DevOpsSchool

Course curriculum · November 2026

LEVEL 04 OF 04 · ADVANCED

Postgresql Advanced Training

Run PostgreSQL at scale with tuning, partitioning, pooling, Patroni HA, zero-downtime upgrades, hardened security and Kubernetes operators.

LIVE ONLINE **Max 8-10 hours**	CORPORATE (DAY-WISE) **5 days · Days 1-5**	SELF-PACED VIDEO **1-year LMS access**
BATCH SIZE **Max 10 learners**	NEXT BATCHES **1st of every month · weekends: first Saturday**	CERTIFICATE **Verifiable certificate of completion**

Foundation	Essential	Intermediate	Advanced
1 day · Included	2 days · Included	3 days · Included	5 days · This curriculum

INSIDE THIS CURRICULUM

What you will achieve	Outcomes and level focus
Who should attend	Audience and prerequisites
Agenda	51 topics · Foundation to Advanced
Hands-on labs	4 labs
Formats and fees	Live, 1:1, self-paced, corporate
Trainer and reviews	Rajesh Kumar
Enrolment	Batches, payment, contacts

WHY DEVOPSSCHOOL

- Rated 4.6 on Google
- 1,500+ verifiable certificates issued in the public registry
- Trainer Rajesh Kumar: 20 years in industry
- Small batches: max 10 learners, every session recorded

Course page: www.devopsschool.com/courses/postgresql/postgresql-advance-training.html
Talk to us: WhatsApp +91 99057 40781 · +1 (469) 756-6329 · contact@DevOpsSchool.com · reply within 1 hour

OUTCOMES

What you will achieve

By the end of the Postgresql course path, you will be able to:

1

Write effective PostgreSQL SQL

Write correct, fast SQL with joins, window functions, CTEs, JSONB and the right indexes.

2

Administer PostgreSQL safely

Install, configure, secure, back up and monitor PostgreSQL servers with confidence.

3

Run PostgreSQL at scale

Design highly available, partitioned and tuned PostgreSQL platforms on servers, cloud and Kubernetes.

WHAT THE ADVANCED LEVEL ADDS

Performance, HA, partitioning, upgrades and operators

Hands-on: Build a Patroni HA cluster. Deploy a three-node Patroni cluster with etcd, PgBouncer and pgBackRest, tune it, then test failover and a full restore.

WHO SHOULD ATTEND

- Experienced Postgresql practitioners responsible for quality, security and scale.
- Senior engineers, architects and leads who design and troubleshoot Postgresql solutions.
- Teams making Postgresql an organisation-wide standard.

BEFORE YOU START

- The Intermediate level, or equivalent hands-on experience.
- You can already: Automate logic with PL/pgSQL, read query plans, run backups, PITR and streaming replication, and secure and troubleshoot PostgreSQL.
- Basic computer skills and a laptop with a stable internet connection for the live sessions and labs.
- This curriculum includes every earlier level, so it is complete on its own.

AGENDA · FOUNDATION TO ADVANCED

Postgresql Advanced Training agenda

51 topics. Each level builds on the one before it, so this curriculum lists every earlier level in full. Days are for corporate (day-wise) delivery; live online batches cover the same agenda in max 8-10 hours.

DAY 1 — Foundation: PostgreSQL architecture, install and basic SQL

Included from Foundation

1. PostgreSQL overview: object-relational design, ACID, MVCC, open-source licence and highlights of PostgreSQL 17 and 18
2. Architecture: postmaster, backend processes, shared buffers, WAL, background writer, checkpointer and autovacuum
3. Installation: PGDG packages on Ubuntu and RHEL, the official Docker image, the Windows installer, initdb and PGDATA
4. Connecting: psql meta-commands such as \l, \c, \dt and \d+, pgAdmin 4 and DBeaver
5. Databases and schemas: CREATE DATABASE, CREATE SCHEMA, search_path and public schema permissions since PostgreSQL 15
6. Data types: integer, numeric, text, varchar, boolean, date, timestamptz, uuid, arrays and jsonb
7. Creating tables: primary keys, identity columns, NOT NULL, DEFAULT and CHECK constraints
8. Basic SQL: INSERT, SELECT with WHERE, ORDER BY, LIMIT and OFFSET, UPDATE, DELETE and RETURNING
9. Roles and login: CREATE ROLE, LOGIN, scram-sha-256 passwords and pg_hba.conf basics
10. Configuration basics: postgresql.conf, listen_addresses, port, SHOW, ALTER SYSTEM, reload vs restart
11. Service management: pg_ctl and systemctl, server logs and checking status with pg_isready

DAY 2 — Essential: Joins, aggregates, transactions, indexes and JSONB

Included from Essential

12. Joins: inner, left, right, full and cross joins, self joins and USING vs ON
13. Aggregation: GROUP BY, HAVING, COUNT, SUM, AVG, the FILTER clause and GROUPING SETS
14. Subqueries and CTEs: IN, EXISTS, WITH queries and recursive CTEs for hierarchies
15. Window functions: ROW_NUMBER, RANK, LAG, LEAD and running totals with OVER (PARTITION BY, ORDER BY)
16. Keys and constraints: foreign keys with ON DELETE actions, UNIQUE and exclusion constraints
17. Index basics: B-tree, multicolumn, unique and partial indexes, and when an index helps
18. Transactions: BEGIN, COMMIT, ROLLBACK, SAVEPOINT and Read Committed, Repeatable Read and Serializable isolation
19. Views and materialized views: CREATE VIEW, REFRESH MATERIALIZED VIEW CONCURRENTLY
20. JSONB: -> and ->> operators, @> containment, jsonb_path_query and JSON_TABLE in PostgreSQL 17
21. Upserts and MERGE: INSERT ON CONFLICT DO UPDATE, MERGE with RETURNING
22. Data loading: COPY and \copy for CSV, pg_dump and pg_restore for a single database
23. Privileges: GRANT and REVOKE on schemas and tables, ALTER DEFAULT PRIVILEGES and group roles
24. Built-in functions: string functions, date_trunc, age, intervals, generate_series and uuidv7() in PostgreSQL 18

DAY 3 — Intermediate: PL/pgSQL, tuning, backup, replication and security

Included from Intermediate

25. PL/pgSQL: functions, procedures with CALL, variables, control flow and exception handling

26. Triggers: BEFORE and AFTER row triggers, audit tables and event triggers
27. Query plans: EXPLAIN and EXPLAIN (ANALYZE, BUFFERS), sequential vs index scans, nested loop, hash and merge joins
28. Advanced indexing: GIN for JSONB and full text, GiST, BRIN for time series, expression and covering INCLUDE indexes
29. Full-text search: tsvector, tsquery, ranking and pg_trgm for fuzzy matching
30. VACUUM and autovacuum: MVCC bloat, dead tuples, transaction ID wraparound and autovacuum tuning
31. Backups: pg_dumpall, physical backups with pg_basebackup, incremental backups with pg_combinebackup (PostgreSQL 17)
32. Point-in-time recovery: WAL archiving, archive_command, restore_command and recovery_target_time
33. Streaming replication: primary and standby setup, replication slots, synchronous_commit and hot standby reads
34. Monitoring: pg_stat_activity, pg_stat_statements, pg_stat_io and slow query logging with log_min_duration_statement
35. Security basics: pg_hba.conf rules, SSL/TLS, row-level security policies and predefined roles such as pg_read_all_data
36. Extensions: CREATE EXTENSION, pgcrypto, postgres_fdw and an overview of PostGIS
37. Troubleshooting: pg_locks, blocking sessions, deadlocks, pg_cancel_backend and pg_terminate_backend

DAYS 4-5 **Advanced: Performance, HA, partitioning, upgrades and operators** — New at this level

38. Performance tuning: shared_buffers, work_mem, effective_cache_size, maintenance_work_mem, WAL and checkpoint settings
39. Asynchronous I/O in PostgreSQL 18: io_method options and their effect on scans and vacuum
40. Partitioning: declarative range, list and hash partitions, partition pruning, attach and detach
41. Connection pooling: PgBouncer transaction pooling, max_connections sizing and prepared statements with pooling
42. High availability: Patroni with etcd, automatic failover, HAProxy routing and split-brain prevention
43. Logical replication: publications, subscriptions, failover slots and zero-downtime major upgrades
44. Upgrades: pg_upgrade with --link, statistics carried over in PostgreSQL 18, rehearsal and rollback plans
45. Backup at scale: pgBackRest or Barman, parallel and incremental backups, retention and restore drills
46. Security hardening: SCRAM-only authentication, OAuth authentication in PostgreSQL 18, pgaudit and encryption options
47. Scaling out: read replicas, Citus distributed tables and foreign data wrappers
48. Kubernetes: CloudNativePG clusters, backups to object storage and rolling updates
49. Managed PostgreSQL: Amazon RDS and Aurora, Azure Database for PostgreSQL and Cloud SQL trade-offs
50. Migration: moving from Oracle or MySQL with ora2pg and pgloader, schema and data validation
51. Capstone: design, tune and fail over a highly available PostgreSQL cluster with tested backups

PRACTICE

Hands-on labs

You build these yourself during the course, guided by the trainer.

FOUNDATION

Install PostgreSQL and build a schema

Install PostgreSQL, create a database, schema and login role, then create tables with constraints and run insert, query and update statements.

ESSENTIAL

Build an orders reporting database

Model customers, products and orders with foreign keys, load CSV data with COPY, and write join, window-function and JSONB reports.

INTERMEDIATE

Set up replication and recovery

Configure WAL archiving and a streaming standby, take a base backup, then perform a point-in-time recovery to a chosen timestamp.

ADVANCED

Build a Patroni HA cluster

Deploy a three-node Patroni cluster with etcd, PgBouncer and pgBackRest, tune it, then test failover and a full restore.

HOW YOU CAN LEARN

Formats and fees

The same agenda in four formats. Fees are in Indian rupees as of November 2026; the course page shows them in your currency.

FORMAT	DURATION	WHAT YOU GET	FEE
Live & interactive (online)	Max 8-10 hours	Instructor-led public batch of max 10 learners with demos, labs, Q&A and assignment review. Weekday batches start on the 1st of every month, weekend batches on the first Saturday of every month.	**INR 34,999**
1:1 live training (online)	Max 8-10 hours, one-to-one	The same agenda, taught one-to-one by the trainer. Starts immediately, without waiting for the next batch; sessions planned around your working hours, at your pace.	**INR 99,999**
Self-paced video	1-year LMS access	All four Postgresql levels, plus 20+ more courses and 50+ tools, at your own pace.	**INR 833/month** billed yearly at INR 9,996
Corporate (day-wise)	5 days for this level	A private batch for your team, on demand. Foundation 1 day, Essential 2, Intermediate 3, Advanced 5 (cumulative).	**Quote on request**

ASSESSMENT AND CERTIFICATE

Your progress is checked through hands-on labs and assignments at every level. On completion you receive a DevOpsSchool certificate of completion with a unique credential ID that anyone can verify at devopsschool.com/certificates.

INCLUDED WITH EVERY LIVE BATCH

- Every live session is recorded and stays in your LMS for a year.
- Can't attend your batch? Move to next month's batch.
- Free demo class before you pay.
- Free 10-15 minute call with an advisor or the trainer to check the course fits you.

YOUR TRAINER

Learn from Rajesh Kumar

Principal Architect, trainer and mentor in DevOps, SRE, DevSecOps and platform engineering, with 20 years across 8+ software MNCs, including Staff DevOps/SRE Engineer for a leading Japanese mobile-payment platform and Principal DevOps Architect and Manager in Europe.

Profile: www.rajeshkumar.xyz · Videos: youtube.com/@TheDevOpsSchool

20 years in industry	**200+** corporate trainings
10,000+ engineers mentored	**70+** organisations coached

REVIEWS

What learners say

Rated 4.6 on Google · more reviews at devopsschool.com/testimonials and in our video testimonials.

> “Rajesh is very good trainer. Rajesh was able to resolve our queries and question effectively. We really liked the hands-on examples covered during this training program.”
>
> Indrayani, India

> “The training was very useful and interactive. Rajesh helped develop the confidence of all.”
>
> Abhinav Gupta, Pune

START YOUR POSTGRESQL TRAINING

Join the next batch

Weekday batches start on the 1st of every month and weekend batches on the first Saturday of every month, with max 10 learners each. 1:1 training can start immediately; corporate batches run on demand. We reply within 1 hour.

Pay by UPI, credit and debit cards, net banking or PayPal. Before you pay, read our refund policy. All levels of this course: www.devopsschool.com/courses/postgresql/

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