

COMPLETE

SQL

Guide

Topic Wise Functions

@talhakan

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

Subqueries

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

Advanced SQL Functions

- 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

- 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 subqueries
- Performance tuning best practices

Advanced SQL Concepts

- Recursive queries
- Pivot and unpivot 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 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


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

Cursors

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

THANK YOU

THE DATA DIALOGUE

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@talhakhana