



KIDS & TEENS FREELANCING TRAINING INSTITUTE

PostgreSQL Course Outline

Module 1: What is PostgreSQL?

- Introduction to PostgreSQL as a powerful, open-source relational database
 - Real-life example: Managing complex data for banking or ecommerce apps
 - Key features: support for large datasets, performance, and reliability
 - Setting up PostgreSQL and using pgAdmin
 - Activity: Install PostgreSQL and explore the interface
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Module 2: Creating Databases and Tables

- Creating databases and understanding schema structure
 - Defining tables with data types and constraints
 - Real-life example: Building a product and customer database
 - Activity: Create a database and set up related tables
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Module 3: Inserting and Retrieving Data

- Adding data with `INSERT` and retrieving with `SELECT`
 - Using `WHERE`, `ORDER BY`, `LIMIT` clauses for filtered queries
 - Real-life example: Searching for recent transactions or top products
 - Activity: Populate a table and write custom queries
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Module 4: Updating, Deleting, and Transactions

- Making changes using `UPDATE` and removing with `DELETE`
- Real-life example: Updating contact information or removing duplicates
- Introduction to transactions with `BEGIN`, `COMMIT`, and `ROLLBACK`
- Activity: Practice safe updates using transactions

Module 5: Using Joins and Relationships

- Understanding foreign keys and relational integrity
- Combining data using INNER, LEFT, RIGHT, and FULL JOINS
- Real-life example: Linking users to their orders or messages
- Activity: Query data from multiple tables using JOINS

Module 6: Functions, Views & Stored Procedures

- Using built-in functions (COUNT, AVG, MAX, etc.)
- Creating views for reusable query logic
- Writing simple stored procedures with PL/pgSQL
- Activity: Build a report using a view and a function

Module 7: Advanced Features and Indexing

- Creating indexes to optimize performance
- Understanding constraints, triggers, and sequences
- Real-life example: Automatically logging changes to records
- Activity: Add indexing and triggers to improve a project

Module 8: PostgreSQL Security & Backup

- Creating roles and assigning permissions
- Performing backups and restoring data
- Real-life example: Controlling access for team members
- Activity: Export and import a database; set user privileges

Bonus Materials

- PostgreSQL CLI & GUI cheatsheets
- Mini projects: Inventory system, Blog DB, Student records
- Free hosting & practice database links
- Certificate of Completion for PostgreSQL Training

