	1	10 boxes x 20 bags	18
2	Chang	1	1	24 - 12 oz bottles	19
3	Aniseed Syrup	1	2	12 - 550 ml bottles	10

Comparison operators

Greater than or equal

```
SELECT * FROM products  
WHERE Price >= 25;
```

ProductID	ProductName	SupplierID	CategoryID	Unit	Price
1	Chais	1	1	10 boxes x 20 bags	18
2	Chang	1	1	24 - 12 oz bottles	19
3	Aniseed Syrup	1	2	12 - 550 ml bottles	10
4	Chef Anton's Cajun Seasoning	2	2	48 - 6 oz jars	22
5	Chef Anton's Gumbo Mix	2	2	36 boxes	21.35
6	Grandma's Boysenberry Spread	3	2	12 - 8 oz jars	25
7	Uncle Bob's Organic Dried Pears	3	7	12 - 1 lb pkgs.	30
8	Northwoods Cranberry Sauce	3	2	12 - 12 oz jars	40
9	Mishi Kobe Niku	4	6	18 - 500 g pkgs.	97
10	Ikura	4	8	12 - 200 ml jars	31

ProductID	ProductName	SupplierID	CategoryID	Unit	Price
6	Grandma's Boysenberry Spread	3	2	12 - 8 oz jars	25
7	Uncle Bob's Organic Dried Pears	3	7	12 - 1 lb pkgs.	30
8	Northwoods Cranberry Sauce	3	2	12 - 12 oz jars	40
9	Mishi Kobe Niku	4	6	18 - 500 g pkgs.	97
10	Ikura	4	8	12 - 200 ml jars	31

Comparison operators

Less than or equal

```
SELECT * FROM products  
WHERE Price <= 25;
```

ProductID	ProductName	SupplierID	CategoryID	Unit	Price
1	Chais	1	1	10 boxes x 20 bags	18
2	Chang	1	1	24 - 12 oz bottles	19
3	Aniseed Syrup	1	2	12 - 550 ml bottles	10
4	Chef Anton's Cajun Seasoning	2	2	48 - 6 oz jars	22
5	Chef Anton's Gumbo Mix	2	2	36 boxes	21.35
6	Grandma's Boysenberry Spread	3	2	12 - 8 oz jars	25
7	Uncle Bob's Organic Dried Pears	3	7	12 - 1 lb pkgs.	30
8	Northwoods Cranberry Sauce	3	2	12 - 12 oz jars	40
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3	Aniseed Syrup	1	2	12 - 550 ml bottles	10
4	Chef Anton's Cajun Seasoning	2	2	48 - 6 oz jars	22
5	Chef Anton's Gumbo Mix	2	2	36 boxes	21.35
6	Grandma's Boysenberry Spread	3	2	12 - 8 oz jars	25

Comparison operators

Not equal

```
SELECT * FROM products  
WHERE CategoryID <> 2;
```

```
SELECT * FROM products  
WHERE CategoryID != 2;
```

ProductID	ProductName	SupplierID	CategoryID	Unit	Price
1	Chais	1	1	10 boxes x 20 bags	18
2	Chang	1	1	24 - 12 oz bottles	19
3	Aniseed Syrup	1	2	12 - 550 ml bottles	10
4	Chef Anton's Cajun Seasoning	2	2	48 - 6 oz jars	22
5	Chef Anton's Gumbo Mix	2	2	36 boxes	21.35
6	Grandma's Boysenberry Spread	3	2	12 - 8 oz jars	25
7	Uncle Bob's Organic Dried Pears	3	7	12 - 1 lb pkgs.	30
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9	Mishi Kobe Niku	4	6	18 - 500 g pkgs.	97
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Exercices

5.

Logical operators

Enkel geschikt voor personen ouder dan 7 jaar of jonger dan 70

Meerdere condities combineren

AND => **&&**

OR => **||**

NOT => **!**

AND

TRUE && TRUE

TRUE && FALSE

FALSE && TRUE

FALSE && FALSE

TRUE

FALSE

FALSE

FALSE

Logical operators

AND

```
SELECT * FROM products  
WHERE CategoryID = 2 && Price < 20;
```

ProductID	ProductName	SupplierID	CategoryID	Unit	Price
1	Chais	1	1	10 boxes x 20 bags	18
2	Chang	1	1	24 - 12 oz bottles	19
3	Aniseed Syrup	1	2	12 - 550 ml bottles	10
4	Chef Anton's Cajun Seasoning	2	2	48 - 6 oz jars	22
5	Chef Anton's Gumbo Mix	2	2	36 boxes	21.35
6	Grandma's Boysenberry Spread	3	2	12 - 8 oz jars	25
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8	Northwoods Cranberry Sauce	3	2	12 - 12 oz jars	40
9	Mishi Kobe Niku	4	6	18 - 500 g pkgs.	97
10	Ikura	4	8	12 - 200 ml jars	31

ProductID	ProductName	SupplierID	CategoryID	Unit	Price
3	Aniseed Syrup	1	2	12 - 550 ml bottles	10

OR

TRUE || TRUE

TRUE || FALSE

FALSE || TRUE

FALSE || FALSE

TRUE

TRUE

TRUE

FALSE

Logical operators

OR

```
SELECT * FROM products  
WHERE CategoryID = 2 || Price < 20;
```

ProductID	ProductName	SupplierID	CategoryID	Unit	Price
1	Chais	1	1	10 boxes x 20 bags	18
2	Chang	1	1	24 - 12 oz bottles	19
3	Aniseed Syrup	1	2	12 - 550 ml bottles	10
4	Chef Anton's Cajun Seasoning	2	2	48 - 6 oz jars	22
5	Chef Anton's Gumbo Mix	2	2	36 boxes	21.35
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ProductID	ProductName	SupplierID	CategoryID	Unit	Price
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4	Chef Anton's Cajun Seasoning	2	2	48 - 6 oz jars	22
5	Chef Anton's Gumbo Mix	2	2	36 boxes	21.35
6	Grandma's Boysenberry Spread	3	2	12 - 8 oz jars	25
8	Northwoods Cranberry Sauce	3	2	12 - 12 oz jars	40

NOT

!TRUE

!FALSE

FALSE

TRUE

Logical operators

NOT

```
SELECT * FROM products  
WHERE !(CategoryID = 2 || Price < 20);
```

ProductID	ProductName	SupplierID	CategoryID	Unit	Price
1	Chais	1	1	10 boxes x 20 bags	18
2	Chang	1	1	24 - 12 oz bottles	19
3	Aniseed Syrup	1	2	12 - 550 ml bottles	10
4	Chef Anton's Cajun Seasoning	2	2	48 - 6 oz jars	22
5	Chef Anton's Gumbo Mix	2	2	36 boxes	21.35
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8	Northwoods Cranberry Sauce	3	2	12 - 12 oz jars	40
9	Mishi Kobe Niku	4	6	18 - 500 g pkgs.	97
10	Ikura	4	8	12 - 200 ml jars	31

ProductID	ProductName	SupplierID	CategoryID	Unit	Price
7	Uncle Bob's Organic Dried Pears	3	7	12 - 1 lb pkgs.	30
9	Mishi Kobe Niku	4	6	18 - 500 g pkgs.	97
10	Ikura	4	8	12 - 200 ml jars	31

Combining AND, OR and NOT

```
SELECT * FROM table
```

```
WHERE A = 1 && B = "demo" || C > 20 && B != "demo";
```

Order of operations

1. Brackets
2. NOT
3. AND
4. OR

Logical operators
Exercises

6.

Specials

IS NULL / IS NOT NULL

- **NULL check**
- **Only for columns allowing null**
- **Checking for a value**
- **Different from 0**
- **Different from “ ”**

IS NULL syntax

```
SELECT column_names  
FROM table_name  
WHERE column_name IS NULL;
```

Specials

IS NULL example

```
SELECT * FROM products  
WHERE Unit IS NULL;
```

ProductID	ProductName	SupplierID	CategoryID	Unit	Price
1	Chais	1	1	10 boxes x 20 bags	18
2	Chang	1	1	24 - 12 oz bottles	19
3	Aniseed Syrup	1	2	12 - 550 ml bottles	10
4	Chef Anton's Cajun Seasoning	2	2	NULL	22
5	Chef Anton's Gumbo Mix	2	2	36 boxes	21.35
6	Grandma's Boysenberry Spread	3	2	12 - 8 oz jars	25
7	Uncle Bob's Organic Dried Pears	3	7	NULL	30
8	Northwoods Cranberry Sauce	3	2	12 - 12 oz jars	40
9	Mishi Kobe Niku	4	6	18 - 500 g pkgs.	97
10	Ikura	4	8	12 - 200 ml jars	31

ProductID	ProductName	SupplierID	CategoryID	Unit	Price
4	Chef Anton's Cajun Seasoning	2	2	NULL	22
7	Uncle Bob's Organic Dried Pears	3	7	NULL	30

- Check if a value is **BETWEEN** 2 values
- Can be used for:
 - Numbers
 - Strings
 - Dates
- **Begin & end value included**
- **Same as:**
 - $X \geq \text{beginValue} \ \&\& \ X \leq \text{endValue}$

BETWEEN SYNTAX

```
SELECT column_name(s)  
FROM table_name  
WHERE column_name BETWEEN value1 AND value2;
```

Specials

BETWEEN example

```
SELECT * FROM products  
WHERE Price BETWEEN 20 AND 30;
```

ProductID	ProductName	SupplierID	CategoryID	Unit	Price
1	Chais	1	1	10 boxes x 20 bags	18
2	Chang	1	1	24 - 12 oz bottles	19
3	Aniseed Syrup	1	2	12 - 550 ml bottles	10
4	Chef Anton's Cajun Seasoning	2	2	NULL	22
5	Chef Anton's Gumbo Mix	2	2	36 boxes	21.35
6	Grandma's Boysenberry Spread	3	2	12 - 8 oz jars	25
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8	Northwoods Cranberry Sauce	3	2	12 - 12 oz jars	40
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ProductID	ProductName	SupplierID	CategoryID	Unit	Price
4	Chef Anton's Cajun Seasoning	2	2	NULL	22
5	Chef Anton's Gumbo Mix	2	2	36 boxes	21.35
6	Grandma's Boysenberry Spread	3	2	12 - 8 oz jars	25
7	Uncle Bob's Organic Dried Pears	3	7	NULL	30

- Checks if value is **IN** a list
- Subqueries

```
SELECT column_name(s)  
FROM table_name  
WHERE column_name IN (value1, value2, ...);
```

Specials IN example

```
SELECT * FROM products  
WHERE SupplierID IN (1,4);
```

ProductID	ProductName	SupplierID	CategoryID	Unit	Price
1	Chais	1	1	10 boxes x 20 bags	18
2	Chang	1	1	24 - 12 oz bottles	19
3	Aniseed Syrup	1	2	12 - 550 ml bottles	10
4	Chef Anton's Cajun Seasoning	2	2	NULL	22
5	Chef Anton's Gumbo Mix	2	2	36 boxes	21.35
6	Grandma's Boysenberry Spread	3	2	12 - 8 oz jars	25
7	Uncle Bob's Organic Dried Pears	3	7	NULL	30
8	Northwoods Cranberry Sauce	3	2	12 - 12 oz jars	40
9	Mishi Kobe Niku	4	6	18 - 500 g pkgs.	97
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ProductID	ProductName	SupplierID	CategoryID	Unit	Price
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2	Chang	1	1	24 - 12 oz bottles	19
3	Aniseed Syrup	1	2	12 - 550 ml bottles	10
9	Mishi Kobe Niku	4	6	18 - 500 g pkgs.	97
10	Ikura	4	8	12 - 200 ml jars	31

- **Searching for a specific pattern**
- **Wildcard operators**
 - % => 0, 1 or more characters
 - _ => 1 character

```
SELECT column1, column2, ...  
FROM table_name  
WHERE columnN LIKE pattern;
```

Specials

LIKE example

```
SELECT * FROM products  
WHERE ProductName LIKE 'Ch%g';
```

ProductID	ProductName	SupplierID	CategoryID	Unit	Price
1	Chais	1	1	10 boxes x 20 bags	18
2	Chang	1	1	24 - 12 oz bottles	19
3	Aniseed Syrup	1	2	12 - 550 ml bottles	10
4	Chef Anton's Cajun Seasoning	2	2	NULL	22
5	Chef Anton's Gumbo Mix	2	2	36 boxes	21.35
6	Grandma's Boysenberry Spread	3	2	12 - 8 oz jars	25
7	Uncle Bob's Organic Dried Pears	3	7	NULL	30
8	Northwoods Cranberry Sauce	3	2	12 - 12 oz jars	40
9	Mishi Kobe Niku	4	6	18 - 500 g pkgs.	97
10	Ikura	4	8	12 - 200 ml jars	31

ProductID	ProductName	SupplierID	CategoryID	Unit	Price
2	Chang	1	1	24 - 12 oz bottles	19
4	Chef Anton's Cajun Seasoning	2	2	NULL	22

Specials
Exercise



7.

Functions

- \approx Excel
- POW, ROUND, SQRT, MIN, MAX, AVG, COUNT, SUM, ...
- Can be used instead of columns in queries
- Function on column \approx returns column
- **NULL values doesn't count**

```
SELECT FUNCTION(column_name)  
FROM table_name  
WHERE condition  
ORDER BY columnN ASC|DESC;
```

- **Round all prices to 1 decimal place**
- **Get the day name for the date**
- **Get the number of items a user has bought**
- **Get the minimum temperature in December**
- **Get the max temperature in December**

- **Numeric, String & Date functions**
- **Aggregate functions**
- **Others**

Numeric, String & Date functions

- **Can be used where we use a column**
- **Examples**
 - Length
 - Round
 - Dayname
 - ...

Aggregate

- **Can not be used where we use a column**
 - Not in where
- **Aggregate functions calculates over records.**
- **Results depends on multiple records**
- **Mostly one result**
- **Examples**
 - MAX
 - COUNT
 -

<https://mariadb.com/kb/en/library/built-in-functions/>

Functions
Exercises

8.

DISTINCT

The **SELECT DISTINCT** statement is used to return only distinct (different) values.

Inside a table, a column often contains many duplicate values; and sometimes you only want to list the different (distinct) values.

```
SELECT DISTINCT column1, column2, ...  
FROM table_name  
WHERE condition  
ORDER BY columnN ASC|DESC;
```

DISTINCT
Examples

- **Return all unique cityNamees**
- **Return the number of unique cities**
- **Return all different price tags that should be printed**

DISTINCT
Exercises

9. Summary

```
SELECT column1, column2, ...  
FROM table_name  
WHERE condition  
ORDER BY column ASC/DESC;
```

- **Comparison operators**
- **Logical operators**
- **Specials**
 - NULL
 - BETWEEN
 - IN
 - LIKE