



GLOBAL EDUCATION & TECHNOLOGY

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G++ IN ORACLE 11G DATABASE

COURSE DURATION:480 HRS

Introduction

- List the Oracle Database 11g main features
- Provide an overview of: components, internet platform, apps server and developer suite
- Describe relational and object relational database designs
- Review the system development life cycle
- Describe different means of storing data
- Review the relational database concept
- Define the term data models
- Show how multiple tables can be related

Retrieving Data Using the SQL SELECT Statement

- Define projection, selection, and join terminology
- Review the syntaxes for the basic SQL SELECT statements
- Use Arithmetic and Concatenation operators in SQL statements
- List the differences between SQL and SQL Developer
- Log into the database using SQL Developer
- Explain the SQL Developer interface
- Categorize the different types of SQL Developer commands
- Save SQL statements to script files

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Restricting and Sorting Data

- Limit rows using a selection
- Using the WHERE clause to retrieve specific rows
- Using the comparison conditions in the WHERE clause
- Use the LIKE condition to compare literal values
- List the logical conditions AND, OR, NOT
- Describe the rules of precedence for the conditions shown in this lesson
- Sort rows with the ORDER BY clause
- Use ampersand substitution in SQL Developer to restrict and sort output at run time

Using Single Row Functions to Customize Reports

- Show the differences between single row and multiple row SQL functions
- Categorize the character functions into case manipulation and character manipulation types
- Use the character manipulation functions in the SELECT and WHERE clauses
- Explain and use the DATE and numeric functions
- Use the SYSDATE function to retrieve the current date in the default format
- Introduce the DUAL table as a means to view function results
- List the rules for applying the arithmetic operators on dates
- Use the arithmetic operators with dates in the SELECT clause

Reporting Aggregated Data Using the Group Functions

- Describe and categorize the group functions
- Use the group functions
- Utilize the DISTINCT keyword with the group functions
- Describe how nulls are handled with the group functions
- Create groups of data with the GROUP BY clause
- Group data by more than one column
- Avoid illegal queries with the group functions
- Exclude groups of data with the HAVING clause

Displaying Data From Multiple Tables

- Show the join tables syntax using SQL 99 syntax
- Use table aliases to write shorter code and explicitly identify columns from multiple tables
- Issue a SQL CROSS JOIN statement to produce a cartesian product
- Use the NATURAL JOIN clause to retrieve data from tables with the same named columns
- Create a join with the USING clause to identify specific columns between tables

- Create a three way join with the ON clause to retrieve information from 3 tables
- List the types of outer joins LEFT, RIGHT, and FULL
- Add additional conditions when joining tables with the AND clause

Using Sub queries to Solve Queries

- List the syntax for sub queries in a SELECT statements WHERE clause
- List the guidelines for using sub queries
- Describe the types of sub queries
- Execute single row sub queries and use the group functions in a sub query
- Identify illegal statements with sub queries
- Execute multiple row sub queries
- Analyze how the ANY and ALL operators work in multiple row sub queries
- Explain how null values are handled in sub queries

Using the SET Operators

- Use the UNION operator to return all rows from multiple tables and eliminate any duplicate rows
- Use the UNION ALL operator to return all rows from multiple tables
- Describe the INTERSECT operator
- Use the INTERSECT operator
- Explain the MINUS operator
- Use the MINUS operator
- List the SET operator guidelines
- Order results when using the UNION operator

Manipulating Data

- Write INSERT statements to add rows to a table
- Copy rows from another table
- Create UPDATE statements to change data in a table
- Generate DELETE statements to remove rows from a table
- Use a script to manipulate data
- Save and discard changes to a table through transaction processing
- Show how read consistency works
- Describe the TRUNCATE statement

Using DDL Statements to Create and Manage Tables

- List the main database objects and describe the naming rules for database objects
- Introduce the schema concept
- Display the basic syntax for creating a table and show the DEFAULT option

- Explain the different types of constraints
- Show resulting exceptions when constraints are violated with DML statements
- Create a table with a sub query
- Describe the ALTER TABLE functionality
- Remove a table with the DROP statement and Rename a table

Managing Objects with Data Views

- Describe the structure of each of the views
- List the purpose of each of the views
- Write queries that retrieve information from the views on the schema objects

Controlling User Access

- Controlling user access
- System versus objects privileges
- Creating user sessions and granting system privileges
- Using roles to define user groups
- Creating and granting privileges to a role
- Granting and revoking object privileges
- Changing your password
- Using Database Links

Manipulating Large Data Sets

- Using the MERGE Statement
- Performing DML with Subqueries
- Performing DML with a RETURNING Clause
- Overview of Multitable INSERT Statements
- Tracking Changes in DML

Generating Reports by Grouping Related Data

- Overview of GROUP BY and Having Clause
- Aggregating data with ROLLUP and CUBE Operators
- Determine subtotal groups using GROUPING Functions
- Compute multiple groupings with GROUPING SETS
- Define levels of aggregation with Composite Columns
- Create combinations with Concatenated Groupings

Searching Data Using Advanced Sub queries

- Subquery Overview
- Using a Sub query
- Comparing several columns using Multiple-Column Sub queries
- Defining a Data source Using a Sub query in the FROM Clause
- Returning one Value using Scalar Sub query Expressions
- Performing ROW by-row processing with Correlated Sub queries
- Reusing query blocks using the WITH Clause

Hierarchical Data Retrieval

- Sample Data from the EMPLOYEES Table
- The Tree Structure of Employee data
- Hierarchical Queries
- Ranking Rows with LEVEL
- Formatting Hierarchical Reports Using LEVEL and LPAD
- Pruning Branches with the WHERE and CONNECT BY clauses

Introduction to PL/SQL

- What is PL/SQL
- PL/SQL Environment
- Benefits of PL/SQL
- Overview of the Types of PL/SQL blocks
- Create and Execute a Simple Anonymous Block
- Generate Output from a PL/SQL Block
- SQL Developer as PL/SQL Programming Environment

Declaring PL/SQL Identifiers

- Identify the Different Types of Identifiers in a PL/SQL subprogram
- Use the Declarative Section to Define Identifiers
- List the Uses for Variables
- Store Data in Variables
- Declare PL/SQL Variables

Writing Executable Statements

- Describe Basic Block Syntax Guidelines
- Use Literals in PL/SQL
- Customize Identifier Assignments with SQL Functions
- Use Nested Blocks as Statements
- Reference an Identifier Value in a Nested Block
- Qualify an Identifier with a Label

- Use Operators in PL/SQL
- Use Proper PL/SQL Block Syntax and Guidelines

Interacting with the Oracle Server

- Identify the SQL Statements You Can Use in PL/SQL
- Include SELECT Statements in PL/SQL
- Retrieve Data in PL/SQL with the SELECT Statement
- Avoid Errors by Using Naming Conventions When Using Retrieval and DML Statements
- Manipulate Data in the Server Using PL/SQL
- The SQL Cursor concept
- Use SQL Cursor Attributes to Obtain Feedback on DML
- Save and Discard Transactions

Writing Control Structures

- Control PL/SQL Flow of Execution
- Conditional processing Using IF Statements
- Conditional Processing CASE Statements
- Handle Nulls to Avoid Common Mistakes
- Build Boolean Conditions with Logical Operators
- Use Iterative Control with Looping Statements

Working with Composite Data Types

- Learn the Composite Data Types of PL/SQL Records and Tables
- Use PL/SQL Records to Hold Multiple Values of Different Types
- Inserting and Updating with PL/SQL Records
- Use INDEX BY Tables to Hold Multiple Values of the Same Data Type

Using Explicit Cursors

- Cursor FOR Loops Using Subqueries
- Increase the Flexibility of Cursors By Using Parameters
- Use the FOR UPDATE Clause to Lock Rows
- Use the WHERE CURRENT Clause to Reference the Current Row
- Use Explicit Cursors to Process Rows
- Explicit Cursor Attributes
- Cursors and Records

Handling Exceptions

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- Handling Exceptions with PL/SQL
- Predefined Exceptions
- Trapping Nonpredefined Oracle Server Errors
- Functions that Return Information on Encountered Exceptions
- Trapping User-Defined Exceptions
- Propagate Exceptions
- Use The RAISE_APPLICATION_ERROR Procedure To Report Errors To Applications

Creating Stored Procedures

- Describe PL/SQL blocks and subprograms
- Describe the uses of procedures
- Create procedures
- Differentiate between formal and actual parameters
- List the features of different parameter modes
- Create procedures with parameters and invoke a procedure
- Handle exceptions in procedures

Creating Stored Functions

- Describe stored functions
- List the CREATE OR REPLACE FUNCTION syntax
- Identify the steps to create a stored function
- Create a stored function in SQL Developer and execute a stored function
- Identify the advantages of using stored functions in SQL statements
- Identify the restrictions of calling functions from SQL statements
- Describe how procedures and functions differ

Creating Packages

- List the benefits of using PL/SQL packages
- Differentiate between a package specification and a package body
- Create packages
- Include public and private constructs in a package
- Call public and private constructs in a package
- Remove packages

Creating Triggers

- Describe different types of triggers
- Describe database triggers and their use
- Create database triggers
- Describe database trigger firing rules

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- Remove database triggers

Applications for Triggers

- Create database and system event triggers
- Create triggers on DDL statements
- Use the CALL statement in triggers to invoke procedures
- Explain the rules for reading and writing to tables with triggers
- Describe business application scenarios for implementing with triggers
- Manage trigger code

Understanding and Influencing the PL/SQL Compiler

- Describe native compilation and interpreted compilation
- List the features of native compilation
- Switch between native and interpreted compilation for compiled PL/SQL code
- Set the parameters to control aspects of PL/SQL compilation
- Explain the compiler warning mechanism
- List the steps to use the compiler warnings
- Use DBMS_WARNING to implement compiler warnings

Introducing Oracle Forms Developer and Forms Services

- Grid Computing
- Oracle 11g Products
- Oracle Application Server Architecture
- Oracle Forms Services Architecture
- Benefits and Components of Oracle Developer Suite
- Running a Forms Developer Application
- Working in the Forms Developer Environment

Creating Forms Modules

- Creating a Basic Forms Module
- Creating a Master-Detail Forms Module
- Modifying the Data Block
- Modifying the Layout

Working with Data Blocks and Frames

- Using the Property Palette
- Managing Object Properties

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- Creating and Using Visual Attributes
- Controlling the Behavior and Appearance of Data Blocks
- Controlling Frame Properties
- Creating Control Blocks
- Deleting Data Blocks

Working with Input Items

- Creating Text Items
- Controlling the Behavior and Appearance of Text Items
- Creating LOVs
- Defining Editors
- Creating Check Boxes
- Creating List Items
- Creating Radio Groups

Working with Non input Items

- Creating a Display Item
- Creating an Image Item
- Creating a Push Button
- Creating a Calculated Item
- Creating a Hierarchical Tree Item
- Creating a Bean Area Item

Creating Windows and Canvases

- Overview of Windows and Canvases
- Displaying a Form Module in Multiple Windows
- Creating a New Window
- Displaying a Form Module on Multiple Layouts
- Creating a New Content Canvas
- Creating a Stacked Canvas
- Creating a Toolbar
- Creating a Tab Canvas

Producing Triggers

- Grouping Triggers into Categories
- Defining Trigger Components: Type, Code, and Scope
- Specifying Execution Hierarchy
- Using the PL/SQL Editor
- Using the Database Trigger Editor

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- Writing Trigger Code
- Using Variables and Built-ins
- Using the When-Button-Pressed and When-Window-Closed Triggers

Debugging Triggers

- The Debugging Process
- The Debug Console
- Setting Breakpoints
- Debugging Tips
- Running a Form in Debug Mode
- Stepping through Code

Adding Functionality to Items

- Coding Item Interaction Triggers
- Defining Functionality for Check Boxes
- Changing List Items at Run Time
- Displaying LOVs from Buttons
- Populating Image Items
- Populating and Displaying Hierarchical Trees
- Interacting with JavaBeans

Run-Time Messages and Alerts

- Built-Ins and Handling Errors
- Controlling System Messages
- The FORM_TRIGGER_FAILURE Exception
- Using Triggers to Intercept System Messages
- Creating and Controlling Alerts
- Handling Server Errors

Query Triggers

- Handling Server Errors
- SELECT Statements Issued During Query Processing
- WHERE and ORDER BY clauses and the ONETIME_WHERE property
- Writing Query Triggers
- Query Array Processing
- Coding Triggers for Enter-Query Mode
- Overriding Default Query Processing
- Obtaining Query Information at Run Time

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Validation

- Validation Process
- Controlling Validation Using Properties
- Controlling Validation Using Triggers
- Performing Client-Side Validation with PJs
- Tracking Validation Status
- Using Built-ins to Control When Validation Occurs

Introducing Multiple Form Applications

- Multiple Form Applications Overview
- Starting Another Form Module
- Defining Multiple Form Functionality
- Sharing Data among Modules

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