# PostgreSQL Training

Duration: **4 Day**

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## Overview

With in-depth tutorials and a practical, hands on workshop, you will learn about the basics and advanced features of PostgreSQL and how to develop applications with PostgreSQL as the back-end.

You will be led by our team of expert trainers who will hand hold you through the concepts of database installation and connection, writing queries to manage the database, and SQL statements to operate PostgreSQL. You will also get the PostgreSQL certification on successful completion of the course..

## Prerequisites

Participants are required to have basic knowledge of DATABASE and RDBMS.

## What You Will Learn

- How relational databases work and how are they relevant in today's times
- What sort of a database management system is PostgreSQL
- How to install and setup PostgreSQL and run queries on it
- How to create applications with PostgreSQL as a back end database management system

## Outline

**Module 1: Introduction**

- History of PostgreSQL
- Major Features
- New Features of PostgreSQL
- Multi Version Concurrency Control
- Write-Ahead Logging
- Architectural Overview
- Limits

**Module 2: PostgreSQL System Architecture**

- Architectural Summary
- Shared Memory
- Statement Processing
- Utility Processes
- Disk Read Buffering
- Write Buffering

- Background Writer Cleaning Scan
- Commit & Checkpoint
- Physical Database Architecture
- Data Directory Layout
- Installation Directory Layout
- Page Layout

**Module 3: Creating and Managing Databases**

- Object Hierarchy
- Creating Databases
- Creating Schemas
- Schema Search Path
- Roles, Users & Groups
- Access Control

**Module 4: Postgres Data Dictionary**

- The System Catalog Schema
- System Information views/tables
- System Information Functions

**Module 5: Configuration**

- Setting PostgreSQL Parameters
- Access Control
- Connection Settings
- Security and Authentication
- Settings
- Memory Settings
- Query Planner Settings
- WAL Settings
- Log Management
- Background Writer Settings
- Statement Behavior

**Module 6: Security**

- Authentication
- Authorization
- Levels of security
- pg_hba.conf file
- Users
- Object ownership

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- Access control
- Application access parameters

**Module 7: Backup and Recovery & Point-in Time Recovery**

- Backup Types
- SQL Dump
- Cluster Dump
- Offline Copy Backup
- Continuous Archiving
- pg_basebackup
- Point-In Time Recovery
- pg_upgrade

**Module 8: Routine Maintenance**

- Explain and Explain Analyze
- Table Statistics
- Updating Planner Statistics
- Vacuuming
- Scheduling Auto Vacuum
- Preventing Transaction ID Wraparound Failures
- The Visibility Map
- Routine Reindexing

**Module 9: Table Partitioning**

- Partitioning
- Partitioning Methods
- When to Partition
- Partitioning Setup
- Partitioning Example
- Partitioning and Constraint
- Exclusion
- Caveats

**Module 10: Database Monitoring**

- Database Statistics
- The Statistics Collector
- Database Statistic Tables
- Operating System Process Monitoring
- Current Sessions and Locks
- Log Slow Running Queries

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- Disk Usage