

PostgreSQL Database Administration

Module 1- Introduction to PostgreSQL Server and Advance Features

Module 2- Postgres Client Server Architecture

Module 3- Getting Started

- Installing the PostgreSQL Server
- Setting Environment Variables
- Creating a Cluster
- Running Server

Module 4-

- Configuring of PostgreSQL Server
- Connection Settings
- Security and Authentication
- Resource Settings
- WAL
- Error Reporting and Logging
- Autovacuum
- Runtime Statistics, etc.

Module 5- Server Control

- Postgres hosed based access configuration
- Multiple server installation on one machine
- Remote connection establishment

Module 6- Client and Tools

- Introduction To PSQL
 - Commands and Parameters
- Using graphical administration tools- pgAdmin 4
 - Installation
 - Binary path setting
 - Remote server connection

Module 7- Creating and Managing Databases

- Object Hierarchy
- Databases and Schemas
- Tablespaces
- Exploring Databases
 - Locating the database server's message log

- Locating the database's system identifier
- Listing databases on this database server
- How much disk space does a table use?
- Which are my biggest tables?

Module 8- Obtaining Metadata

Module 9- Transactions & Concurrency Control

Module 10- Database Administration

- Performing actions on many tables
- Writing a script
- Adding/removing schemas
- Moving objects between schemas
- Adding/removing tablespaces
- Moving objects between tablespaces
- Using materialized views

Module 11- Table Partitioning

- Range Partitioning
- List Partitioning

Module 12- Extensions

- Accessing objects in other PostgreSQL databases (postgres_fdw, dblink)
- File_fdw, hstore, citext, etc.

Module 13- Security

- User Management
- Superuser
- Roles and Users
- Groups and Access Control
- Ownership, Etc.
- Preventing Connections
- Checking secure password
- Auditing Changes
- Encrypting Sensitive data

Module 14- Monitoring and Diagnosis

- Real-time viewing using pgAdmin
- Checking whether a user is connected
- Checking which queries are running
- Checking which queries are active or blocked
- Knowing who is blocking a query
- Killing a specific session

- Knowing when a table was last used
- Usage of disk space by temporary data
- Understanding why queries slow down
- Producing a daily summary of log file errors
- Analyzing the real-time performance of your queries

Module 15- Performance and Concurrency

- Find and Tune Slow Running Queries
- Collecting regular statistics from pg_stat* views
- Finding out what makes SQL slow
- Speeding up queries without rewriting them
- Discovering why a query is not using an index
- Forcing a query to use an index

Module 16- Regular Maintenance

- Controlling automatic database maintenance
- Removing issues that cause bloat
- Identifying and fixing bloated tables and indexes
- Monitoring and tuning vacuum
- Updating Table Statistics
- Vacuuming
- Re-indexing

Module 17- Backup and Recovery

- Planning backups
- Backup Types
- Logical
 - Pg_dump
 - Pg_dumpall
- Physical
 - Standalone hot physical database backup
 - Hot physical backup and continuous archiving
 - PgBaseBackup
- Restore
 - Pg_restore
 - Recovery to a point in time
 - Restore Physical Backup
 - Recovery of a dropped/damaged table
 - Recovery of a dropped/damaged database

Module 18- Moving Data

- Exporting/Importing Data To/From A Flat File

Module 19- Replication and Upgrades

- Replication
 - Replication best practices
 - Streaming Replication
 - Implement Hot Standby
 - Replication Slots
 - Logical Replication
 - repmgr
- Handling Switchover & Failover
- Upgrading Best Practices
 - Upgrading - minor releases
 - Upgrading - major release(pg_upgrade)
- Migration from Oracle to Postgres using Ora2PG (introduction)