

21-Day SQL Challenge Syllabus (PostgreSQL & SQL)

Start Date: April 4, 2025

Duration: 21 Days

This challenge is designed to take you from SQL basics to advanced concepts, helping you build strong database skills. Each day will focus on specific topics with practical exercises.

Week 1: SQL Fundamentals (Days 1-7)

Day 1: Introduction to SQL & PostgreSQL - Setting up PostgreSQL, Basic syntax and structure.

Day 2: Database & Table Management - Creating, modifying, and deleting databases.

Day 3: Basic CRUD Operations - SELECT, INSERT, UPDATE, DELETE.

Day 4: Sorting & Limiting Data - ORDER BY, LIMIT, OFFSET.

Day 5: Aggregate Functions - COUNT(), SUM(), AVG(), GROUP BY, HAVING.

Day 6: Working with Date & Time - PostgreSQL date/time functions.

Day 7: String Functions - UPPER(), LOWER(), CONCAT(), LIKE, REGEXP.

Week 2: Intermediate SQL (Days 8-14)

Day 8: Understanding Joins - INNER JOIN, LEFT JOIN, RIGHT JOIN.

Day 9: Subqueries & CTEs - Writing subqueries, using WITH.

Day 10: Set Operations - UNION, INTERSECT, EXCEPT.

Day 11: Window Functions - ROW_NUMBER(), RANK(), DENSE_RANK().

Day 12: Indexing & Performance Optimization - EXPLAIN ANALYZE.

Day 13: Transactions - BEGIN, COMMIT, ROLLBACK.

Day 14: Stored Procedures & Functions - Writing custom PL/pgSQL functions.

Week 3: Advanced SQL & Real-World Applications (Days 15-21)

Day 15: Working with JSON - Querying JSON data in PostgreSQL.

Day 16: Recursive Queries - Using recursive Common Table Expressions (CTEs).

Day 17: Triggers - Automating processes using triggers.

Day 18: Advanced Query Optimization - Query execution plans, indexing strategies.

Day 19: Security & User Management - Managing roles, GRANT, REVOKE.

Day 20: Real-World Case Studies - Writing optimized queries.

Day 21: Final Project & Summary - Applying all learned concepts.

How to Participate?

I will post daily updates, insights, and challenges on LinkedIn!

Feel free to comment, share your solutions, and engage with the community.

Follow my journey:

GitHub: github.com/FullStackDeveloperShubham

LinkedIn: [linkedin.com/in/shubham-gaikwad-62499329a](https://www.linkedin.com/in/shubham-gaikwad-62499329a)