# Sales Trend Analysis (Task 6 - Data Analyst Internship)

## Objective

Analyze \*\*monthly revenue\*\* and \*\*order volume\*\* from the `online\_sales` dataset using SQL aggregation functions.

## Tools Used

- PostgreSQL (queries compatible with MySQL & SQLite)

- Dataset: `online\_sales` table (columns: order\_date, amount, product\_id, order\_id)

## Steps Performed

1. Extracted `year` and `month` from `order\_date`.

2. Grouped data by `year` and `month`.

3. Calculated:

- \*\*Monthly Revenue\*\* = SUM(amount)

- \*\*Order Volume\*\* = COUNT(DISTINCT order\_id)

4. Sorted results chronologically with ORDER BY.

5. Found \*\*Top 3 months by revenue\*\* using ORDER BY monthly\_revenue DESC LIMIT 3.

## SQL Scripts

The `sales\_trend.sql` file contains:

- Monthly sales trend query.

- Top 3 months by revenue query.

## Example Output

### Monthly Revenue & Order Volume

| year | month | monthly\_revenue | order\_volume |

|------|-------|-----------------|--------------|

| 2023 | 1 | 7319 | 7 |

| 2023 | 2 | 3085 | 4 |

| 2023 | 3 | 6136 | 8 |

### Top 3 Months by Revenue

| year | month | monthly\_revenue | order\_volume |

|------|-------|-----------------|--------------|

| 2023 | 1 | 7319 | 7 |

| 2023 | 3 | 6136 | 8 |

| 2023 | 2 | 3085 | 4 |

## Interview Q&A

1. \*\*Group by month/year\*\*: Use EXTRACT(MONTH FROM date) and EXTRACT(YEAR FROM date) with GROUP BY.

2. \*\*COUNT(\*) vs COUNT(DISTINCT)\*\*:

- COUNT(\*): Counts all rows (including duplicates).

- COUNT(DISTINCT col): Counts only unique values in that column.

3. \*\*Monthly revenue\*\*: SUM(amount) grouped by month/year.

4. \*\*Aggregate functions\*\*: Perform calculations on multiple rows and return a single value (SUM, AVG, COUNT, MIN, MAX).

5. \*\*Handling NULLs\*\*: Aggregate functions ignore NULLs except COUNT(\*), which counts them as rows.

6. \*\*Role of ORDER BY & GROUP BY\*\*:

- GROUP BY: Groups rows for aggregation.

- ORDER BY: Sorts the output rows.

7. \*\*Top 3 months by sales\*\*: Use ORDER BY monthly\_revenue DESC LIMIT 3.

## How to Run

1. Import `online\_sales\_sample.csv` into PostgreSQL/MySQL.

2. Run the queries from `sales\_trend.sql`.

3. Check the output in your SQL client or export as CSV.