Course Name : **PRACTICAL POSTGRESQL: QUERY MASTERY**
Duration : **3 Days (Physical Classroom / Virtual Live Instructor)**
Skill Level : **Beginner**

COURSE DESCRIPTION:
This comprehensive PostgreSQL course is designed to provide participants with a solid foundation in database management and advanced SQL techniques. Starting with an introduction to PostgreSQL, the course covers the essentials of installation, development environment setup, and database fundamentals. Participants will gain hands-on experience with SQL, mastering key operations such as data selection, filtering, grouping, and joining tables. Advanced modules delve into specialized commands, database design principles, and manipulation techniques, enabling learners to create, modify, and manage robust databases effectively.

The course also explores PostgreSQL integration with Python, introducing the `Psycopg2` library for seamless database connectivity, and culminates with a practical CRUD project using PostgreSQL and PHP. This real-world project solidifies the application of concepts through building, connecting, and managing databases in a dynamic environment. By the conclusion, learners will have the skills to handle complex database operations, integrate databases into programming workflows, and apply best practices, making this course ideal for aspiring database administrators, developers, and IT professionals.

WHAT WILL YOU LEARN?
In this course, you will learn how to efficiently manage and manipulate databases using PostgreSQL. You'll master SQL fundamentals, including data selection, filtering, grouping, and joining, while gaining hands-on experience with advanced techniques like subqueries, self-joins, and conditional expressions. You'll explore database design principles, work with constraints, and perform CRUD operations to create, update, and manage data effectively. Additionally, you'll integrate PostgreSQL with Python using the `Psycopg2` library and apply your knowledge to build a complete CRUD application with PHP. By the end, you'll have the skills to design robust databases, optimize queries, and seamlessly connect databases to your applications.

PREREQUISITE:
Beginners. No programming experience is required.

METHODOLOGY:
This program will be conducted with interactive lectures, PowerPoint presentations, discussions, and practical exercises. This course can be conducted as instructor-led (ILT) or virtual instructor-led training (VILT).

JOB SCOPE:
Upon completion of this course, candidates may pursue the following career paths:

- Database Administrator
- Data Analyst
- Backend Developer
- Full stack Developer
- Data Engineer
- Software Engineer

Rynet Malaysia Sdn. Bhd. (899837-K)
95-2, Block H, The Suites, Jaya One, 72A, Jalan Universiti, 46200 Petaling Jaya,Selangor, Malaysia.
Phone: +603-7623-1088 | Fax: +603-7660-9393

MODULE 1: INTRODUCTION TO POSTGRESQL

- Welcome
- Overview of the Course Curriculum
- Understanding Databases
- Installation and Development Environment Setup
- Introduction to pgAdmin

MODULE 2: SQL FUNDAMENTALS

- Fundamentals of SQL Statements
- Using `SELECT DISTINCT`
- Counting Data with `COUNT`
- Filtering Data with `WHERE`
- Limiting Results with `LIMIT`
- Using `BETWEEN` for Ranges
- Working with `IN` for Matching Values
- Pattern Matching with `LIKE` and `ILIKE`

MODULE 3: GROUPING AND AGGREGATION

- Introduction to the `GROUP BY` Clause
- Using Aggregation Functions
- Applying `GROUP BY`
- Filtering Groups with `HAVING`

MODULE 4: WORKING WITH JOINS

- Understanding Joins in SQL
- Basics of JOIN Statements
- Using Aliases with `AS`
- Full Outer Joins
- Left Outer Joins
- Right Outer Joins
- Combining Results with `UNION`

MODULE 5: ADVANCED SQL COMMANDS

- Overview of Advanced SQL Concepts
- Working with Timestamps and `EXTRACT`
- Formatting Output with `TO_CHAR`
- Mathematical Functions and Operators
- String Functions and Operators
- Writing Subqueries
- Implementing Self-Joins

Rynet Malaysia Sdn. Bhd. (899837-K)
95-2, Block H, The Suites, Jaya One, 72A, Jalan Universiti, 46200 Petaling Jaya,Selangor, Malaysia.
Phone: +603-7623-1088 | Fax: +603-7660-9393

MODULE 6: DATABASE DESIGN AND MANIPULATION

- Introduction to Database Creation
- Understanding Data Types
- Using Primary and Foreign Keys
- Applying Constraints
- Creating Tables with `CREATE`
- Inserting Data with `INSERT`
- Modifying Records with `UPDATE`
- Deleting Records with `DELETE`
- Altering Table Structures with `ALTER`
- Removing Tables with `DROP`
- Implementing `CHECK` Constraints

MODULE 7: CONDITIONAL EXPRESSIONS AND PROCEDURES

- Introduction to Conditional Logic
- Using the `CASE` Expression
- Handling Nulls with `COALESCE`
- Type Casting with `CAST`
- Comparing Values with `NULLIF`
- Creating and Using Views
- Importing and Exporting Data

MODULE 8: POSTGRESQL INTEGRATION WITH PYTHON

- Overview of PostgreSQL and Python Integration
- Example Usage of the `Psycopg2` Library
- Additional Resources for `Psycopg2`

MODULE 9: CRUD PROJECT: POSTGRESQL WITH PHP

- Set Up Your Development Environment
- Create a PostgreSQL Database
- Connect PHP to PostgreSQL
- Perform CRUD Operations
- Read (Select) Records
- Update Record
- Delete Record
- Test Your CRUD Operations

CONCLUSION

- QA
- Useful References and Books
- Feedback

Rynet Malaysia Sdn. Bhd. (899837-K)
95-2, Block H, The Suites, Jaya One, 72A, Jalan Universiti, 46200 Petaling Jaya,Selangor, Malaysia.
Phone: +603-7623-1088 | Fax: +603-7660-9393