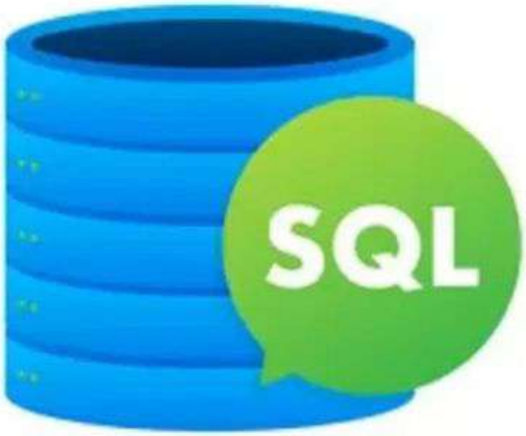
SQL LEARNING PATH



Swipe →

Basic SQL

1. Introduction to Databases & SQL

- What is SQL? Importance of SQL
- in Data Management Types of
- Databases: Relational vs. NoSQL

2. Database and Table Management

- Creating a Database (CREATE DATABASE)
- Using a Database (USE) Creating a Table
- (CREATE TABLE) Data Types in SQL (INT,
- VARCHAR, DATE, etc.) Modifying Tables
- (ALTER TABLE) Deleting Tables (DROP TABLE)

3. Data Manipulation (CRUD Operations)

- Inserting Data (INSERT INTO)
- Retrieving Data (SELECT)
- Filtering Data (WHERE clause)
- Updating Data (UPDATE)
- Deleting Data (DELETE)

The Role of SQL in Data Analytics and Business Intelligence

SQL (Structured Query Language) is essential for data analysts because it allows them to efficiently retrieve, manipulate, and analyze data stored in databases. Here's why SQL. is important for data analysts:

1.Data Extraction - Analysts use SQL to extract relevant data from large databases using queries.

2. Data Filtering & Aggregation - SQL helps filter, sort, and group data for analysis. Functions like WHERE, GROUP BY, and HAVING are commonly used.

3. Data Cleaning & Transformation - Analysts use SQL to clean and format data before analysis. Operations like JOIN, CASE, and CAST help in transformation.

4. Data Analysis & Reporting - SQL enables analysts to perform calculations, generate reports, and visualize trends using commands like SUM(), AVG(), and COUNT().

5. Data Integration - SQL is used to combine multiple datasets from different sources using JOIN operations.

6. Automation & Efficiency-SQL querie
automated, saving time and reducing
in repetitive tasks.

13. Stored Procedures & Triggers

- Creating and Using Stored Procedures Creating
- Triggers (AFTER INSERT, AFTER UPDATE, AFTER DELETE)

14. Views and Materialized Views

- Creating Views (CREATE VIEW) Using Views for
- Security and Performance Difference Between
- Views and Materialized Views

15. SQL for Data Analysis & Business Intelligence

- Exploratory Data Analysis (EDA) with SQL
- Using SQL for Reporting and Dashboards
- Working with JSON Data in SQL

8. Common Table Expressions (CTEs) and Window Functions

- Using WITH for CTEs
- Window Functions: ROW_NUMBER(), RANK(), DENSE_RANK(), LEAD(), LAG()

9. String & Date Functions

- String Functions: SUBSTRING(), TRIM(), LOWER(), UPPER()
- Date Functions: NOW(), DATEDIFF(), DATEADD()

10. Case Statements & Conditional Logic

- Using CASE WHEN for Conditional Queries
- Handling NULL values (COALESCE(), ISNULL())

Advanced SQL

11. Advanced Query Optimization

- Indexing (CREATE INDEX)
- Understanding Execution Plans (EXPLAIN) Optimizing
- Joins & Query Performance

12. Transactions and Concurrency Control

- Transactions (BEGIN, COMMIT, ROLLBACK)
- ACID Properties
- Handling Deadlocks

4. Sorting and Filtering Data

- Sorting (ORDER BY ASC/DESC)
- Limiting Results (LIMIT)
- Wildcards & Pattern Matching (LIKE, %, _)

5. Basic Aggregate Functions

- COUNT(), SUM(), AVG(), MIN(), MAX()
- Grouping Data (GROUP BY)
- Filtering Groups (HAVING)

Intermediate SQL

6. Joins and Relationships

- Introduction to Joins
- INNER JOIN, LEFT JOIN, RIGHT JOIN, FULL OUTER JOIN
- Self Joins
- UNION and UNION ALL

7. Subqueries and Nested Queries

- Simple Subqueries
- Correlated vs. Non-Correlated Sub
- Using Subqueries in SELECT, FROM, c