**PostgreSQL for Developers**

**Day wise Content**

Training Duration -5 Days

**Day 1:**

1. Introduction to PostgreSQL Server
   * PostgreSQL Client Server Architecture

* Getting Started
  + Installing the PostgreSQL Server
  + Setting Environment Variables
  + Creating a Database Cluster
  + Running Server
* Server Control
  + PostgreSQL hosed based access configuration

1. Designing and Implementing Databases and Tables

* Normalization(1ts,2nd and 3rd NF)
* Selecting Best Data Types for your tables
* Synonyms, Sequences, Collections or equivalent in postgresql
* DDL(create, alter and drop table)

1. Ensuring Data Integrity Through Constraints and Rules

* Primary Key vs Unique Key
* Foreign Key
* Null vs Not Null
* Check Constraint
* Comparing postgresql and oracle data types

1. Joins in PostgreSQL( Inner, Full Outer, Right Outer, Left Outer, Cross, self, Netural)

**Day 2:**

1. Subqueries in PostgreSQL
2. Oracle PLSQL vs PostgreSQL
3. The Procedural Language and Dynamic SQL
   * Create and Alter Stored Procedures
   * IN,OUT,INOUT Parameters in Stored Procedures
   * Control statements(IF,FOR LOOP,WHILE LOOP, Case)
   * Dynamic SQL in stored Procedures
   * Metadata of Stored Procedures
   * Exception Handling in Stored Procedures
   * Cursors in PostgreSQL
4. User Defined Functions in PostgreSQL
5. Working with Triggers, Rules and Views
   * Create and Alter Triggers in PostgreSQL
   * Trigger Function and Trigger Body
   * For each Row vs For Each Statement Triggers
   * Multi Event based Triggers
   * Meta Data of Triggers
   * Concept of Rules and Views in Postgresql
   * Concept of Materialized Views in Postgresql
   * Migration from Oracle PL/SQL to Postgresql
   * Global Temporary Table in PostgreSQL
   * Migration from Oracle to Postgresql for Every Topic

**Day3 :**

1. Working with Transactions & Error Handling
   * ACID Compliance in Postgresql
   * Transaction Isolation level setting and Locking
   * MVCC
   * Error Messages, Error Codes and warning in Postgresql
   * Error Log setting in Postgresql
2. Partitioning
   * List vs Range Partitioning In Postgresql
   * Use of PARTMAN to handle Automatic portioning
   * Choosing Different storage for different Partitions
   * Maintaining partitioned tables
3. Working with Indexes and Full Text Search

* Introduction to Different types of Indexes in Postgresql
* Implicit, Explicit, Function, Partial Indexes in Postgresql
* Finding Unused indexes
* Index maintenance in Postgresql
* Full Text Indexes using GIN and Gist

1. Query Optimization

* Setting Baseline using pg\_bench
* Reading Execution Plan
* Use of PG\_stat\_statements for query profiling
* Finding slow queries
* Wait events in Postgresql
* Best Practices for writing optimized queries
* Prepared statements

**Day4:**

10. Foreign Data Wrappers

Concept of Foreign Data Wrapper and Foreign Tables.

Implementation of FDW using below :

* Postgresql\_FDW
* Mysql\_FDW
* File\_FDW

11. Dealing with Large Objects

* + Data Types for Large Objects
  + Concept of BLOB files

12. Communicating with PostgreSQL Using LibPQ

13. Built in Functions in Postgresql

* Single Row Vs Multi Row Functions
* Text
* Numeric
* Datetime
* Logical

**Day 5:**

14. Extensions

* Create/drop extensions
* List of Available extensions
* Introduction to some important extensions like Pg\_crypto,dblink( Database Link),hstore etc

15. Window Functions /Analytic Functions in Postgresql

* Rank,Dense Rank,Lead,Leg,

15: Backup and Recovery in Postgresql

* + Taking logical backup using Pg\_dump and Pg\_dumpall
  + Recover data using psql and Pg\_restore
  + Executing a script in Postgresql
  + Import export data to/from Postgresql

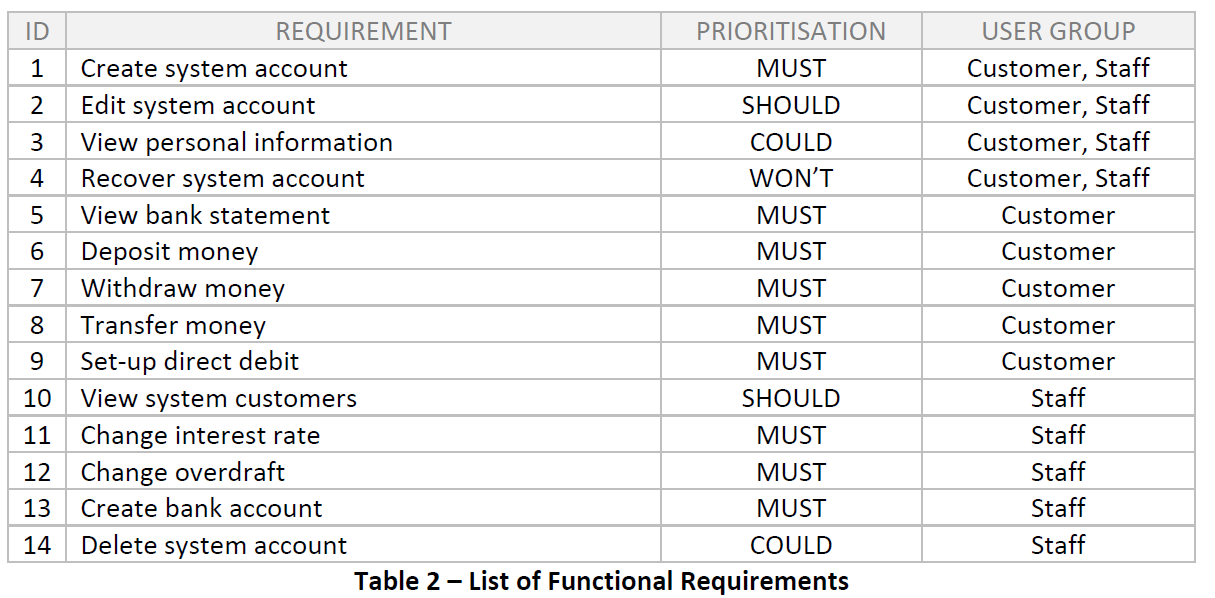
16: Monitoring Postgresql using system views

* + Concept of pg\_catalog and Information Schema
  + Most Important system Views in Postgresql
  + Vacuum and Stat Maintenance of Tables

17. Postgresql RDS using AWS or Azure

18. Postgresql Spring Boot Application

Case Study



Text, table

Description automatically generated with medium confidence





