COMPLETE

SQL
Guide

Topic Wise Functions

PREM MANDAL

1:

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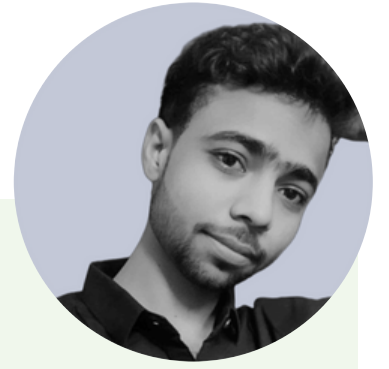
- SQL keywords
- Data types
- Operators
- SQL statements
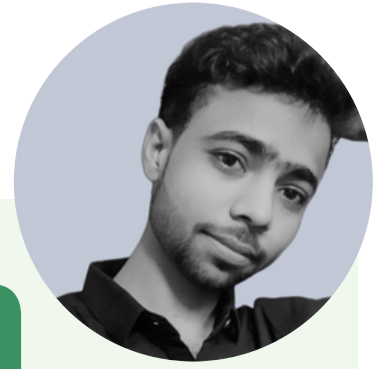 - SELECT
  - INSERT
  - UPDATE
  - DELETE

2:

Data Definition Language (DDL)

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

3:

Data Manipulation Language (DML)

- SELECT statement (SELECT, FROM, WHERE, ORDER BY, GROUP BY, HAVING, JOINs)
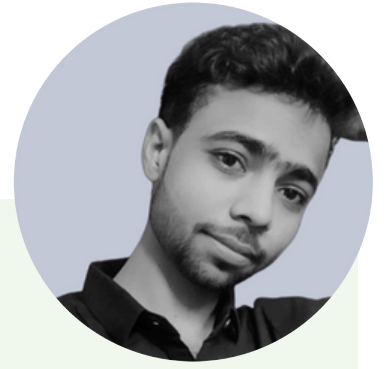
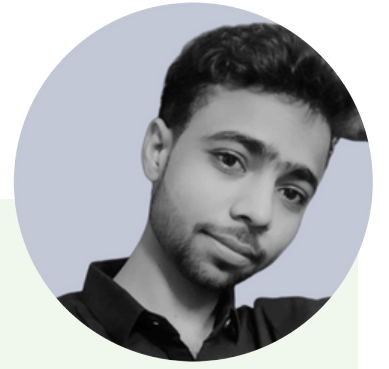- INSERT statement

- UPDATE statement

- DELETE statement

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Aggregate Functions

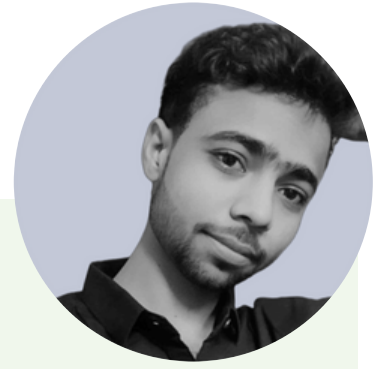- SUM, AVG, COUNT, MIN, MAX
- GROUP BY clause
- HAVING clause

5:

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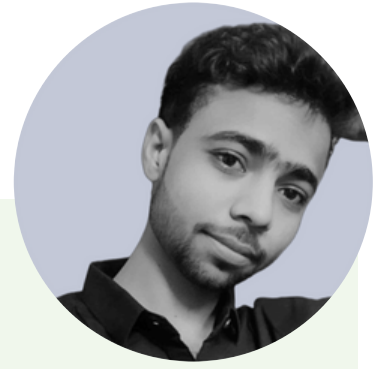
- Primary Key
- Foreign Key
- Unique
- NOT NULL
- CHECK

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Joins

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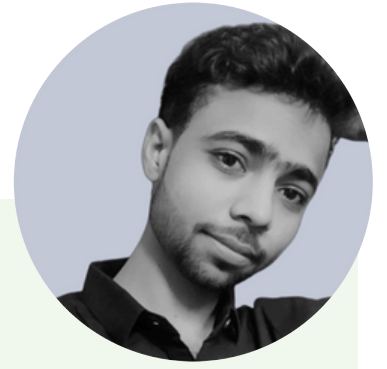- RIGHT JOIN
- FULL OUTER JOIN
- SELF JOIN
- CROSS JOIN

7:

Subqueries

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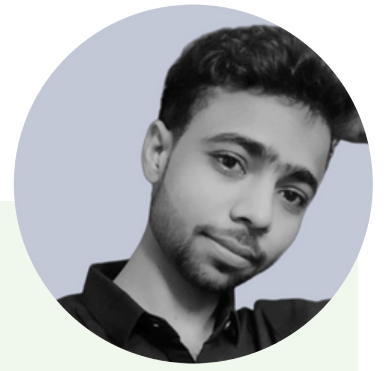- Correlated subqueries

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

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Views

- Creating views
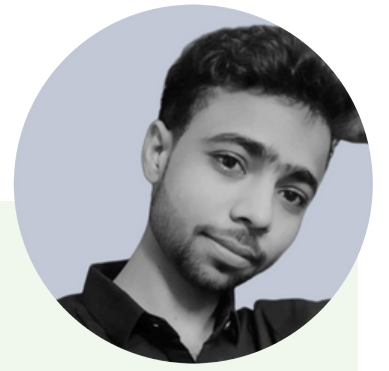- Modifying views
- Dropping views

10:

Indexes

- Creating indexes
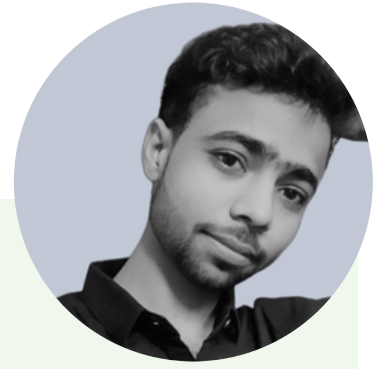 -
- CREATE INDEX

  Using indexes for query
  optimization

11:

Transactions

- ACID properties
- Transaction management:
  - BEGIN, COMMIT, ROLLBACK, SAVEPOINT
- Transaction isolation levels
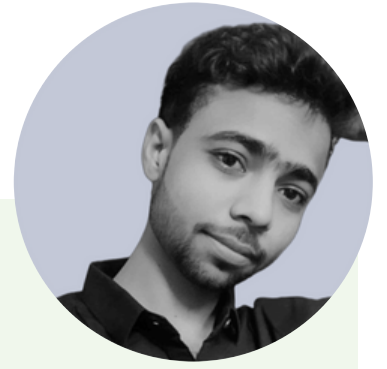
12:

Data Integrity and Security

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

- Database security best practices

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13:

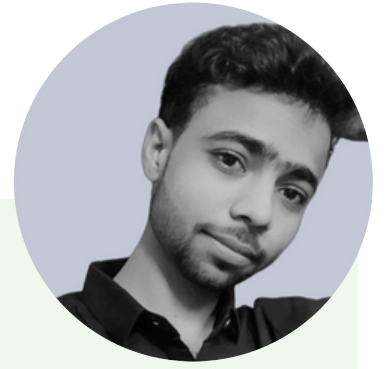## Stored Procedures and Functions

- Creating stored procedures

  - CREATE PROCEDURE

  Executing stored procedures

  - EXEC

- Creating functions

  Using functions in queries

14:

Performance Optimization

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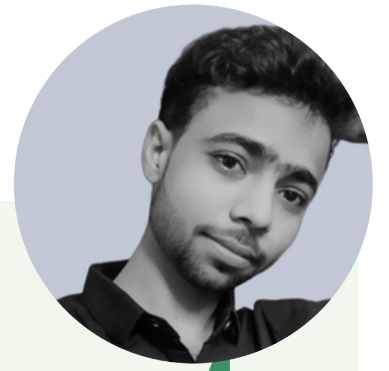- Performance tuning best practices

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15:

Advanced SQL Concepts

- Recursive queries
- Pivot and unpivot operations
- Window functions:
  - Row_number, rank, dense_rank, lead & lag
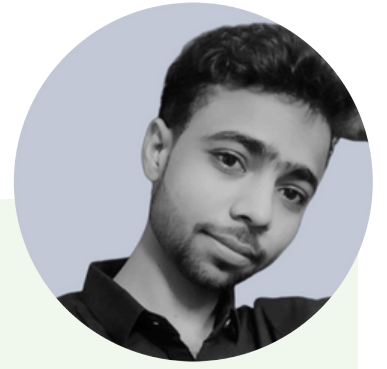- CTEs (Common Table Expressions)
- Dynamic SQL

16:

Schema Management

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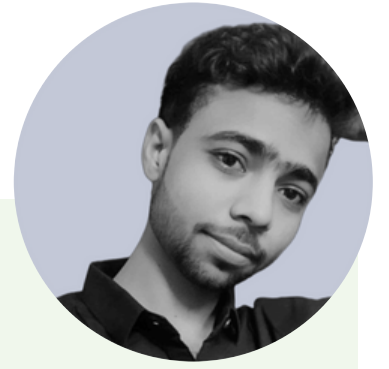- Altering schemas
  - ALTER SCHEMA
- Dropping schemas
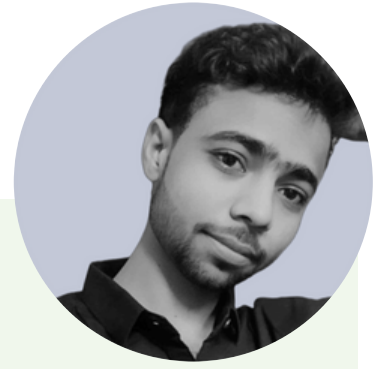 - DROP SCHEMA

17:

Sequences and Identity Columns

- Creating sequences/identity columns

- Using sequences/identity columns

Triggers

- Creating triggers
  -
    - CREATE TRIGGER
  Using triggers

19:

Error Handling
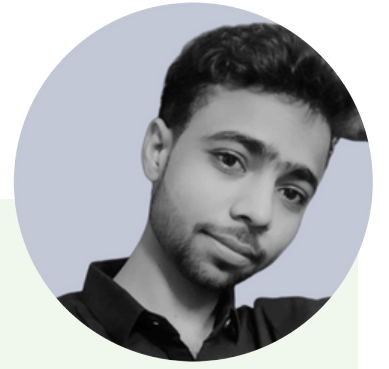
- TRY-CATCH blocks
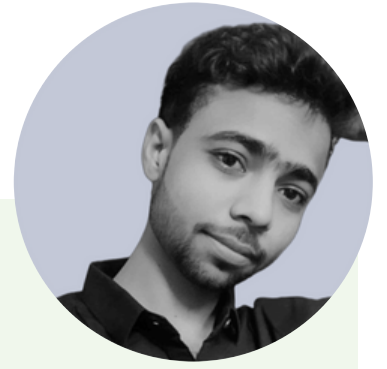- Raising custom exceptions

20:

Advanced SQL Data Types
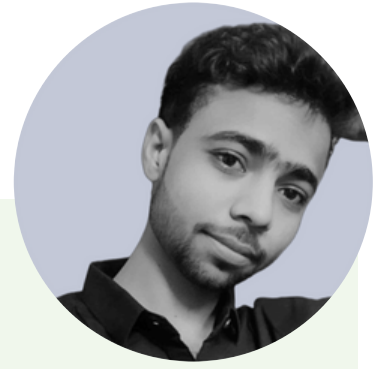
- BLOB
- CLOB
- ENUM
- SET, etc.

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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
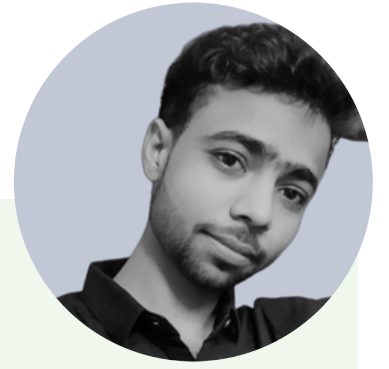 - $ (Dollar): Matches the end of a string without consuming any characters

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Temporal Tables

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

24:

Cursors

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

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THANK YOU

in PREM MANDAL