SQL DDL (Data Definition Language) – Understanding Notes

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1. Introduction to DDL
DDL (Data Definition Language) commands are used to define, modify, and remove database structures such as databases, tables, and indexes.

2. Creating and Using a Database
CREATE DATABASE employees;
USE employees;

3. Creating a Table
CREATE TABLE Employees (employee_id INT PRIMARY KEY, name VARCHAR(50), age INT, department VARCHAR(50));

4. Inserting Data
INSERT INTO Employees (employee_id, name, age, department) VALUES (...);

5. ALTER TABLE (Modifying Table Structure)
• Add Column:
ALTER TABLE Employees ADD COLUMN email VARCHAR(50);

• Rename Column:
ALTER TABLE Employees RENAME COLUMN employee_id TO id;

• Drop Column:
ALTER TABLE Employees DROP COLUMN email;

6. Dropping a Table
DROP TABLE IF EXISTS Employees;

7. Creating Table with Constraints
CREATE TABLE Employees (employee_id SERIAL PRIMARY KEY, name VARCHAR(50) NOT NULL, age INT CHECK (age >= 18), department VARCHAR(50), hire_date DATE);

8. Practical DDL Operations
• Drop and Recreate Table
• Add Constraints (NOT NULL, CHECK, PRIMARY KEY)
• Add, Rename, Drop Columns using ALTER TABLE
• Verify changes using SELECT * FROM table_name;

Important Constraints:
PRIMARY KEY – Uniquely identifies each record.
NOT NULL – Prevents null values.
CHECK – Ensures condition validation.
SERIAL – Auto-increment primary key (PostgreSQL).

Conclusion
DDL commands form the foundation of database design. Mastering CREATE, ALTER, and DROP allows you to build and maintain structured, secure, and optimized databases effectively.