Advanced PostgreSQL Training Program

Master the World's Most Powerful Open-Source Database

This 8-week advanced PostgreSQL training program is designed for DBAs, DevOps engineers, a

Week 1 - PostgreSQL Internals & Architecture Deep Dive
- Process model, memory layout, query lifecycle
- Configuration files and logging
- MVCC, visibility map, and catalog views

Week 2 - Performance Tuning Fundamentals
- shared_buffers, work_mem, and other key parameters
- Checkpoints, WAL, autovacuum tuning
- Analyzing slow queries with pg_stat_statements

Week 3 - Advanced Indexing & Query Optimization
- B-Tree, GIN, GiST, BRIN indexes
- Partial, expression, and covering indexes
- Using EXPLAIN and analyzing execution plans

Week 4 - Backup, PITR & Disaster Recovery
- Logical vs physical backups
- pg_basebackup, pgBackRest usage
- PITR, archiving, and DR planning

Week 5 - Replication, Streaming, and Clustering
- Streaming replication (sync/async)
- Logical replication
- Designing resilient architectures

Week 6 - High Availability with Patroni & HAProxy
- Setting up a Patroni cluster with etcd
- Failover and HAProxy configuration
- Monitoring and operational best practices

Week 7 - Connection Pooling & Scaling Strategies
- PgBouncer vs Odyssey
- Load balancing and read replicas
- Sharding patterns and scaling read/write

Week 8 - Security, Extensions & Observability
- TLS, RLS, access control
- Key extensions (pg_cron, pgvector, etc.)
- Monitoring with Prometheus + Grafana
- Final project & real-world simulation