

DQL

DATA QUERY LANGUAGE

Structured Query Language (SQL)

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Data Query Language (DQL)



DQL (*Data Query Language*) is a **subset** of **SQL** that is used to **query** and **retrieve data** from a **database**.

PostgreSQL Example

```
SELECT * FROM myTable;
```

MySQL Example

```
SELECT * FROM myTable;
```

Extract

source

Kleene's Star



DQL with Conditions

$3.0 \leq \text{avg-grade} \leq 3.2 \text{ \& core = 'SSI' (Students)}$

DQL statements are used to **query** and **retrieve data** from a **database**. In this case, we are using a **condition** using the **WHERE** clause.

PostgreSQL Example

```
SELECT * FROM myTable
WHERE name = 'John';
```

condition

MySQL Example

```
SELECT * FROM myTable
WHERE name = 'John';
```

$\text{SELECT * FROM students}$
 $\text{WHERE career = 'Ing. Sistemas'}$
 $\text{AND avg-grade} \geq 3.0 \text{ AND avg-grade} \leq 3.2;$



DQL with Conditions by Strings

DQL has a **LIKE** operator that is used to **search** for a specified **pattern** in a **column**.

text, var char, string

PostgreSQL Example

```
SELECT * FROM myTable
WHERE name LIKE 'J%';
```

LIKE 'J%' or 'JD%'

starts with J

MySQL Example

```
SELECT * FROM myTable
WHERE name LIKE 'J%';
```

'%.s' → ends with s

'%.s%' → any s



DQL for Columns Projection

DQL could be used to **project** only the **columns** that are required.

↑ name (Students)

PostgreSQL Example

** Klee's Star*

```
SELECT name AS full_name
FROM myTable;
```

*Students ← name
age*

MySQL Example

```
SELECT name AS full_name
FROM myTable;
```

↑ name (Page 18 (Students))

↓ Table memory temporal



```
SELECT name
FROM students
WHERE age >= 18;
```



DQL for Counting Operation

DQL could be used to **count** the number of rows in a table.

PostgreSQL Example

SELECT COUNT(*)
FROM myTable;

Students — Career



MySQL Example

SELECT COUNT(*)
FROM myTable;

Career LIKE 'ing_e_d_s' (Students)

SELECT COUNT(*)
FROM students
WHERE career LIKE 'ing_e_d_s';



DQL for Sum Operation

DQL could be used to **sum** the values of a column.

PostgreSQL Example

```
SELECT SUM(salary)
FROM myTable;
```

MySQL Example

```
SELECT SUM(salary)
FROM myTable;
```

client_id
payment ← amount
pay-day

Pays in last 6 months

```
SELECT SUM(amount) AS total_payment
FROM payment
```

```
WHERE client_id = 5
AND pay-day >= '2024-06-01'
AND pay-day <= '2024-12-31';
```

last
6
months

parameter



DQL for Stats Operations

DQL could be used to calculate the average, maximum, and minimum values of a column.

PostgreSQL Example

```
SELECT AVG(salary), MAX(salary), MIN(salary)
FROM myTable;
```

MySQL Example

```
SELECT AVG(salary), MAX(salary), MIN(salary)
FROM myTable;
```

*SELECT MAX(grade)
FROM student
WHERE name like 'Marbri';*



DQL to Limit the number of results

DQL could be used to limit the number of results.

PostgreSQL Example

```
SELECT * FROM myTable
LIMIT 10;
```

7 First rows

MySQL Example

```
SELECT * FROM myTable
LIMIT 10;
```

Person

SELECT * FROM Person
LIMIT 2;

Person

id	name
0	alice
1	bob
2	clarin
3	dennis
4	erik
5	

Person

id	name
1	alice
2	bob



DQL for Sorting Results

DQL could be used to **sort** the results by any column or columns.

PostgreSQL Example

```
SELECT * FROM myTable
ORDER BY name ASC;
```

Text

asc ↓ a b c
desc ↑ A B C

MySQL Example

```
SELECT * FROM myTable
ORDER BY name ASC;
```

5 highest grades from Marlón

AVG (grades)

SELECT grades
FROM students
WHERE name LIKE 'Marlon'
ORDER BY grades DESC
LIMIT 5;

1	2	3	4	5	6	7
5	4	3	2	1	7	6

≠

1



DQL for Grouping Results

DQL could be used to **group** the results by any column.

PostgreSQL Example

```
SELECT country, COUNT(*)
FROM myTable GROUP BY country;
```

*SELECT name, MAX (grade)
FROM students
GROUP BY name;*

MySQL Example

```
SELECT country, COUNT(*)
FROM myTable GROUP BY country;
```

con	country
a	col
b	col
c	col
d	ecu
e	ecu
f	ecu



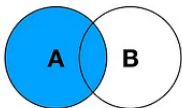
country	name	grade
col	col	3
ecu	ecu	2
ecu	ecu	4

country	count(*)
col	3
ecu	2
ecu	1

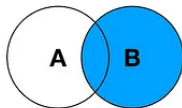


Table Joins

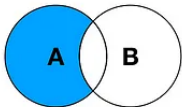
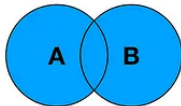
SQL JOINS



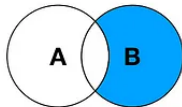
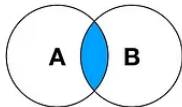
LEFT JOIN



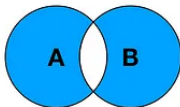
RIGHT JOIN

LEFT JOIN EXCLUDING
INNER JOIN

FULL OUTER JOIN

RIGHT JOIN EXCLUDING
INNER JOIN

INNER JOIN

FULL OUTER JOIN EXCLUDING
INNER JOIN

DQL for Joins

PostgreSQL Example

```
SELECT myTable.name, myOtherTable.email  
FROM myTable  
JOIN myOtherTable ON myTable.pk = myOtherTable.fk;
```

MySQL Example

```
SELECT myTable.name, myOtherTable.email  
FROM myTable  
JOIN myOtherTable ON myTable.pk = myOtherTable.fk;
```



SELECT id, name, location
FROM users

WHERE email = 'en@unisco'
AND password = 'pass';

Thanks!

Questions?



Repo: <https://github.com/EngAndres/ud-public/tree/main/courses/databases-foundations>

