

## SQL Processing on IBM Netezza (PureData System for Analytics)

**Course Length:** 2 days **CEUs** 1.2

**Format:** Hands on Training/Workshop

### AUDIENCE

This course is designed to teach basic to advanced ANSI show how SQL. The course and SQL will be taught on the IBM PureData System for Analytics (Netezza) platform.

### PREREQUISITES

Prior knowledge of SQL or Netezza is not required. General programming and database knowledge is helpful.

### COURSE TOPICS

#### Background

- Relational Model
- Components of SQL Language
- Primary Key
- Foreign Key
- The Null Concept

#### Creating and Populating a Database

- Aginity Workbench Environment
- Statements
- Constraints
- Indexes
- Sequences
- Insert Statement
- Traditional Statement Failures

#### Query Mechanics

- Query Clauses
- The Select Clause
  - Derived Columns*
  - Removing Duplicates*
  - Subquery-generated Tables*
- Views
- Table Links
  - Defining Table Alias*
  - The Where Clause*
  - Group By and Having Clauses*
  - Order By Clause*
  - Ascending vs. Descending Order*
  - Sorting via Expressions and Numeric*
  - Placeholders*

#### Filtering

- Condition Evaluation
- Using Parentheses
- Using the Not Operator
- Building a Condition
  - Equality and Inequality Conditions*
  - Data Modification using Equality Conditions*
  - Range Conditions*
  - Between Operator*
  - String Ranges*
- Membership Conditions
  - Using Not In*
  - Matching Conditions*
  - Using Wildcards*
- Regular Expression

#### Querying Multiple Tables

- Cartesian Products
- Inner Joins
  - ANSI Join Syntax*
  - Using Subqueries as Tables*
  - Using the same Table twice*
- Self Joins
- Natural Joins
- Equi-joins and Non Equi-joins
- Join condition vs. Filter condition

## SQL Processing on IBM Netezza (PureData System for Analytics)

### Working with Sets

- Set Operators
  - Union*
  - Intersect*
  - Except*
- Set Operation Rules

### Data Generation, Conversion, and Manipulation

- String Generation
  - Including Special Characters*
- String Manipulation
- Numeric Data
  - Controlling Numeric Precision*
  - Working with Temporal Data*
  - Choosing the Valid Value in a List*
- Casting
  - String to Date Conversion*
  - Functions for Generating Dates*
  - Manipulating Temporal Data*
  - Temporal Functions that Return Strings*

### Grouping and Aggregates

- Granularity
- Grouping Concepts
- Aggregate Functions
  - Implicit vs. Explicit Groups*
  - Counting Distinct Values*
- Using Expressions
  - Null Impact on Aggregate Functions*
  - Generating Groups*
- Column Grouping
  - Grouping by Expressions*
  - Generating Rollups*
  - Group Filter Conditions*

### Subqueries

- Subquery Background
- Subquery Types
  - Non-correlated Subqueries*
  - Multi-row (one column) queries*
- The All Operator and The Any Operator
- Multicolumn Subqueries
- Correlated Subqueries
  - Exists Operator*
  - Data Manipulation Using Correlated Subqueries*
  - Subqueries as Data Sources*
  - Subqueries in Filter Conditions*

### Advanced Joins

- Outer Joins
  - Left Join vs. Right Join*
- Three-Way Outer Join
- Self Outer Joins
- Cross Joins

### Conditional Logic

- Outer Join with No Conditions
- Case Expressions
- Result Set Transformations
- Checking For Existence
  - Division By Zero Errors*
- Null Values
  - Simple Case Expressions*

### Transactions

- Multiuser Databases
- Locking
- Relaxed Serialization
- Transactions

### Views

- Data Security
- Data Aggregation
- Hiding Complexity
- Joining Partitioned Data
- Display Views

### Metadata

- Metadata Background
  - Information Schema*

### Windows Aggregate Functions

- Windows Function Definition and Examples
  - First\_Value Function*
  - LAG Function*
  - Lead Function*
  - Min and Max Function*
  - Rank Function*