SQL
Window Functions

Unlock the Power of **SQL** Analytics -
Understand, Apply and Master Windows Functions

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1. RANK ()

Definition:

Gives a ranking number to each row based on the specified order. If two rows have the same value, they get the same rank, and the next rank is skipped.

SQL Query:

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```
SELECT
EmployeeName,
Salary,
RANK() OVER (ORDER BY Salary DESC) AS SalaryRank
FROM Employees;
```

Output:

EmployeeName	Salary	SalaryRank
Nick	70000	1
Anna	65000	2
John	65000	2
Kate	50000	4
Bob	45000	5

2. DENSE_RANK ()

Definition:

Similar to RANK(), but it **does not skip any rank** numbers even if there are ties.

SQL Query:

Window Functions

```
SELECT
EmployeeName,
Salary,
DENSE_RANK() OVER (ORDER BY Salary DESC)
AS SalaryRank
FROM Employees;
```

Output:

EmployeeName	Salary	SalaryRank
Nick	70000	1
Anna	65000	2
John	65000	2
Kate	50000	3
Bob	45000	4

3. ROW_NUMBER ()

Definition:

Gives a **unique number** to each row, even if rows have the same values.

SQL Query:

Window Functions

```
SELECT
EmployeeName,
Salary,
ROW_NUMBER() OVER (ORDER BY Salary DESC)
AS RowNum
FROM Employees;
```

Output:

EmployeeName	Salary	RowNum
Nick	70000	1
Anna	65000	2
John	65000	3
Kate	50000	4
Bob	45000	5

4. LAG ()

Definition:

Fetches the value from the **previous row** based on the order.

SQL Query:

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```
SELECT
EmployeeName,
Salary,
LAG(Salary) OVER (ORDER BY Salary) AS
PrevSalary
FROM Employees;
```

Output:

EmployeeName	Salary	PrevSalary
Bob	45000	NULL
Kate	50000	45000
John	65000	50000
Anna	65000	65000
Nick	70000	65000

5. LEAD ()

Definition:

Fetches the value from the **next row** based on the order.

SQL Query:

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```
SELECT
EmployeeName,
Salary,
LEAD(Salary) OVER (ORDER BY Salary) AS
NextSalary
FROM Employees;
```

Output:

EmployeeName	Salary	NextSalary
Bob	45000	50000
Kate	50000	65000
John	65000	65000
Anna	65000	70000
Nick	70000	NULL

6. NTILE (2)

Definition:

Divides the result set into equal parts or groups. Each row is assigned a group number.

SQL Query:

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```sql
SELECT
EmployeeName,
Salary,
NTILE(2) OVER (ORDER BY Salary DESC)
AS Quartile
FROM Employees;
```

Output:

EmployeeName	Salary	Quartile
Nick	70000	1
Anna	65000	1
John	65000	1
Kate	50000	2
Bob	45000	2

7. FIRST_VALUE ()

Definition:

Returns the **first value** in the group after sorting.

SQL Query:

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```
SELECT
EmployeeName,
Department,
Salary,
FIRST_VALUE(Salary) OVER (PARTITION BY
Department ORDER BY Salary DESC)
AS TopDeptSalary
FROM Employees;
```

Output:

EmployeeName	Department	Salary	TopDeptSalary
Bob	Tech	45000	65000
Kate	Tech	50000	65000
John	Tech	65000	65000
Anna	Finance	65000	70000
Nick	Finance	70000	70000

8. LAST_VALUE ()

Definition:

Returns the **last value** in the group after sorting.

SQL Query:

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```
SELECT
EmployeeName,
Department,
Salary,
LAST_VALUE(Salary) OVER (PARTITION BY
Department ORDER BY Salary DESC)
AS LastDeptSalary
FROM Employees;
```

Output:

EmployeeName	Department	Salary	LastDeptSalary
Bob	Tech	45000	45000
Kate	Tech	50000	45000
John	Tech	65000	45000
Anna	Finance	65000	65000
Nick	Finance	70000	65000