DISTINCT operator

◈ DISTINCT అంటే ఏమిటి?

Definition:

DISTINCT is used in SQL to remove duplicate records from the result set and show only unique values.

◈ Syntax:

SELECT DISTINCT column1, column2, ...

FROM table_name;

☞ అంటే మనం ఎంచుకున్నకాలమ్స్లో డూప్లికేట్ values ఉన్నా ఒకసారి మాత్రమే చూపిస్తుంది.

◈ Basic Example

🎓 Example Table: student

student_id	student_name	dept_name	marks
1	Raju	CSE	85
2	Rani	CSE	78
3	John	ECE	90
4	Meena	CSE	88
5	Ravi	ECE	90

✿ Example 1: Find all unique departments

SELECT DISTINCT dept_name FROM student;

Output:

dept_name

CSE

ECE

☑ Explanation:

CSE మూడు సార్లు ఉన్నా DISTINCT వలన ఒకసారి మాత్రమే కనిపించింది.

✿ Example 2: Find unique combinations of department and marks

SELECT DISTINCT dept_name, marks FROM student;

Output:

dept_name	marks
CSE	85
CSE	78
CSE	88
ECE	90

☑ Explanation:

DISTINCT ఇప్పుడు combination of (dept_name + marks) uniqueగా చూపించింది.

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◈ WHERE తో కలిసి ఉపయోగించవచ్చు

SELECT DISTINCT dept_name

FROM student

WHERE marks > 80;

Meaning:

80 కన్నాఎకుఫ మార్కులు ఉన్నunique departments మాత్రమే చూపిస్తుంది.

◈ COUNT తో DISTINCT

SELECT COUNT(DISTINCT dept_name) AS unique_departments

FROM student;

Output:

unique_departments

2

☑ Explanation:

COUNT(DISTINCT column) ఉపయోగిస్తే duplicate values count అవవు — unique values మాత్రమే count అవుతాయి.

◈ ORDER BY తో ఉపయోగించవచ్చు

```
SELECT DISTINCT dept_name
FROM student
ORDER BY dept_name;
```

Explanation:

Unique department names ascending order లో చూపిస్తుంది.

◈ PostgreSQL లో DISTINCT సపోర్ట్ అవుతుందా?

Yes ✅

PostgreSQL లో DISTINCT మరియు DISTINCT ON రెండూ ఉన్నాయి.

♻ DISTINCT ON in PostgreSQL (Special Feature)

ఇది PostgreSQL కి మాత్రమే ప్రత్యేకం.

```
SELECT DISTINCT ON (dept_name) dept_name, student_name, marks
FROM student
ORDER BY dept_name, marks DESC;
```

Output:

dept_name	student_name	marks
CSE	Raju	85
ECE	John	90

☑️ Explanation: DISTINCT ON (dept_name) → ప్రతి department లో మొదటి (highest marks) ఉన్న record మాత్రమే తీసుకుంది.

ఇది PostgreSQL ప్రత్యేకమైన ఫీచర్, ఇతర databases (Oracle, MySQL) లో లేదు.

◈ Real-Time Usage Examples

Domain	Requirement	Query Example
College ERP	Show all unique departments	SELECT DISTINCT dept_name FROM student;
HR System	Show unique job titles	SELECT DISTINCT job_title FROM employee;
Banking	Show all unique branch codes	SELECT DISTINCT branch_code FROM account;
E-commerce	Find all unique product categories sold	SELECT DISTINCT category_id FROM orders;

◈ Interview-Level Questions

Level	Question	Answer
Beginner	What does DISTINCT do?	It removes duplicate records from query results.
Intermediate	Can we use DISTINCT with multiple columns?	Yes, it applies to the combination of all listed columns.
Intermediate	Difference between DISTINCT and GROUP BY?	Both remove duplicates, but GROUP BY can use aggregate functions, DISTINCT cannot.
Expert	What is DISTINCT ON in PostgreSQL?	PostgreSQL-specific feature to get the first unique record per group using ORDER BY.
Expert	Can we use DISTINCT inside aggregate functions?	Yes, e.g., COUNT(DISTINCT column) counts unique values only.

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⚡ Summary (Quick Notes)

Feature	DISTINCT	DISTINCT ON (PostgreSQL only)
Removes duplicates	☑ Yes	☑ Yes
Works with multiple columns	☑ Yes	☑ Yes
Allows ORDER BY	☑ Yes	☑ Yes, but must match DISTINCT ON columns
Works with aggregate functions	☑ Yes (COUNT, SUM)	✘ Not usually
Database Support	All major databases	Only PostgreSQL