

Topics for Today (SQL)

- Aggregate Functions
- Joins

Aggregate Functions

What are aggregate functions?

- Functions that we apply to a group of data

Common aggregate functions:

- COUNT: Returns the number of rows.
- SUM: Calculates the sum of a numeric column.
- AVG: Calculates the average of a numeric column.
- MIN: Returns the minimum value in a column.
- MAX: Returns the maximum value in a column.

Basic Syntax: `SELECT aggregate_function(column_name) FROM table_name;`

Conditions can be used as well (WHERE condition;)

GROUP BY Clause

Groups rows based on one or more columns.

Used with **Aggregate functions** to perform calculations on each group.

Syntax:

```
SELECT column_name, aggregate_function(column_name)
```

```
FROM table_name
```

```
GROUP BY column_name;
```

HAVING Clause

Filters groups based on a condition.

Used with **GROUP BY** clause.

Syntax:

```
SELECT column_name, aggregate_function(column_name)
```

```
FROM table_name
```

```
GROUP BY column_name
```

```
HAVING condition;
```

Introduction to Joins

Joins combine rows from two or more tables based on a related column between them.

Essential for retrieving data from multiple tables.

Types: INNER JOIN, LEFT JOIN, RIGHT JOIN, FULL OUTER JOIN

Syntax:

```
SELECT column_name1, column_name2  
FROM table1  
JOIN table2  
ON condition;
```

INNER Join

- Returns rows that have matching values in both tables.
- Only returns rows where there is a match in both tables.
- Syntax:

```
SELECT column_name1, column_name2
```

```
FROM table1
```

```
INNER JOIN table2
```

```
ON table1.column_name = table2.column_name;
```

LEFT Join

- Returns all rows from the left table, and the matched rows from the right table.
- If there is no match in the right table, it returns NULL values.
- Syntax:

```
SELECT column_name1, column_name2
```

```
FROM table1
```

```
LEFT JOIN table2
```

```
ON table1.column_name = table2.column_name;
```


RIGHT Join

- Returns all rows from the right table, and the matched rows from the left table.
- If there is no match in the left table, it returns NULL values.
- Syntax:

```
SELECT column_name1, column_name2
```

```
FROM table1
```

```
RIGHT JOIN table2
```

```
ON table1.column_name = table2.column_name;
```

FULL OUTER Join

- Returns all rows when there is a match in either left or right table.
- If there is no match in either table, it returns NULL values.
- Syntax:

```
SELECT column_name1, column_name2
```

```
FROM table1
```

```
FULL OUTER JOIN table2
```

```
ON table1.column_name = table2.column_name;
```