

A Relational Database Management System (RDBMS) is a software system that allows you to create and manage a Relational Database. Minimum requirements for such a system are defined by both ANSI and ISO. Database administration involves installation and management of a database, which includes security, performance, backup / recovery, and reliability. Oracle Database 11g is designed to automate many of the functions previously managed by an Oracle Database Administrator manually.

This class will develop the key fundamental skills necessary to be an Oracle DBA. Students will design and create a server using the Optimal Flexible Architecture (OFA), configure logical and physical structures, set up database and user security, add and administer users, and monitor and tune main server areas. Each student will create a toolkit of administration scripts for database management and tuning by the end of this class.

### Course Objectives:

- Create an Oracle Database using the Oracle Database Creation Assistant.
- Manage an Oracle Database.
- Configure various database structures.
- Set up database and user security.
- Add and administer users.
- Monitor and tune main server areas.

**Audience:** Non-Oracle database administrators, application developers, and system administrators.

**Prerequisites:** *Introduction to Oracle 11g*, or at least six months working in an Oracle technical environment. An understanding of relational database concepts, SQL, and PL/SQL programming skills are required. A solid understanding of Oracle schema is recommended.

**Number of Days:** 5 days

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| <p><b>1. Course Introduction</b><br/>         Course Objectives<br/>         Overview<br/>         Suggested References</p> <p><b>2. Overview of Oracle Database</b><br/>         ORACLE_HOME and ORACLE_SID<br/>         The Oracle Database vs. The Oracle Instance<br/>         Instance Memory Structures<br/>         Background Processes<br/>         Server Processes<br/>         Datafiles<br/>         Blocks, Extents, and Segments<br/>         Control Files<br/>         Redo Logs<br/>         The Oracle Architecture</p> | <p><b>3. Starting and Shutting Down an Oracle Database</b><br/>         SYSDBA and SYSOPER System Privileges<br/>         Oracle Database Startup<br/>         Oracle Database Shutdown<br/>         Altering Database Availability<br/>         Suspending and Resuming a Database<br/>         Quiescing a Database<br/>         Tracking Database Activity - The Alert Log<br/>         Data Dictionary Views for Startup and Shutdown</p> <p><b>4. Using The Oracle Data Dictionary</b><br/>         Introducing the Data Dictionary</p> |
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- DBA, ALL, and USER Data Dictionary Views
- V\$ Dynamic Performance Views
- Using Oracle Documentation to Locate Data Dictionary Views
- Combining Data Dictionary Views
- 5. Oracle Database Users and Schemas**
  - Users and Schemas
  - Oracle Default Database Users
  - Oracle Sample Schemas
  - Creating Users
  - Altering and Dropping Users
  - Data Dictionary Views For Users
- 6. Oracle System Privileges**
  - Overview of System Privileges
  - Granting and Revoking System Privileges
  - Data Dictionary Views for System Privileges
  - Roles
  - Creating and Removing Roles
  - Data Dictionary Views for Roles
  - Predefined Roles
  - User Group PUBLIC
- 7. Parameter Files**
  - Oracle Database Parameters
  - The Parameter File (PFILE) and the Server Parameter File (SPFILE)
  - Dynamic vs. Static Parameters
  - Determining Current Parameter Settings
  - Benefits of SPFILES over PFILES
  - Creating an SPFILE from a PFILE and Back Again
  - Understanding Scope
  - Session-Level Parameters
  - Data Dictionary Views for Parameters
- 8. Datafiles and Tablespaces**
  - Datafiles Overview
  - Tablespaces Overview
  - SYSTEM and SYSAUX Tablespaces
  - Creating Tablespaces
  - Dictionary- and Locally Managed Tablespaces
  - Locally Managed Tablespace Extent Allocation
  - Temporary Tablespaces
  - Temporary Tablespace Groups
  - Default Tablespaces
  - Tablespace Quotas
  - Dropping and Altering a Tablespace
  - Renaming a Tablespace
  - Renaming or Relocating Datafiles
  - Bigfile Tablespaces
  - Data Dictionary Views for Datafiles and Tablespaces
- 9. Control Files**
  - Control Files Overview
  - Database Parameters for Control Files
  - Backing Up Control Files
  - Restoring Control Files from Multiplexed Copies
  - Restoring Control Files from Backups
  - Moving Control Files
  - Data Dictionary Views for Control Files
- 10. Oracle Physical Structures — Online Redo Logs**
  - Redo
  - Redo Log Files
  - Database Parameters for Redo
  - Sizing the Redo Log Files
  - How Many Redo Log Groups?
  - Creating Redo Logs
  - Removing Redo Logs
  - Renaming Redo Log Files
  - Forcing Log Switches
  - Archiving Redo Logs
  - Configuring Archive Log Mode
  - Database Parameters for Archiving
  - Data Dictionary Views for Redo Logs
- 11. Oracle Physical Structures — Undo Segments**
  - Undo Overview
  - Database Parameters for Undo
  - Creating Undo Tablespaces
  - Altering and Dropping Undo Tablespaces
  - Switching Undo Tablespaces
  - Undo Advisor
  - Data Dictionary Views for Undo
- 12. Segment Space Management**
  - Blocks, Extents and Segments
  - Fragmentation

- Coalescing Fragmented Space
- Row Migration and Chaining
- Manual Segment Space Usage
- Automatic Segment Space Management
- Data Dictionary Views for Physical Objects
- 13. Tables**
  - Tables Overview
  - Physical Properties of Tables
  - Creating Tables
  - Table Storage and Logging
  - Altering Tables
  - Dropping Tables
  - The Recycle Bin
  - The TRUNCATE COMMAND
  - Temporary Tables
  - Clustered Tables
  - Indexed-Organized Tables
  - Creating an IOT
  - Data Dictionary Views for Tables
- 14. Indexes**
  - Indexes
  - B-tree Indexes
  - NULL Values and Indexes
  - NULL Values and Unique Indexes
  - Creating Indexes
  - Monitoring Index Usage
  - Dropping Indexes
  - Rebuilding and Moving Indexes
  - Coalescing Indexes
  - Bitmap Indexes
  - Special Index Types
  - Index Key Compression
  - Data Dictionary Views for Indexes
- 15. Constraints**
  - Integrity Constraints
  - Constraint Names and Syntax
  - Constraint Checking
  - Managing Primary Key Constraints
  - Managing NOT NULL Constraints
  - Managing Check Constraints
  - Managing Foreign Key Constraints
  - Data Dictionary Views for Constraints
- 16. Views**
  - Views
  - Creating and Replacing Views
- 17. Object Privileges**
  - Object Privileges
  - Granting and Revoking Object Privileges
  - Using WITH GRANT OPTION
  - Revoking and the GRANT OPTION
  - Data Dictionary Views for Object Privileges
- 18. Synonyms**
  - Synonyms
  - Private and Public Synonyms
  - Creating and Dropping Synonyms
  - Security and Synonyms
  - Object Precedence
- 19. The Optimizer and Statistics**
  - Optimizer Overview
  - Optimizer Statistics
  - Data Dictionary Views and Statistics
  - Collecting Statistics
  - Removing Statistics
  - Automated Statistics Collection
- 20. Oracle Net Services**
  - Oracle Networking Explained
  - The Net Configuration Assistant
  - Configuring the Listener — GUI
  - Configuring the Listener — Manually
  - Configuring the Client — GUI
  - Configuring the Client — Manually
- 21. Data Pump**
  - Oracle Data Pump Architecture
  - Configuring for Data Pump
  - Command-Line Utilities
  - Exporting With expdp
  - Importing With impdp
  - Interactive Mode
  - Attaching to a Running Job
  - Parallel Data Pump
  - Data Dictionary Views for Data Pump
- 22. SQL\*Loader and External Tables**
  - SQL\*Loader
  - SQL\*Loader Control File

- Loading Data with SQL\*Loader
- Conventional vs. Direct Path Loads
- External Tables Overview
- Creating an External Table
- Creating a Writable External Table
- 23. Back Up Your Database**
  - Physical Backups vs. Logical Backups
  - Offline Backup Basics
  - Oracle Offline Backup Steps
  - Other Backup Considerations
  - Advanced Backup Concepts
  - RMAN
- 24. Recover Your Database**
  - Offline Recovery Basics
  - Restoration Using Offline Backups for a NOARCHIVE Database
  - Restoring Other Files
  - Other Recovery Considerations
- 25. Oracle Enterprise Manager**
  - Introducing Oracle Enterprise Manager
  - OEM Architecture and Physical Structure
  - Installing OEM When Using DBCA
  - Using EMCA to Install OEM
  - Managing OEM
  - Removing OEM
  - Troubleshooting OEM
  - Securing OEM
  - Starting OEM
  - Introducing the OEM Home Pages
  - Using OEM — Managing the Job Scheduler
  - Using OEM — Using Metrics, Alerts, and Thresholds
  - Automatic Workload Repository
  - The Automatic Database Diagnostic Monitor — ADDM
  - OEM and Advisors
  - The SQL Access Advisor
- 26. Appendix A – Installing Oracle Software**
  - Optimal Flexible Architecture
  - OFA Directory Layouts
  - The Oracle Universal Installer
  - OUI Installation Modes
  - Preparing To Install Software
- Starter Database
- Installing the Oracle Software
- Deinstalling Oracle Software
- 27. Appendix B – Creating a Database Using the DBCA**
  - The DBCA
  - Select a Database Template
  - Specify the Database Name
  - Set System Account Passwords
  - Specify File Locations
  - Install Sample Schemas
  - Security Settings
  - Automatic Maintenance Tasks
  - Specify Storage Parameters
  - Create Your Oracle Database
  - Oracle Net Configuration Assistant
  - Configure the Listener
  - Set TCP Parameters
  - Removing a Database with the DBCA
- 28. Appendix C – Manual Database Creation**
  - Manual Database Creation
  - Prepare the System
  - Creating the Parameter File
  - The CREATE DATABASE Statement
  - Manually Create the Database
  - Finalizing the Creation
  - SQL.BSQ File
  - Creating the Service on Windows
- 29. Appendix D – Auditing the Database**
  - Auditing Explained
  - Data Dictionary Views for Auditing
  - Audit Trail, OS, and DB
  - Statement Auditing
  - Privilege Auditing
  - Object Auditing