WEEK 13

Logical & **Comparison Operators**

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Logical Operator - AND

Definition:

- Combines multiple conditions in a query.
- All conditions must be TRUE for a row to be included in the results.

```sql
SELECT *
FROM table_a
WHERE column_a > 18 AND column_b = 1;
```

Explanation:

- Retrieves rows where column_a is greater than 18 and column_b equals 1.

Logical Operator - OR

Definition:

- At least one condition must be TRUE for a row to be included.

```sql
SELECT *
FROM table_a
WHERE column_c = 'string' OR column_b <= 12;
```

Explanation:

- Retrieves rows where column_c equals 'string' or column_b is less than or equal to 12.

Logical Operator - BETWEEN

Definition:

- Filters data within a specified range.
- Inclusive of the start and end values.

```sql
SELECT *
FROM table_a
WHERE column_1 BETWEEN '2024-01-01' AND '2024-12-31';
```

Explanation:

- Retrieves rows where column_1 falls between January 1st and December 31st, 2024.

Logical Operator - IN

Definition:

- Filters data based on a list of values.
- Simplifies multiple OR conditions.

```sql
SELECT *
FROM table_a
WHERE column_1 IN ('Sales', 'Marketing');
```

Explanation:

- Retrieves rows where column_1 equals 'Sales' or 'Marketing'.

Comparison Operator : = (Equal)

Definition:

- Checks if two values are equivalent.

```sql
SELECT *
FROM table_a
WHERE column_1 = 50;
```

Explanation:

- Retrieves rows where column_1 equals 50.

Comparison Operator - != or <> (Not Equal)

Definition:

- Checks if two values are not the same.

```
SELECT *
FROM table_a
WHERE column_1 != 50;
```

Explanation:

- Retrieves rows where column_1 does not equal 50.

Comparison Operator - > and >=

Definition:

- >: Checks if one value is greater than another.
- >=: Checks if one value is greater than or equal to another.

SQL Syntax Example (`>`):

```sql
SELECT *
FROM table_a
WHERE column_1 > '2024-03-15';
```

SQL Syntax Example (`>=`):

```sql
SELECT *
FROM table_a
WHERE column_1 >= '2024-03-15';
```

Explanation:

- Rows are retrieved based on whether the dates are after or on March 15th, 2024.

Comparison Operator - < (Less Than)

Definition:

- Checks if one value is lower than another.

SQL Syntax Example:

```sql
SELECT *
FROM table_a
WHERE column_1 < 90;
```

Explanation:

- Retrieves rows where column_1 has a value below 90.

Comparison Operator - IS NULL and IS NOT NULL

Definition:

- IS NULL: Checks if a column contains no value.
- IS NOT NULL: Checks if a column contains a value.

SQL Syntax Example (`IS NULL`):

```sql
SELECT *
FROM table_a
WHERE column_1 IS NULL;
```

SQL Syntax Example (`IS NOT NULL`):

```sql
SELECT *
FROM table_a
WHERE column_1 IS NOT NULL;
```

Explanation:

- Filters rows based on the presence or absence of data in a column.

Common Mistakes and Best Practices

- Avoid combining WHERE and aggregate functions.
- Use IN instead of multiple OR conditions.
- Always consider NULL values explicitly.
- Understand execution order
  - (FROM → WHERE → GROUP BY → HAVING → SELECT → ORDER BY).

Recap and Next Steps

Key Takeaways:

- Logical operators (AND, OR, BETWEEN, IN) refine queries.
- Comparison operators (=, >, <, IS NULL) validate conditions.
- Pattern matching (LIKE, NOT LIKE) enables flexible text searches.

- Next Steps:
  - Complete Week 11 Quiz