

TechnoMaster

Sql

Duration: 20 Hrs (Changeable) | Fees: Individual / Batch

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Syllabus Contd..

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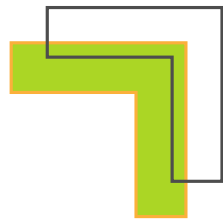
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Syllabus



Module 1: Introduction to Databases and SQL

- * What is a Database?
- * Introduction to databases and their importance
- * Types of databases: Relational, NoSQL, etc.
- * Introduction to SQL
- * History and purpose of SQL
- * Basic SQL terminology (tables, rows, columns, etc.)
- * Setting Up SQL Environment
- * Installing database management systems (e.g., MySQL, PostgreSQL)
- * Installing SQL clients (e.g., MySQL Workbench, pgAdmin)

Module 2: SQL Basics

- * SQL Data Types
- * Common data types (e.g., INT, VARCHAR, DATE)
- * Choosing the right data type for columns
- * Creating and Managing Tables
- * Creating tables using CREATE TABLE
- * Altering tables using ALTER TABLE
- * Deleting tables using DROP TABLE
- * Inserting and Manipulating Data
- * INSERT, UPDATE, and DELETE statements
- * Understanding SQL transactions

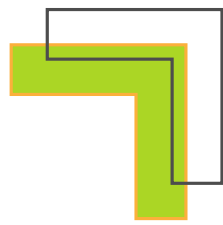
Module 3: Querying Data

- * SELECT Statement



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- * Retrieving data from tables
- * Using SELECT DISTINCT and aliases
- * Filtering and Sorting Data
- * WHERE clause for filtering
- * ORDER BY clause for sorting
- * Aggregate Functions
- * SUM, AVG, COUNT, MIN, MAX
- * GROUP BY and HAVING clauses

Module 4: Joins and Relationships

- * Understanding Relationships
- * Primary keys and foreign keys
- * Types of relationships: one-to-one, one-to-many, many-to-many
- * INNER JOIN and OUTER JOIN
- * Joining tables to retrieve related data
- * LEFT JOIN, RIGHT JOIN, FULL JOIN
- * Subqueries
- * Using subqueries to retrieve data
- * Correlated subqueries

Module 5: Advanced SQL Concepts

- * Indexes and Performance Optimization
- * Creating and managing indexes
- * Query optimization techniques



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- * Views
- * Creating and using views
- * Advantages of using views
- * Stored Procedures and Functions
- * Creating and executing stored procedures
- * Creating and executing user-defined functions

Module 6: Transactions and Concurrency

- * Transactions
- * ACID properties
- * Managing transactions using COMMIT and ROLLBACK
- * Locking and Concurrency Control
- * Understanding locks and their types
- * Handling concurrent database access

Module 7: Security and Permissions

- * User Accounts and Permissions
- * Creating and managing user accounts
- * Granting and revoking privileges
- * SQL Injection Prevention
- * Protecting against SQL injection attacks
- * Best practices for secure coding

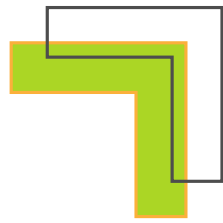
Module 8: Case Studies and Real-world Applications

- * Building SQL Applications



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- * Developing a simple web application with a database backend

- * Data Modeling

- * Entity-Relationship Diagrams (ERD)

- * Normalization techniques

Module 9: Reporting and Business Intelligence (Optional)

- * Introduction to Reporting Tools

- * Using SQL for generating reports

- * Integration with reporting tools like Tableau, Power BI, etc.

Module 10: NoSQL and Big Data (Optional)

- * Introduction to NoSQL databases

- * Overview of popular NoSQL databases (e.g., MongoDB, Cassandra)

- * SQL in the context of Big Data

- * Basics of working with large datasets

Module 11: Advanced Topics (Optional)

- * Window Functions

- * Understanding window functions for advanced querying

- * JSON and XML Processing

- * Working with JSON and XML data in SQL