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## Oracle Certification

**Oracle Certified Associate (OCA):** Signifies apprentice-level knowledge, which provides a foundation for supporting Oracle products. An OCA credential is available for several of today's most in-demand technology job roles.

**Oracle Certified Professional (OCP):** The benchmark of professional skill and technical expertise required to manage large-scale databases or to develop applications that are deployed enterprise-wide. Increasingly, the OCP credential is the standard by which IT managers evaluate qualified employees and job candidates.

### Exam

1Z0-047: Oracle Database 10g SQL Expert

Or

1Z0-051: Oracle Database 11g SQL Fundamentals I

### OCA & OCP Requirement

### Exam

1Z0-042: Oracle Database 10g Administration I

### OCA & OCP Requirement

### Exam

1Z0-043: Oracle Database 10g Administrator II

And

### Form

Complete the Course Submission Form

### OCP Requirement

## Students Benefits

- t 25% discount on Oracle Certification Exams.
- t Oracle University Student Courseware Kit.
- t Practice Exams.
- t Complete the Course submission form.

## Oracle Certification Exam

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To register for an Oracle certification exam, go to [www.vue.com](http://www.vue.com)

### Academic Partner



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## Oracle Database 10g: Introduction to SQL

**Duration:** 5 Days (40 hours)

### What you will learn

Learn the SQL essentials using SQL Developer on Linux. This course offers students an introduction to Oracle Database 10g database technology. In this class students learn the concepts of relational databases and the powerful SQL programming language. This course provides the essential SQL skills that allow developers to write queries against single and multiple tables, manipulate data in tables, create database objects, and query meta data.

In addition, the advanced features of SQL in order to query and manipulate data within the database are taught. Advanced querying and reporting techniques are explained. Schema objects that are useful for data warehousing and other application areas are discussed in detail. Students learn about manipulating large data sets and storing and retrieving dates according to different time zones.

In this course, students use Oracle SQL Developer on Linux as the main development tool.

This course is a combination of Oracle Database 10g: SQL Fundamentals I and Oracle Database 10g: SQL Fundamentals II courses.

Learn to:

- Use SQL Statements to retrieve data from tables
- Create and manage tables, and other schema objects
- Employ SQL functions to generate and retrieve customized data
- Control privileges at the object and system level
- Run data manipulation statements (DML) to update data in the Oracle Database 10g
- Search data using Advanced Sub queries, and retrieve hierarchical data

### Audience

Application Developers  
Business Intelligence Developer  
Database Administrators  
End Users  
Forms Developer  
PL/SQL Developer  
Portal Developer

### Prerequisites

*Suggested Prerequisites*  
Familiarity with Data Processing Concepts and Techniques  
Ability to use a graphical user interface (GUI)

### Course Objectives

Retrieve row and column data from tables with the SELECT statement.  
Employ SQL functions to generate and retrieve customized data.  
Run data manipulation statements (DML) to update data in the Oracle Database 10g.  
Control user access and manage schema objects

Search data using advanced sub queries

## Course Topics

### Introduction

List the Oracle Database 10g Main Features

An Overview of: components, internet platform, apps server and developer suite

Describe Relational and Object Relational Database Designs

Review the System Development Life Cycle

Define the term Data Models

Describe different means of Sorting Data

Show how Multiple Tables can be related

Describe how SQL Communicates to the Database

### Writing SQL SELECT Statements

Define projection, selection, and join terminology

Review the basic SQL SELECT statement syntax

Select all columns using a wildcard notation from a table

State simple rules and guidelines for writing SQL statements

Write a query containing the arithmetic operators

Create a character expression with the concatenation operator

Using the Oracle SQL Developer Environment

### 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

Sort rows with the ORDER BY clause

Use ampersand substitution to restrict and sort output at run time

### Using Single-Row Functions to Customize Output

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**

Identify Types of Joins

Retrieve Records with Natural Joins

Use Table Aliases to write shorter code and explicitly identify columns from multiple tables

Create a Join with the USING clause to identify specific columns between tables

Use the ON clause to specify arbitrary conditions or specify columns to Join

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

Generating a Cartesian Product

### **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

### **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

### **Creating Other Schema Objects**

- Categorize simple and complex views and compare them
- Create a view
- Retrieve data from a view
- Explain a read-only view
- List the rules for performing DML on complex views
- Create a sequence
- List the basic rules for when to create and not create an index
- Create a synonym

### **Managing Objects with Data Dictionary Views**

- Describe the structure of each of the dictionary views
- List the purpose of each of the dictionary views
- Write queries that retrieve information from the dictionary views on the schema objects
- Use the COMMENT command to document objects

### **Controlling User Access**

- Controlling User Access
- System versus Objects Privileges
- Using Roles to define user groups
- Changing Your Password
- Granting Object Privileges
- Confirming Privileges Granted
- Revoking Object Privileges
- Using Database Links

### **Manage Schema Objects**

- Using the ALTER TABLE statement
- Adding a Column
- Modifying a Column
- Dropping a Column, Set Column UNUSED
- Adding, Enabling and Disabling Constraints
- Creating Function-Based Indexes
- Performing FLASHBACK operations
- External Tables

### **Manipulating Large Data Sets**

- Using the MERGE Statement
- Performing DML with Sub queries
- Performing DML with a RETURNING Clause
- Overview of Multi-table INSERT Statements
- Tracking Changes in DML

### **Generating Reports by Grouping Related Data**

- Overview of GROUP BY Clause
- Overview of 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

### **Managing Data in Different Time Zones**

Time Zones

Using date and time functions

Identifying TIMESTAMP Data Types

Differentiating between DATE and TIMESTAMP

Performing Conversion Operations

### **Searching Data Using Advanced Sub queries**

Sub query 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 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

### **Regular Expression Support**

Regular Expression Support Overview

Describing simple and complex patterns for searching and manipulating data

## Oracle Database 10g: Administration Workshop I Release 2

**Duration:** 5 Days (40 hours)

### What you will learn

This course is your first step towards success as an Oracle professional, designed to give you a firm foundation in basic database administration. In this class, you'll learn how to install and maintain an Oracle database. You will gain a conceptual understanding of the Oracle database architecture and how its components work and interact with one another. You will also learn how to create an operational database and properly manage the various structures in an effective and efficient manner including performance monitoring, database security, user management, and backup/recovery techniques. The lesson topics are reinforced with structured hands-on practices. This course is designed to prepare you for the corresponding Oracle Certified Associate exam. This course counts towards the Hands-on course requirement for the Oracle Database 10g Administrator Certification. Only instructor-led inclass or instructor-led online formats of this course will meet the Certification Hands-on Requirement. Self Study CD-Rom and Knowledge Center courses DO NOT meet the Hands-on Requirement.

Learn To:

- Install the Database
- Back up and Recover Data
- Administer Users
- Transport Data between Databases
- Manage Data
- Configure the Network

### Audience

- Database Administrators
- Database Designers
- Project Manager
- Sales Consultants
- Support Engineer
- Technical Consultant

### Prerequisites

*Suggested Prerequisites*  
Working knowledge of SQL

### Course Objectives

- Install Oracle Database 10g and configure a database
- Manage the Oracle instance
- Manage the Database storage structures
- Create and administer user accounts
- Perform backup and recovery of a database
- Monitor, troubleshoot, and maintain a database

Configure Oracle Net services  
Move data between databases and files

## Course Topics

### Introduction (Database Architecture)

Describe course objectives  
Explore the Oracle 10g database architecture

### Installing the Oracle Database Software

Explain core DBA tasks and tools  
Plan an Oracle installation  
Use optimal flexible architecture  
Install software with the Oracle Universal Installer (OUI)

### Creating an Oracle Database

Create a database with the Database Configuration Assistant (DBCA)  
Create a database design template with the DBCA  
Generate database creation scripts with the DBCA

### Managing the Oracle Instance

Start and stop the Oracle database and components  
Use Enterprise Manager (EM)  
Access a database with SQL\*Plus and iSQL\*Plus  
Modify database initialization parameters  
Understand the stages of database startup  
View the Alert log  
Use the Data Dictionary

### Managing Database Storage Structures

Describe table data storage (in blocks)  
Define the purpose of tablespaces and data files  
Understand and utilize Oracle Managed Files (OMF)  
Create and manage tablespaces  
Obtain tablespace information  
Describe the main concepts and functionality of Automatic Storage Management (ASM)

### Administering User Security

Create and manage database user accounts  
Authenticate users  
Assign default storage areas (tablespaces)  
Grant and revoke privileges  
Create and manage roles  
Create and manage profiles  
Implement standard password security features  
Control resource usage by users

### Managing Schema Objects

Define schema objects and data types  
Create and modify tables  
Define constraints



- View the columns and contents of a table
- Create indexes, views and sequences
- Explain the use of temporary tables
- Use the Data Dictionary

### **Managing Data and Concurrency**

- Manage data through SQL
- Identify and administer PL/SQL Objects
- Describe triggers and triggering events
- Monitor and resolve locking conflicts

### **Managing Undo Data**

- Explain DML and undo data generation
- Monitor and administer undo
- Describe the difference between undo and redo data
- Configure undo retention
- Guarantee undo retention
- Use the undo advisor

### **Implementing Oracle Database Security**

- Describe DBA responsibilities for security
- Apply the principal of least privilege
- Enable standard database auditing
- Specify audit options
- Review audit information
- Maintain the audit trail

### **Configuring the Oracle Network Environment**

- Use Enterprise Manager for configuring the Oracle network environment
- Create additional listeners
- Create Net Service aliases
- Configure connect-time failover
- Control the Oracle Net Listener
- Test Oracle Net connectivity
- Identify when to use shared versus dedicated servers

### **Proactive Maintenance**

- Use statistics
- Manage the Automatic Workload Repository (AWR)
- Use the Automatic Database Diagnostic Monitor (ADDM)
- Describe advisory framework
- Set alert thresholds
- Use server-generated alerts
- Use automated tasks

### **Performance Management**

- Use Enterprise Manager pages to monitor performance
- Use the SQL Tuning Advisor
- Use the SQL Access Advisor
- Use Automatic Shared Memory Management
- Use the Memory Advisor to size memory buffers
- Use performance related dynamic views

Troubleshoot invalid or unusable objects

### **Backup and Recovery Concepts**

Identify the types of failure that may occur in an Oracle Database

Describe ways to tune instance recovery

Identify the importance of checkpoints, redo log files, and archived log files

Configure ARCHIVELOG mode

### **Performing Database Backups**

Create consistent database backups

Back your database up without shutting it down

Create incremental backups

Automate database backups

Monitor the flash recovery area

### **Performing Database Recovery**

Recover from loss of a control file

Recover from loss of a redo log file

Perform complete recovery following the loss of a data file

### **Performing Flashback**

Describe Flashback database

Restore the table content to a specific point in the past with Flashback Table

Recover from a dropped table

View the contents of the database as of any single point in time with Flashback Query

See versions of a row over time with Flashback Versions Query

View the transaction history of a row with Flashback Transaction Query

### **Moving Data**

Describe available ways for moving data

Create and use directory objects

Use SQL\*Loader to load data from a non-Oracle database (or user files)

Explain the general architecture of Data Pump

Use Data Pump Export and Import to move data between Oracle databases

Use external tables to move data via platform-independent files

### **Related Courses**

Oracle Database 10g: Administration Workshop I Self-Study CD Course

## Oracle Database 10g: Administration Workshop II Release 2

**Duration:** 5 Days (40 hours)

### What you will learn

This course advances your success as an Oracle professional in the area of database administration. In this class, you'll learn how to configure an Oracle database for multilingual applications. You will practice various methods of recovering the database using RMAN and Flashback technology. Database performance monitoring tools will be covered, in addition to the steps to take to resolve common problems and improve performance. You will also learn how to administer a database efficiently by using database technologies such as the Resource Manager, the Scheduler, Automatic Storage Management (ASM), and VLDB features. You will set up a secure database using Virtual Private Database, and learn how to efficiently move data from database to database. The lesson topics are reinforced with structured hands-on practices and a workshop. This course is designed to prepare you for the corresponding Oracle Certified Professional exam. This course counts towards the Hands-on course requirement for the Oracle Database 10g Administrator Certification. Only instructor-led inclass or instructor-led online formats of this course will meet the Certification Hands-on Requirement. Self Study CD-Rom and Knowledge Center courses are excellent study and reference tools but DO NOT meet the Hands-on Requirement for certification.

Database Administrators  
Sales Consultants  
Support Engineer  
Technical Consultant

### Prerequisites

#### *Required Prerequisites*

Oracle Database 10g: Administration Workshop I Release 2

#### *Suggested Prerequisites*

Knowledge of basic database administration

### Course Objectives

- Use RMAN to create and manage backup sets and image copies
- Recover the database to a previous point in time
- Use Oracle Secure Backup to backup and recover a database
- Use Oracle's Flashback technology to recover your database
- Detect block corruptions and take appropriate measures to correct them
- Use the various Database advisors and views to monitor and improve database performance
- Control database resource usage with the Resource Manager
- Simplify management tasks by using the Scheduler
- Review database log files for diagnostic purposes
- Customize language-dependent behavior for the database and individual sessions
- Administer a VLDB
- Implement a secure database
- Transport data across platforms

## Course Topics

### Introduction

Grid Computing  
Oracle Enterprise Manager 10g Product Controls  
Database Architecture Review

### Configuring Recovery Manager

Recovery Manager Features and Components  
Using a Flash Recovery Area with RMAN  
Configuring RMAN  
Control File Autobackups  
Retention Policies and Channel Allocation  
Using Recovery Manager to connect to a target database in default NOCATALOG mode  
Displaying the current RMAN configuration settings  
Altering the backup retention policy for a database

### Using Recovery Manager

RMAN Command Overview  
Parallelization of Backup Sets  
Compressed Backups  
Image Copy  
Whole Database and Incremental Backups  
LIST and REPORT commands  
Enable ARCHIVELOG mode for the database  
Use Recovery Manager

### Oracle Secure Backup

Installation and Configuration  
Implement the Oracle suggested strategy  
RMAN and Oracle Secure Backup  
Database and File-system files backup/restore to tape  
Using obtool and web interface to configure Oracle Secure Backup devices (CLI/GUI)  
Configuring EM for Oracle Secure Backup and test backup to tape (EM)  
Using RMAN to backup your database to tape (CLI)  
Using the OB Web tool to backup file system files

### Recovering from Non-critical Losses

Recovery of Non-Critical Files  
Creating New Temporary Tablespace  
Recreating Redo Log Files, Index Tablespaces, and Indexes  
Read-Only Tablespace Recovery  
Authentication Methods for Database Administrators  
Loss of Password Authentication File  
Creating a new temporary tablespace  
Altering the default temporary tablespace for a database

### Incomplete Recovery

Recovery Steps  
Server and User Managed Recovery commands  
Recovering a Control File Autobackup  
Creating a New Control File

- Incomplete Recovery Overview
- Incomplete Recovery Best Practices
- Simplified Recovery Through RESETLOGS
- Point-in-time recovery using RMAN

## **Flashback**

- Flashback Database Architecture
- Configuring and Monitoring Flashback Database
- Backing Up the Flash Recovery Area
- Using V\$FLASH\_RECOVERY\_AREA\_USAGE
- Flashback Database Considerations
- Using the Flashback Database RMAN interface
- Using Flashback Database EM Interface
- Managing and monitoring Flashback Database operations

## **Dealing with Database Corruption**

- Block Corruption Symptoms: ORA-1578
- DBVERIFY Utility and the ANALYZE command
- Initialization parameter DB\_BLOCK\_CHECKING
- Segment Metadata Dump and Verification
- Using Flashback for Logical Corruption and using DBMS\_REPAIR
- Block Media Recovery
- RMAN BMR Interface
- Dumping and Verifying Segment Metadata

## **Monitoring and Managing Memory**

- Oracle Memory Structures
- Automatic Shared Memory Management
- SGA Tuning Principles
- Database Control and Automatic Shared Memory Management
- Behavior of Auto-Tuned and Manual SGA Parameters
- Resizing SGA\_TARGET
- PGA Management Resources
- Using the Memory Advisor

## **Automatic Performance Management**

- Identifying Tunable Components
- Oracle Wait Events and System Statistics
- Troubleshooting and Tuning Views
- Direct Attach to SGA for Statistic Collection
- Workload Repository
- Advisory Framework
- ADDM Scenarios and Usage Tips
- Using the SQL Tuning and SQL Access Advisor

## **Monitoring and Managing Storage I**

- Database Storage Structures
- Space Management Overview
- Oracle-Managed Files (OMF)
- Row Chaining and Migrating
- Proactive Tablespace Monitoring
- Managing Resumable Space Allocation

SYSAUX Tablespace

Monitoring table and index space usage

## **Monitoring and Managing Storage II**

Automatic Undo Management

Redo Log Files

Table Types

Partitioned Tables

Index-Organized Tables (IOT)

Managing index space with SQL

Configure optimal redo log file size

View “Automatic Tuning of Undo Retention”

## **Automatic Storage Management**

ASM General Architecture and Functionalities

Dynamic Performance View Additions

Managing an ASM Instance

ASM Disk Groups

Using asmcmd Command Line

Migrating Your Database to ASM Storage

Creating an ASM instance in a separate Oracle Home

Migrating a tablespace to use ASM storage

## **VLDB Support**

Creating Bigfile Tablespaces

Packages and data dictionary changes to support VLDB

Creating and maintaining temporary tablespace groups (TTG)

Partitioning and Partitioned Indexes

Skipping unusable indexes

Creating and using hash-partitioned global indexes

DML Error Logging

Interpreting Bigfile ROWIDs

## **Managing Resources**

Database Resource Manager Concepts and Configuration

Creating a New Resource Plan

Active Session Pool Mechanism

Maximum Estimated Execution Time

Creating a Complex Plan

Administering and Monitoring Resource Manager

Resource Plan Directives

Creating Resource Consumer Groups

## **Automating Tasks with the Scheduler**

Scheduler Concepts

Creating a Job Class and a Window

Managing Jobs, Programs, Chains, Events, Schedules, priority

Viewing and Purging Job Logs

Creating a program and a schedule

Creating a job that uses a program and a schedule

Altering the program and schedule for the job and observing the behavior change of the job

Monitoring job runs

## **Database Security**

- Virtual Private Database: Overview
- Creating a Column-Level Policy
- Writing a Policy Function
- Policy Types
- Column level VPD with column masking
- Transparent Data Encryption
- Setting the listener password
- Implement VPD

## **Data Movement**

- External Tables Concepts
- Creating a Directory object and External Table
- Data Pump
- Transport Database
- RMAN CONVERT DATABASE Command
- Transport Tablespace
- Create a Directory Object
- Create a Temporary Table

## **Using Globalization Support**

- Globalization Support Features
- Encoding Schemes
- Database Character Sets and National Character Sets
- Specifying Language-Dependent Behavior
- Locale Variants
- Using Linguistic Comparison and Sorting
- Data Conversion Between Client and Server Character Sets
- Determining the Default NLS Settings

## **Workshop**

- Workshop Methodology, requirements, and setup
- Scenario 1: Database performance
- Scenario 2: Finding and Tuning Inefficient SQL
- Scenario 3: SGA Management - REDO
- Scenario 4: Running out of Undo Space
- Scenario 5: Missing datafile
- Scenario 6: Managing space in a tablespace - REDO
- Scenario 7: Missing TEMP data file

## **Related Courses**

- Oracle Database 10g: Administration Workshop II Self-Study CD Course