

COMPLETE

SQL GUIDE

Topic Wise Functions

Rambhainav's Blog

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## **Basic SQL Syntax**

- SQL keywords
- Data types
- Operators
- SQL statements
- SELECT
- INSERT
- UPDATE
- DELETE

## **Data Definition Language (DDL)**

- CREATE TABLE
- ALTER TABLE
- DROP TABLE
- TRUNCATE TABLE

## **Data Manipulation Language (DML)**

- SELECT statement (SELECT, FROM, WHERE, ORDER BY, GROUP BY, HAVING, JOINS)
- INSERT statement
- UPDATE statement
- DELETE statement

## **Aggregate Functions**

- SUM, AVG, COUNT, MIN, MAX
- GROUP BY clause
- HAVING clause

## **Data Constraints**

- Primary Key
- Foreign Key
- Unique
- NOT NULL

- CHECK

## Joins

- INNER JOIN
- LEFT JOIN
- RIGHT JOIN
- FULL OUTER JOIN
- SELF JOIN
- CROSS JOIN

## Sub queries

- Types of sub queries (scalar, column, row, table)
- Nested sub queries
- Correlated sub queries

## Advanced SQL Functions

- String functions ( CONCAT, LENGTH, SUBSTRING, REPLACE, UPPER, LOWER)
- Date and time functions (DATE, TIME, TIMESTAMP, DATEPART, DATE ADD)
- Numeric functions: (ROUND, CEILING, FLOOR, ABS, MOD)
- Conditional functions: ( CASE, COALESCE, NULLIF)

## Views

- Creating views
- Modifying views
- Dropping views

## Indexes

- Creating indexes (CREATE INDEX)
- Using indexes for query optimization

## Transactions

- ACID properties

- Transaction management: (BEGIN, COMMIT, ROLLBACK, SAVEPOINT)
- Transaction isolation levels

## **Data Integrity and Security**

- Data integrity constraint (Referential integrity, entity integrity)
- GRANT and REVOKE statements (granting and revoking permissions)
- Database security best practices

## **Stored Procedures and Functions**

- Creating stored procedures (CREATE PROCEDURE)
- Executing stored procedures (EXEC)
- Creating functions
- Using functions in queries

## **Performance Optimization**

- Query optimization techniques (Using indexes, optimizing joins, reducing sub queries)
- Performance tuning best practices

## **Advanced SQL Concepts**

- Recursive queries
- Pivot and unpaved operations
- Window functions: (Row number, rank, dense rank, lead & lag)
- CTEs (Common Table Expressions)
- Dynamic SQL

## **Schema Management**

- Creating schemas (CREATE SCHEMA)
- Altering schemas (ALTER SCHEMA)
- Dropping schemas (DROP SCHEMA)

## **Sequences and Identity Columns**

- Creating sequences/identity columns
- Using sequences/identity columns

## Triggers

- Creating triggers (CREATE TRIGGER)
- Using triggers

## Error Handling

- TRY-CATCH blocks
- Raising custom exceptions

## Advanced SQL Data Types

- BLOB
- CLOB
- ENUM
- SET, etc.

## Partitioning

- Creating partitions (PARTITION)
- Using partitions

## Regular Expressions

Using REGEXP for pattern matching in queries

- (Dot): Matches any single character, except newline characters
- (Asterisk): Matches zero or more of the preceding character or group
- (Plus): Matches one or more of the preceding characters or group
- ? (Question mark): Matches zero or one of the preceding characters or group
- ^ (Caret): Matches the start of a string without consuming any characters
- \$ (Dollar): Matches the end of a string without consuming any characters

## Temporal Tables

- Creating temporal tables  
E.g. GENERATED ALWAYS
- Using temporal tables

## Cursors

Understanding and using cursors

- DECLARE
- OPEN
- CLOSE
- DEALLOCATE

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