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Oracle sql & PL/SQL Syllabus

SQL syllabus

1. Writing Basic SQL SELECT Statements

- ✓ Basic SELECT Statement
- ✓ Selecting All Columns
- ✓ Selecting Specific Columns
- ✓ Writing SQL Statements
- ✓ Column Heading Defaults
- ✓ Arithmetic Expressions
- ✓ Using Arithmetic Operators
- ✓ Operator Precedence
- ✓ Using Parentheses
- ✓ Defining a Null Value
- ✓ Null Values in Arithmetic Expressions
- ✓ Defining a Column Alias
- ✓ Using Column Aliases
- ✓ Concatenation Operator
- ✓ Using the Concatenation Operator
- ✓ Literal Character Strings

- ✓ Using Literal Character Strings
- ✓ Duplicate Rows
- ✓ Eliminating Duplicate Rows

2. Restricting and Sorting Data

- ✓ Limiting Rows Using a Selection
- ✓ Limiting the Rows Selected
- ✓ Using the WHERE Clause
- ✓ Character Strings and Dates
- ✓ Comparison Conditions
- ✓ Using Comparison Conditions
- ✓ Other Comparison Conditions
- ✓ Using the BETWEEN Condition
- ✓ Using the IN Condition
- ✓ Using the LIKE Condition
- ✓ Using the NULL Conditions
- ✓ Logical Conditions
- ✓ Using the AND Operator
- ✓ Using the OR Operator
- ✓ Using the NOT Operator
- ✓ Rules of Precedence
- ✓ ORDER BY Clause
- ✓ Sorting in Descending Order
- ✓ Sorting by Column Alias
- ✓ Sorting by Multiple Columns

3. Single-Row Functions

- ✓ SQL Function
- ✓ Two Types of SQL Functions
- ✓ Single-Row Functions
- ✓ Single-Row Functions
- ✓ Character Functions
- ✓ Character Functions
- ✓ Case Manipulation Functions
- ✓ Using Case Manipulation Functions
- ✓ Character-Manipulation Functions

- ✓ Using the Character-Manipulation Functions
- ✓ Number Functions
- ✓ Using the ROUND Function
- ✓ Using the TRUNC Function
- ✓ Using the MOD Function
- ✓ Working with Dates
- ✓ Arithmetic with Dates
- ✓ Using Arithmetic Operators with Dates
- ✓ Date Functions
- ✓ Using Date Functions
- ✓ Practice 3, Part One:
- ✓ Conversion Functions
- ✓ Implicit Data Type Conversion
- ✓ Explicit Data Type Conversion
- ✓ Using the TO_CHAR Function with Dates
- ✓ Elements of the Date Format Model
- ✓ Using the TO_CHAR Function with Dates
- ✓ Using the TO_CHAR Function with Numbers
- ✓ Using the TO_NUMBER and TO_DATE Functions
- ✓ RR Date Format
- ✓ Example of RR Date Format
- ✓ Nesting Functions
- ✓ General Functions
- ✓ NVL Function
- Using the

- ✓ The CASE Expression
- ✓ Using the CASE Expression
- ✓ The DECODE Function
- ✓ Using the DECODE Function

4. Displaying Data from Multiple Tables

- ✓ Obtaining Data from Multiple Tables

- ✓ Cartesian Products
- ✓ Generating a Cartesian Product
- ✓ Types of Joins
- ✓ Joining Tables Using Oracle Syntax
- ✓ What is an Equijoin?
- ✓ Retrieving Records with Equijoins
- ✓ Additional Search Conditions Using the AND Operator
- ✓ Qualifying Ambiguous Column Names
- ✓ Using Table Aliases
- ✓ Joining More than Two Tables
- ✓ Non-Equijoins
- ✓ Retrieving Records with Non-Equijoins
- ✓ Outer Joins Outer Joins Syntax
- ✓ Using Outer Joins
- ✓ Self Joins
- ✓ Joining a Table to Itself
- ✓ Joining Tables Using SQL: 1999 Syntax
- ✓ Creating Cross Joins
- ✓ Creating Natural Joins
- ✓ Retrieving Records with Natural Joins
- ✓ Creating Joins with the USING Clause
- ✓ Retrieving Records with the USING Clause
- ✓ Creating Joins with the ON Clause
- ✓ Retrieving Records with the ON Clause
- ✓ Creating Three-Way Joins with the ON Clause
- ✓ INNER Versus OUTER Joins
- ✓ LEFT OUTER JOIN
- ✓ RIGHT OUTER JOIN
- ✓ FULL OUTER JOIN
- ✓ Additional Conditions

5. Aggregating Data Using Group Functions

- ✓ What Are Group Functions?
- ✓ Types of Group Functions
- ✓ Group Functions Syntax
- ✓ Using the AVG and SUM Functions

- ✓ Using the MIN and MAX Functions
- ✓ Using the COUNT Function
- ✓ Using the DISTINCT Keyword
- ✓ Group Functions and Null Values
- ✓ Using the NVL Function with Group Functions
- ✓ Creating Groups of Data
- ✓ Creating Groups of Data: The GROUP BY Clause Syntax
- ✓ Using the GROUP BY Clause
- ✓ Grouping by More Than One Column
- ✓ Using the GROUP BY Clause on Multiple Columns
- ✓ Illegal Queries Using Group Functions
- ✓ Excluding Group Results
- ✓ Excluding Group Results: The HAVING Clause
- ✓ Using the HAVING Clause
- ✓ Nesting Group Functions

6. Subqueries

- ✓ Objectives
- ✓ Using a Subquery to Solve a Problem
- ✓ Subquery Syntax
- ✓ Using a Subquery
- ✓ Guidelines for Using Subqueries
- ✓ Types of Subqueries
- ✓ Single-Row Subquery
- ✓ Executing Single-Row Subqueries
- ✓ Using Group Functions in a Subquery
- ✓ The HAVING Clause with Subqueries
- ✓ What is Wrong with this Statement?
- ✓ Will this Statement Return Rows?
- ✓ Multiple-Row Subqueries
- ✓ Using the ANY Operator in Multiple-Row Subqueries
- ✓ Using the ALL Operator in Multiple-Row Subqueries
- ✓ Null Values in a Subquery

7. Manipulating Data

- ✓ Data Manipulation Language

- ✓ Adding a New Row to a Table
- ✓ The INSERT Statement Syntax 8-5
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- ✓ Inserting Rows with Null Values
- ✓ Inserting Special Values
- ✓ Inserting Specific Date Values
- ✓ Creating a Script
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- ✓ Changing Data in a Table
- ✓ The UPDATE Statement Syntax
- ✓ Updating Rows in a Table
- ✓ Updating Two Columns with a Subquery
- ✓ Updating Rows Based on Another Table
- ✓ Updating Rows: Integrity Constraint Error
- ✓ Removing a Row from a Table
- ✓ The DELETE Statement
- ✓ Deleting Rows from a Table
- ✓ Deleting Rows Based on Another Table
- ✓ Deleting Rows: Integrity Constraint Error
- ✓ Using a Subquery in an INSERT Statement
- ✓ Using the WITH CHECK OPTION Keyword on DML Statements
- ✓ Overview of the Explicit Default Feature
- ✓ Using Explicit Default Values
- ✓ The MERGE Statement
- ✓ The MERGE Statement Syntax
- ✓ Merging Rows
- ✓ Database Transactions
- ✓ Advantages of COMMIT and ROLLBACK Statement
- ✓ Controlling Transactions
- ✓ Rolling Back Changes to a Marker
- ✓ Implicit Transaction Processing
- ✓ State of the Data Before COMMIT or ROLLBACK
- ✓ State of the Data after COMMIT
- ✓ Committing Data
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- ✓ Statement-Level Rollback
- ✓ Read Consistency

- ✓ Implementation of Read Consistency
- ✓ Locking
- ✓ Implicit Locking
- ✓ Read Consistency Example

8. Creating and Managing Tables

- ✓ Database Objects
- ✓ Naming Rules
- ✓ The CREATE TABLE Statement
- ✓ Referencing Another User's Tables
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- ✓ Creating Tables
- ✓ Tables in the Oracle Database
- ✓ Querying the Data Dictionary 9-10
- ✓ Data Types
- ✓ DateTime Data Types
- ✓ TIMESTAMP WITH TIME ZONE Data Type
- ✓ TIMESTAMP WITH LOCAL TIME Data Type
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- ✓ Creating a Table by Using a Subquery Syntax
- ✓ Creating a Table by Using a Subquery
- ✓ The ALTER TABLE Statement
- ✓ Adding a Column
- ✓ Modifying a Column
- ✓ Dropping a Column
- ✓ The SET UNUSED Option
- ✓ Dropping a Table
- ✓ Changing the Name of an Object
- ✓ Truncating a Table
- ✓ Adding Comments to a Table

9. Including Constraints

- ✓ What are Constraints?
- ✓ Constraint Guidelines
- ✓ Defining Constraints

- ✓ The NOT NULL Constraint
- ✓ The UNIQUE Constraint
- ✓ The PRIMARY KEY Constraint
- ✓ The FOREIGN KEY Constraint
- ✓ FOREIGN KEY Constraint Keywords
- ✓ The CHECK Constraint
- ✓ Adding a Constraint Syntax
- ✓ Adding a Constraint
- ✓ Dropping a Constraint
- ✓ Disabling Constraints
- ✓ Enabling Constraints
- ✓ Cascading Constraints
- ✓ Viewing Constraints
- ✓ Viewing the Columns Associated with Constraints

10. Creating Views

- ✓ Database Objects
- ✓ What is a View?
- ✓ Why use Views?
- ✓ Simple Views and Complex Views
- ✓ Creating a View
- ✓ Retrieving Data from a View
- ✓ Querying a View
- ✓ Modifying a View
- ✓ Creating a Complex View
- ✓ Rules for Performing DML Operations on a View
- ✓ Using the WITH CHECK OPTION Clause
- ✓ Denying DML Operations
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- ✓ Performing Top-N Analysis
- ✓ Example of Top-N Analysis

11. Other Database Objects

- ✓ Database Objects

- ✓ What is a Sequence?
- ✓ The CREATE SEQUENCE Statement Syntax
- ✓ Creating a Sequence
- ✓ Confirming Sequences
- ✓ NEXTVAL and CURRVAL Pseudo columns
- ✓ Using a Sequence
- ✓ Modifying a Sequence
- ✓ Guidelines for Modifying a Sequence
- ✓ Removing a Sequence
- ✓ What is an Index?
- ✓ How Are Indexes Created?
- ✓ Creating an Index
- ✓ When to Create an Index
- ✓ When Not to Create an Index
- ✓ Confirming Indexes
- ✓ Function-Based Indexes
- ✓ Removing an Index
- ✓ Creating and Removing Synonyms

12. Controlling User Access

- ✓ Objectives
- ✓ Controlling User Access
- ✓ Privileges
- ✓ System Privileges
- ✓ Creating Users
- ✓ User System Privileges
- ✓ Granting System Privileges
- ✓ What is a Role?
- ✓ Creating and Granting Privileges to a Role
- ✓ Changing Your Password
- ✓ Object Privileges
- ✓ Granting Object Privileges
- ✓ Using the WITH GRANT OPTION and PUBLIC Keywords
- ✓ Confirming Privileges Granted
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- ✓ Revoking Object Privileges

- ✓ Database Links

13. SQL Workshop

- ✓ Workshop Overview

14. Using SET Operators

- ✓ The SET Operators
- ✓ Tables Used in This Lesson
- ✓ The UNION Operator
- ✓ Using the UNION Operator
- ✓ The UNION ALL Operator
- ✓ Using the UNION ALL Operator
- ✓ The INTERSECT Operator
- ✓ Using the INTERSECT Operator
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- ✓ SET Operator Guidelines
- ✓ The Oracle Server and SET Operators
- ✓ Matching the SELECT Statements
- ✓ Controlling the Order of Rows

15. Enhancements to the GROUP BY Clause

- ✓ Review of Group Functions
- ✓ Review of the GROUP BY Clause
- ✓ Review of the HAVING Clause
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- ✓ ROLLUP Operator Example
- ✓ CUBE Operator
- ✓ CUBE Operator: Example
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- ✓ GROUPING Function: Example
- ✓ GROUPING SETS
- ✓ GROUPING SETS: Example
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- ✓ Composite Columns: Example
- ✓ Concatenated Groupings

- ✓ Concatenated Groupings Example

16. Advanced Subqueries

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- ✓ Subqueries
- ✓ Using a Subquery
- ✓ Multiple-Column Subqueries
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- ✓ Scalar Subquery Expressions
- ✓ Scalar Subqueries: Examples
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- ✓ Using Correlated Subqueries
- ✓ Using the EXISTS Operator
- ✓ Using the NOT EXISTS Operator
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- ✓ Correlated DELETE
- ✓ The WITH Clause
- ✓ WITH Clause: Example
- ✓ Hierarchical Retrieval
- ✓ Sample Data from the EMPLOYEES Table
- ✓ Natural Tree Structure

17. Hierarchical Queries

- ✓ Walking the Tree
- ✓ Walking the Tree: From the Bottom Up
- ✓ Walking the Tree: From the Top Down
- ✓ Ranking Rows with the LEVEL Pseudocolumn
- ✓ Formatting Hierarchical Reports Using LEVEL and LPAD
- ✓ Pruning Branches

18. Extensions to DML and DDL Statements

- ✓ Review of the INSERT Statement
- ✓ Review of the UPDATE Statement

- ✓ Overview of Multitable INSERT Statements
- ✓ Overview of Multitable INSERT Statements
- ✓ Types of Multitable INSERT Statements
- ✓ Multitable INSERT Statements
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- ✓ Conditional INSERT ALL
- ✓ Conditional FIRST INSERT
- ✓ Pivoting INSERT
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- ✓ Creating an External Table
- ✓ Example of Creating an External Table
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- ✓ CREATE INDEX with CREATE TABLE Statement

PL/SQL syllabus

Part I: Programming in PL/SQL

- ✓ Introduction to PL/SQL
- ✓ What Is PL/SQL?
- ✓ The Origins of PL/SQL
- ✓ About PL/SQL Versions
- ✓ Resources for PL/SQL Developers

19. Creating and Running PL/SQL Code

- ✓ SQL*Plus
- ✓ Performing Essential PL/SQL Tasks
- ✓ Calling PL/SQL from Other Languages
- ✓ Language Fundamentals
- ✓ PL/SQL Block Structure
- ✓ The PL/SQL Character Set
- ✓ Identifiers
- ✓ Literals
- ✓ The Semicolon Delimiter
- ✓ Comments
- ✓ The PRAGMA Keyword
- ✓ Labels

Part II: PL/SQL Program Structure

- ✓ Conditional and Sequential Control
- ✓ IF Statements
- ✓ CASE Statements and Expressions
- ✓ The GOTO Statement
- ✓ The NULL Statement
- ✓ Iterative Processing with Loops

20. Loop Basics

- ✓ The Simple Loop
- ✓ The WHILE Loop
- ✓ The Numeric FOR Loop
- ✓ The Cursor FOR Loop
- ✓ Loop Labels
- ✓ Tips for Iterative Processing

21. Exception Handlers

- ✓ Exception-Handling Concepts and Terminology
- ✓ Defining Exceptions
- ✓ Raising Exceptions
- ✓ Handling Exceptions
- ✓ Building an Effective Error Management Architecture
- ✓ Making the Most of PL/SQL Error Management

Part III: PL/SQL Program Data

- ✓ Working with Program Data
- ✓ Naming Your Program Data
- ✓ Overview of PL/SQL Datatypes
- ✓ Declaring Program Data
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- ✓ Conversion Between Datatypes

22. Strings

- ✓ String Datatypes
- ✓ Working with Strings

- ✓ String Function Quick Reference

23. Numbers

- ✓ Numeric Datatypes
- ✓ Number Conversions
- ✓ Numeric Functions

24. Records

- ✓ Records in PL/SQL

25. Collections

- ✓ Collections Overview
- ✓ Collection Methods (Built-Ins)
- ✓ Working with Collections
- ✓ Nested Table Multiset Operations
- ✓ Maintaining Schema-Level Collections

26. Miscellaneous Datatypes

- ✓ The BOOLEAN Datatype
- ✓ The RAW Datatype
- ✓ The UROWID and ROWID Datatypes
- ✓ The LOB Datatypes
- ✓ Working with LOBs
- ✓ Predefined Object Types

Part IV: SQL in PL/SQL

- ✓ DML and Transaction Management
- ✓ DML in PL/SQL
- ✓ Bulk DML with the FORALL Statement
- ✓ Transaction Management
- ✓ Autonomous Transactions

27. Data Retrieval

- ✓ Cursor Basics
- ✓ Working with Implicit Cursors
- ✓ Working with Explicit Cursors
- ✓ BULK COLLECT
- ✓ SELECT ... FOR UPDATE
- ✓ Cursor Variables and REF CURSORS
- ✓ Cursor Expressions

28. Procedures, Functions, and Parameters

- ✓ Procedures
- ✓ Functions
- ✓ Parameters
- ✓ Local Modules
- ✓ Module Overloading
- ✓ Forward Declarations
- ✓ Advanced Topics
- ✓ Go Forth and Modularize!

29. Packages

- ✓ Why Packages?
- ✓ Rules for Building Packages
- ✓ Rules for Calling Packaged Elements
- ✓ Working with Package Data
- ✓ When to Use Packages
- ✓ Packages and Object Types

30. Triggers

- ✓ DML Triggers
- ✓ DDL Triggers
- ✓ Database Event Triggers
- ✓ INSTEAD OF Triggers
- ✓ AFTER SUSPEND Triggers
- ✓ Maintaining Triggers

31. Managing PL/SQL Code

- ✓ Managing Code in the Database
- ✓ Using Native Compilation
- ✓ Using the Optimizing Compiler and Compile-Time Warnings
- ✓ Conditional Compilation
- ✓ Testing PL/SQL Programs
- ✓ Debugging PL/SQL Programs
- ✓ Tuning PL/SQL Programs
- ✓ Protecting Stored Code

32. I/O and PL/SQL

- ✓ Displaying Information
- ✓ Reading and Writing Files
- ✓ Sending Email
- ✓ Working with Web-Based Data (HTTP)
- ✓ Other Types of I/O Available in PL/SQL

Oracle Forms

Oracle Forms Developer 10g: Build Internet Applications

- ✓ Introducing Oracle Forms Developer and Forms Services
- ✓ Grid Computing
- ✓ Oracle 10g Products
- ✓ Oracle Application Server 10g Architecture
- ✓ Benefits and Components of Oracle Developer Suite 10g
- ✓ Running a Forms Developer Application
- ✓ Working in the Forms Developer Environment
- ✓ Creating Forms Modules
- ✓ Working with Data Blocks and Frames
- ✓ Working with Input Items
- ✓ Working with Non Input Items
- ✓ Working with Windows and Canvases
- ✓ Producing Triggers
- ✓ Debugging Triggers
- ✓ Adding Functionality to Items
- ✓ Run-Time Messages and Alerts
- ✓ Query Triggers
- ✓ Validation
- ✓ Navigation
- ✓ Transaction Processing
- ✓ Sharing Objects and Code
- ✓ Using WebUtil to Interact with the Client
- ✓ Introducing Multiple Form Applications

Oracle Reports

Oracle Reports Developer 10g: Build Reports

- ✓ Introduction to Oracle Reports Developer
- ✓ Business Intelligence
- ✓ Enterprise Reporting
- ✓ Oracle Reports Developer
- ✓ Oracle Database 10g
- ✓ Oracle Developer Suite 10g
- ✓ Oracle Application Server 10g
- ✓ OracleAS Reports Services
- ✓ OracleAS Reports Services Architecture for the Web
- ✓ Designing and Running Reports
- ✓ Exploring Oracle Reports Developer
- ✓ Creating a Paper Report
- ✓ Enhancing a Basic Paper Report
- ✓ Managing Report Templates
- ✓ Creating a Web Report
- ✓ Enhancing Reports Using the Data Model: Queries and Groups
- ✓ Enhancing Reports Using the Data Model: Data Sources
- ✓ Enhancing Reports Using the Data Model: Creating Columns
- ✓ Enhancing Reports Using the Paper Layout

- ✓ Controlling the Paper Layout: Common Properties
- ✓ Controlling the Paper Layout: Specific Properties
- ✓ Web Reporting
- ✓ Extending Functionality Using XML
- ✓ Creating and Using Report Parameters
- ✓ Embedding a Graph in a Report
- ✓ Enhancing Matrix Reports
- ✓ Coding PL/SQL Triggers
- ✓ Extending Functionality Using the SRW Package
- ✓ Maximizing Performance Using
- ✓ OracleAS Reports Services
- ✓ Building Reports: Efficiency Guidelines
- ✓ Working with SQL Worksheet
- ✓ Using SQL Developer