

# Oracle 11g DBA Course

## 1. Introduction

- Oracle Products and Services
- Oracle Database 11g:"g" Stands for Grid
- Oracle Database Architecture
- Database Structures
- Oracle memory Structures
- Process Structures
- Oracle Instance Management
- Server Process and Database Buffer Cache
- Physical Database Structure
- Tablespaces and Data Files
- SYSTEM and SYSAUX
- Tablespaces
- Segments, Extents, and Blocks
- Logical and Physical Database Structures
- Course Examples: The HR Schema
- Database Architecture:Summary of Structural Components

## 2. Installing the Oracle Database Software

- Objectives Tasks of an Oracle Database Administrator
- Tools used to Administer an Oracle Database
- Installation: System Requirements
- Checking the System Requirements
- Optimal Flexible Architecture (OFA)
- Using Optimal Flexible Architecture
- Setting Environment Variables
- Oracle Universal Installer (OUI)
- Installing the Oracle Software
- Database Configuration Options
- Executing Configuration Scripts
- Completing Your Installation
- Advanced Installation Options
- Installation Option: Silent Mode

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### 3. Creating an Oracle Database

- Planning the Database
- Databases: Examples
- Database Configuration Assistant (DBCA)
- Using the DBCA to Create a Database
- Password Management
- Creating a Database Design Template
- Using the DBCA to Delete a Database

### 4. Managing the Oracle Instance

- Initialization Parameter Files
- Simplified Initialization Parameters
- Viewing and Modifying Initialization Parameters
- Database Startup and Shutdown
- Starting up an Oracle Database Instance
- Starting up an Oracle Database Instance: NOMOUNT
- Starting up an Oracle Database Instance: MOUNT
- Starting up an Oracle Database Instance: OPEN
- Shutting Down an Oracle Database Instance
- Shutdown Modes
- SHUTDOWN
- Options
- Using SQL\*Plus to Start up and Shut Down
- Viewing the Alert Log
- Viewing the Alert History
- Dynamic Performance Views
- Dynamic Performance Views: Usage Examples
- Dynamic Performance Views: Considerations

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### 5. Managing Database Storage Structures

- Storage Structures
- How Table Data Is Stored
- Anatomy of a Database Block
- Tablespaces and Data Files
- Oracle Managed Files (OMF)
- Space Management in Tablespaces
- Exploring the Storage Structure

- Creating a New Tablespace
- Storage for Locally Managed Tablespaces
- Tablespaces in the Preconfigured Database
- Altering a Tablespace
- Actions with Tablespaces
- Dropping Tablespaces
- Viewing Tablespace Information
- Gathering Storage Information
- Viewing Tablespace Contents

## 6. Administering User Security

- Database User Accounts
- Predefined Accounts: SYS and SYSTEM
- Creating a User
- Authenticating Users
- Administrator Authentication
- Unlocking a User Account and Resetting the Password
- Privileges
- System Privileges
- Object Privileges
- Revoking System Privileges with ADMIN OPTION
- Revoking Object Privileges with GRANT OPTION
- Benefits of Roles
- Assigning Privileges to Roles and Roles to Users
- Predefined Roles
- Creating a Role
- Secure Roles
- Assigning Roles to Users
- Profiles and Users
- Implementing Password Security Features
- Creating a Password Profile
- Supplied Password Verification Function: VERIFY\_FUNCTION
- Assigning Quota to Users

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## 7. Managing Schema Objects

- What Is a Schema?
- Accessing Schema Objects
- Naming Database Objects
- Specifying Data Types in Tables
- Creating and Modifying Tables
- Understanding Data Integrity
- Defining Constraints
- Constraint Violations
- Constraint States
- Constraint Checking
- Creating Constraints with SQL: Examples
- Viewing the Columns in a Table
- Viewing the Contents of a Table
- Actions with Tables
- Dropping a Table
- Truncating a Table
- Indexes
- Types of Indexes
- B-Tree Index
- Bitmap Indexes
- Index Options
- Creating Indexes
- What Is a View?
- Creating Views
- Sequences
- Creating a Sequence
- Using a Sequence
- Temporary Tables
- Temporary Tables: Considerations
- Data Dictionary: Overview
- Data Dictionary Views
- Data Dictionary: Usage Examples

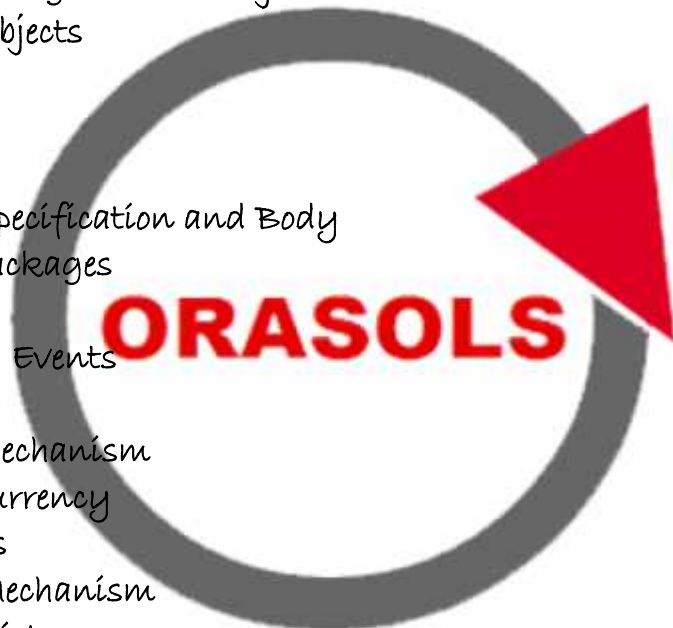


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## 8. Managing Data and Concurrency

- Manipulating Data through SQL
- The INSERT Command
- The UPDATE Command
- The DELETE Command
- The MERGE Command
- The COMMIT and ROLLBACK Commands
- PL/SQL
- Administering PL/SQL Objects
- PL/SQL Objects
- Functions
- Procedures
- Packages
- Package Specification and Body
- Built-in Packages
- Triggers
- Triggering Events
- Locks
- Locking Mechanism
- Data Concurrency
- DML Locks
- Enqueue Mechanism
- Lock Conflicts
- Possible Causes of Lock Conflicts
- Detecting Lock Conflicts
- Resolving Lock Conflicts
- Resolving Lock Conflicts using SQL
- Deadlocks
- Practice Overview: Managing Data and Concurrency



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## 9. Managing Undo Data

- Data Manipulation
- Undo Data
- Transactions and Undo Data
- Storing Undo Information

- Undo Data Versus Redo Data
- Monitoring Undo
- Administering Undo
- Configuring Undo Retention
- Guaranteeing Undo Retention
- Sizing the Undo Tablespace
- Using the Undo Advisor

## 10. Implementing Oracle Database Security

- Industry Security Requirements
- Separation of Responsibilities
- Database Security
- Principle of Least Privilege
- Applying the Principle of Least Privilege
- Monitoring for Suspicious Activity
- Standard Database Auditing
- Enabling Auditing
- Uniform Audit Trails
- Enterprise Manager Audit Page
- Specifying Audit Options
- Using and Maintaining Audit Information
- Value-Based Auditing
- Fine-Grained Auditing
- FGA Policy
- Audited DML Statement: Considerations
- FGA Guidelines
- DBA Auditing
- Maintaining the Audit Trail
- Security Updates
- Applying Security Patches

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## 11. Configuring the Oracle Network Environment

- Oracle Net Services
- Oracle Net Listener
- Establishing Net Connections
- Establishing a Connection
- User Sessions

- Tools for Configuring and Managing the Oracle Network
- Listener Control Utility
- Listener Control Utility Syntax
- Listener Home Page
- Net Services Administration Pages
- Creating a Listener
- Adding Listener Addresses
- Database Service Registration
- Naming Methods
- Easy Connect
- Local Naming
- Directory Naming
- External Naming Method
- Configuring Service Aliases
- Advanced Connection Options
- Testing Oracle Net Connectivity
- User Sessions: Dedicated Server
- User Sessions: Shared Servers
- SGA and PGA
- Shared Server: Connection Pooling
- When Not to Use a Shared Server

## 12. Proactive Maintenance

- Proactive Maintenance
- Introducing Terminology
- Optimizer Statistics
- Using the Manage Optimizer Statistics Page
- Automatic Workload Repository (AWR)
- AWR Infrastructure
- AWR Snapshot Sets
- Enterprise Manager and AWR
- Managing the AWR
- Statistic Levels
- Automatic Database Diagnostic Monitor (ADDM)
- ADDM Findings
- ADDM Recommendations
- Advisory Framework

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- Enterprise Manager and Advisors
- The DBMS\_ADVISOR Package
- Server-Generated Alerts
- Default Server-Generated Alerts
- Setting Thresholds
- Creating and Testing an Alert
- Alerts Notification
- Reacting to Alerts
- Alert Types and Clearing Alerts
- Automated Maintenance Tasks

### 13. Performance Management

- Performance Monitoring
- Performance Monitoring: Top Sessions
- Performance Monitoring: Top Services
- SQL Tuning Advisor: Overview
- SQL Tuning Advisor Options and Recommendations
- Using the SQL Tuning Advisor
- Using the SQL Tuning Advisor: Example
- SQL Tuning Advisor: SQL Statistics
- SQL Tuning Advisor: Identifying Duplicate SQL
- Using the SQL Access Advisor
- Managing Memory Components
- Enabling Automatic Shared Memory Management (ASMM)
- Manually Setting Shared Memory Management
- Using the Memory Advisor
- Dynamic Performance Statistics
- Troubleshooting and Tuning Views
- Invalid and Unusable Objects

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### 14. Backup and Recovery Concepts

- Part of Your Job
- Categories of Failures
- Statement Failure
- User Process Failure
- Network Failure
- User Error



- Instance Failure
- Background Processes and Recovery: Checkpoint (CKPT)
- Background Processes and Recovery: Redo Log Files and LogWriter
- Background Processes and Recovery: Archiver (ARCn)
- Instance Recovery
- Phases of Instance Recovery
- Tuning Instance Recovery
- Using the MTTR Advisor
- Media Failure
- Configuring for Recoverability
- Control Files
- Redo Log Files
- Multiplexing the Redo Log
- Archive Log Files
- Archive Log File: Naming and Destinations
- ARCHIVELOG Mode

## 15. Performing Database Backups

- Backup Solutions: Overview
- Oracle Secure Backup
- User-Managed Backup
- Terminology
- Recovery Manager (RMAN)
- Configuring Backup Settings
- Scheduling Backups: Strategy
- Scheduling Backups: Options
- Scheduling Backups: Settings
- Scheduling Backups: Schedule
- Scheduling Backups: Review
- Backing up the Control File to a Trace File
- Managing Backups
- Flash Recovery Area

## 16. Performing Database Recovery

- Opening a Database
- Changing Instance Status
- Keeping a Database Open

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- Loss of a Control File
- Loss of a Redo Log File
- Loss of a Data File in NOARCHIVELOG Mode
- Loss of a Noncritical Data File in ARCHIVELOG Mode
- Loss of a System-Critical Data File in ARCHIVELOG Mode

## 17. Performing Flashback

- Flashback Technology: Benefits
- When to use the Flashback Technology
- Flashing Back Any Error
- Flashback Database: Overview
- Flashback Database: Reducing Restore Time
- Flashback Database: Considerations
- Flashback Database: Limitations
- Enabling Flashback Database
- Flashback Table: Overview
- Flashback Table
- Enabling Row Movement on a Table
- Performing Flashback Table
- Flashback Table: Considerations
- Flashback Drop: Overview
- Flashing Back Dropped Tables Through Enterprise Manager
- Flashback Drop: Considerations
- Flashback Time Navigation
- Flashback Query: Overview
- Flashback Query: Example
- Flashback Versions Query: Overview
- Flashback Versions Query Through Enterprise Manager
- Flashback Versions Query: Considerations
- Flashback Transaction Query: Overview
- Flashback Transaction Query Through Enterprise Manager
- Flashback Transaction Query: Considerations

## 18. Moving Data

- Moving Data: General Architecture
- Directory Object: Overview
- Creating Directory Objects

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- SQL\*Loader: Overview
- Loading Data with SQL\*Loader
- SQL\*Loader Control File
- Loading Methods
- Data Pump: Overview
- Data Pump: Benefits
- Data Pump Export and Import: Overview
- Data Pump Utility: Interfaces and Modes
- Fine-Grained Object Selection
- Advanced Feature: Sampling
- Export Options: Files
- Data Pump File Locations
- Scheduling and Running a Job
- Data Pump File Naming and Size
- Data Pump Import
- Data Pump Import: Transformations
- Data Pump: Performance Consideration
- Performance Initialization Parameters
- Data Pump Access Path: Considerations
- Using Enterprise Manager to Monitor Data Pump Jobs
- External Table Population
- Using External Tables
- External Table Population with ORACLE\_DATAPUMP
- External Table Population with
- ORACLE\_LOADER



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