

POSTGRESQL DEVELOPER COURSE

"Mastering PostgreSQL for High-Performance Database Development and Administration"

Schedule

Date	Venue	Fees (Face-to-Face)
28 - 12 Jun 2026	Dubai, UAE	USD 3495 per delegate

► **Available delivery methods:** Face-to-Face & Online Training

Introduction

PostgreSQL is a powerful, open-source relational database system known for its stability, scalability, and advanced features. It is widely adopted by developers and data professionals to build robust, secure, and high-performance applications. As organizations increasingly rely on data-driven systems, skilled PostgreSQL developers are in high demand.

This intensive 5-day course offers a hands-on, practical approach to PostgreSQL development. Participants will learn how to design, implement, and optimize PostgreSQL databases, including schema creation, indexing strategies, functions, triggers, and advanced queries. Real-world examples and coding exercises are included to ensure immediate workplace applicability.

Objectives

By the end of this course, participants will be able to:

- Install, configure, and manage PostgreSQL databases
- Design normalized schemas and use advanced data types
- Write efficient SQL queries, joins, and subqueries
- Create stored procedures, triggers, and user-defined functions
- Implement indexing and performance tuning techniques
- Ensure data integrity, security, and transactional control

Why Attend

- Gain in-demand skills in one of the world's leading database systems
- Build high-performance and scalable database applications
- Master query optimization, indexing, and procedural logic in PostgreSQL
- Prepare for real-world development scenarios using hands-on labs
- Increase your technical value in data engineering and software teams

Target Audience

This program is designed for:

- Database Developers and Software Engineers
- Data Analysts and Business Intelligence Developers
- System Architects and Backend Developers
- IT Professionals transitioning to PostgreSQL
- Anyone involved in relational database design or application development

Individual Benefits

Key competencies that will be developed include:

- Structured database design using PostgreSQL best practices
- Advanced SQL skills for data manipulation and reporting
- Procedural coding using PL/pgSQL
- Effective indexing, performance diagnostics, and tuning
- Secure database development and role-based access control

Organizational Benefits

Upon completing the training course, participants will demonstrate:

- Improved database application performance and maintainability
- Efficient use of open-source PostgreSQL technologies
- Stronger support for application development and data services
- Reduced reliance on proprietary systems through skilled internal capability
- Better data governance and compliance practices through secured development

Instructional Methodology

The course follows a blended learning approach combining theory with practice:

- Strategy Briefings - PostgreSQL architecture, use cases, and integrations
- Case Studies - Database performance issues and optimization projects
- Workshops - Schema design, stored procedures, SQL performance tuning
- Peer Exchange - Code reviews, use case sharing, and debugging techniques
- Tools - pgAdmin, psql CLI, EXPLAIN ANALYZE, indexing utilities

Course Outline

Training Hours: 7:30 AM - 3:30 PM Daily Format: 3-4 Learning Modules | Coffee breaks: 09:30 & 11:15 | Lunch Buffet: 01:00 - 02:00

Day 1: PostgreSQL Fundamentals and Setup

- Module 1: Introduction to PostgreSQL Architecture (07:30 - 09:30) • Process model, storage engine, MVCC
- Module 2: Installation, Configuration, and pgAdmin (09:45 - 11:15) • pg_hba.conf, postgresql.conf, CLI vs GUI tools
- Module 3: Creating Databases, Tables, and Constraints (11:30 - 01:00) • Data types, primary/foreign keys, NULL control
- Module 4: Workshop - Install PostgreSQL and Create Sample Schema (02:00 - 03:30) • Hands-on lab with setup and table creation

Day 2: Advanced SQL and Joins

- Module 5: Writing Complex Queries (07:30 - 09:30) • Joins, subqueries, CTEs, set operations
- Module 6: Window Functions and Aggregations (09:45 - 11:15) • ROW_NUMBER, RANK, PARTITION BY
- Module 7: Views, Materialized Views, and Data Manipulation (11:30 - 01:00) • INSERT, UPDATE, DELETE, MERGE
- Module 8: Workshop - Create and Optimize Complex Queries (02:00 - 03:30) • Performance comparison and best practices

Day 3: Functions, Triggers, and Stored Procedures

- Module 9: Introduction to PL/pgSQL (07:30 - 09:30) • Control structures, variables, exception handling
- Module 10: Creating and Using Functions (09:45 - 11:15) • Input/output parameters, returning sets
- Module 11: Triggers and Automation in PostgreSQL (11:30 - 01:00) • AFTER, BEFORE, INSTEAD OF triggers
- Module 12: Workshop - Develop a Trigger-Based Application Logic (02:00 - 03:30) • Trigger on insert/update with validations

Day 4: Indexing and Performance Optimization

- Module 13: Index Types and Use Cases (07:30 - 09:30) • B-tree, Hash, GIN, GiST, BRIN
- Module 14: Query Execution and EXPLAIN ANALYZE (09:45 - 11:15) • Cost estimation, scan types, filter conditions
- Module 15: Partitioning and Table Optimization (11:30 - 01:00) • Range, list partitioning, table maintenance
- Module 16: Workshop - Analyze and Tune Slow Queries (02:00 - 03:30) • Identify bottlenecks and apply fixes

Day 5: Security, Transactions, and Backup

- Module 17: Role Management and Access Control (07:30 - 09:30) • Users, roles, privileges, schemas
- Module 18: Transactions, Locks, and Isolation Levels (09:45 - 11:15) • BEGIN/COMMIT, deadlocks, serializability
- Module 19: Backup, Restore, and Disaster Recovery (11:30 - 01:00) • pg_dump, pg_restore, WAL archiving
- Module 20: Final Workshop - Build a Secure PostgreSQL App (02:00 - 03:30) • Schema with roles, security, and backup plan

Certification

Participants will receive a Certificate of Completion in PostgreSQL Developer Course, validating their proficiency in building, managing, and optimizing PostgreSQL databases for enterprise and application-level performance.

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