

COMPLETE

SQL

Guide

Topic Wise Functions

# Basic SQL Syntax

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

# Data Definition Language (DDL)

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

# Data Manipulation Language (DML)

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

# Aggregate Functions

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

# Data Constraints

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- Primary Key
- Foreign Key
- Unique
- NOT NULL
- CHECK

# Joins

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

# Subqueries

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



# Advanced SQL Functions

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

# Views

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- Creating views
- Modifying views
- Dropping views

# Indexes

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

# Transactions

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- ACID properties
- Transaction management:
  - BEGIN, COMMIT, ROLLBACK, SAVEPOINT
- Transaction isolation levels

# Data Integrity and Security

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

# Stored Procedures and Functions

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

# Performance Optimization

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- Query optimization techniques
  - Using indexes, optimizing joins, reducing subqueries
- Performance tuning best practices

# Advanced SQL Concepts

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



# Schema Management

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

# Sequences and Identity Columns

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

# Triggers

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- Creating triggers
  - CREATE TRIGGER
- Using triggers

# Error Handling

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- TRY-CATCH blocks
- Raising custom exceptions

# Advanced SQL Data Types

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- BLOB
- CLOB
- ENUM
- SET, etc.

# Partitioning

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- Creating partitions
  - PARTITION
- Using partitions

# Regular Expressions

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- 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 character or group
  - ? (Question mark): Matches zero or one of the preceding character 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

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




# Cursors

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- Understanding and using cursors
  - DECLARE
  - OPEN
  - CLOSE
  - DEALLOCATE

# THANK YOU

THE DATA DIALOGUE

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@talhakhana