ORACLE 12c Release 2 DBA I (5 Days)

Course Description

This course provides a complete, hands-on introduction to Oracle Database Administration including the use of Enterprise Manager Database Express (EMDE), SQL Developer and SQL*Plus.

Target Audience

This course is appropriate for anyone needing to understand and manage an Oracle 12c database or those needing a general understanding of Oracle database functionality. That would include end users, business analysts, application developers, database administrators and IT management.

Prerequisites

Oracle12c SQL is required. Oracle12c PL/SQL is highly desirable.

Course Content

CHAPTER 1 – INTRODUCTION

COMPONENTS OF AN ORACLE DATABASE
DUTIES OF A DATABASE ADMINISTRATOR
DBA MANAGEMENT TOOLS
REVIEW OF THE SAMPLE SCHEMA

- The Taxes Table
- The ZipCodes Table
- The Jobs Table
- The Departments Table
- The Employees Table
- Objects In The EL Model
- Analysis
- Join Conditions

SQL*PLUS

- Starting SQL*Plus
- SQL Commands
- PL/SQL Commands
- SQL*Plus Commands
- Login.sql (login.sql In Linux / UNIX)

SQL DEVELOPER
A BRIEF OVERVIEW OF SQL

WHAT GENERATION?
WHAT SUBLANGUAGES ARE SUPPORTED?
KEY SINGLE ROW FUNCTIONS
KEY GROUP FUNCTIONS
KEY ANALYTICAL FUNCTIONS
OTHER AVAILABLE ANALYTICAL TOOLS
HELP ME!
OBJECT NAMING
WHAT ARE THE KEY DATATYPES?
WHAT CONSTRAINTS ARE AVAILABLE FOR TABLE DEFINITIONS?
HOW DO YOU SELECT FROM MULTIPLE TABLES?
WHAT IS A SELF JOIN?
WHAT ELSE CAN YOU DO WITH A SELF REFERENCE?
NEW SQL FEATURES OF NOTE IN ORACLE12C

- Top N And Bottom N Queries
- Using Extended Datatypes
- DEFAULT Values
- IDENTITY Columns
- Invisible Columns
- Temporal Validity
- Pattern Matching
- Creating Multiple Indexes On Columns
- Miscellaneous New SQL Features

A BRIEF OVERVIEW OF PL/SQL
NEW PL/SQL FEATURES OF NOTE IN ORACLE12C

- White Lists
- The WITH Clause For Functions
- PRAGMA UDF
- New Inquiry Directives
- New DBMS_SQL Functionality
- Enhanced Language Interface Features
- Miscellaneous New PL/SQL Features For Oracle12c

LAB 1: INTRODUCTION
LAB 1 SOLUTIONS: INTRODUCTION

CHAPTER 2 – CREATING ORACLE DATABASES
OVERVIEW OF DATABASE CREATION
THE ORACLE UNIVERSAL INSTALLER
PREREQUISE TASKS

- Getting On The Server
- Memory Requirements
- Hardware Requirements
- Software Requirements

- Kernel Requirements
- Resource Limits
- Package Requirements
- Required Users And Groups
- Required Directories
- What About Windows?

RUNNING THE INSTALLER
POST INSTALLATION
- Environment

USING THE DATABASE CONFIGURATION ASSISTANT
DATABASE TEMPLATES
LAB 2: CREATING ORACLE DATABASES
LAB 2 SOLUTIONS: CREATING ORACLE DATABASES

CHAPTER 3 – BASIC DATABASE ADMINISTRATION
A BRIEF ROADMAP
- Basic Database Administration
- Oracle Networking
- Instance Management
- Storage Management
- Oracle Security
- Schema Objects
- Backup And Recovery
- Oracle Advisors
- Problem Resolution
- Software Management
- Automated Storage

DATABASE MANAGEMENT USING EMDE
ENVIRONMENTAL VARIABLES
ACCESSING ENTERPRISE MANAGER DATABASE EXPRESS
- Enterprise Manager Database Express Access For Non-DBA Users

DATABASE ADMINISTRATION WITH OTHER TOOLS
LAB 3: BASIC DATABASE ADMINISTRATION
LAB 3 SOLUTIONS: BASIC DATABASE ADMINISTRATION

CHAPTER 4 – ORACLE NETWORKING
ORACLE NETWORKING OVERVIEW
THE ORACLE NET LISTENER
MAKING A CONNECTION
- Using Easy Connect
- Using Local Naming

USING NET MANAGER
CONTROLLING THE LISTENER

- Starting And Stopping The Listener
- Securing The Listener

TROUBLESHOOTING NETWORKING
LAB 4: ORACLE NETWORKING
LAB 4 SOLUTIONS: ORACLE NETWORKING
CHAPTER 5 – INSTANCE MANAGEMENT
MANAGING THE ORACLE INSTANCE

- Needed Vocabulary

GETTING THE DATABASE UP
CHANGING PARAMETERS
BACKGROUND PROCESSES
OTHER PROCESSES
CONTROLLING MEMORY USAGE
THE STARTUP PROCESS
STARTUP NOMOUNT
STARTUP MOUNT
STARTUP | STARTUP OPEN
STARTUP RESTRICT | STARTUP OPEN RESTRICT
STARTUP FORCE
THE SHUTDOWN PROCESS
SHUTDOWN | SHUTDOWN NORMAL
SHUTDOWN TRANSACTIONAL
SHUTDOWN IMMEDIATE
SHUTDOWN ABORT

- The Overall Shutdown Process
- Using Services For Startup / Shutdown

MEMORY MANAGEMENT
ALTERNATIVE ARCHITECTURES

- Real Application Clusters
- Pluggable Databases
- Application Containers
- Oracle Sharding
    - Sharding Benefits
    - Sharding Components
    - Application Suitability

LAB 5: INSTANCE MANAGEMENT
LAB 5 SOLUTIONS: INSTANCE MANAGEMENT

CHAPTER 6 – STORAGE MANAGEMENT
THE BASIC LOGICAL STRUCTURES

- The Block

- The Extent
- The Segment
- The Tablespace
- The Database

THE PHYSICAL STRUCTURES
- More About Control Files
- More About Online Redo Logs
- More About Archived Redo Logs
- More About Rollback Segments
- What Types Of Tablespaces Are There?
- Tablespace Status
- Default Tablespace Type
- Changing Tablespace Size
- Tablespace Properties
- Encrypted Tablespaces
- Why Add Tablespaces?

USING EMDE FOR STORAGE MANAGEMENT
CHANGING TABLESPACE AND OTHER ALERTS
MANAGING SPACE WITHIN TABLES AND INDEXES
SWITCHING LOG FILES
UNDO RETENTION
REVIEWING UNDO INFORMATION
THE UNDO ADVISOR
CHANGING UNDO TABLESPACE SIZE
LAB 6: STORAGE MANAGEMENT
LAB 6 SOLUTIONS: STORAGE MANAGEMENT

CHAPTER 7 – ORACLE SECURITY
CREATING USER ACCOUNTS
- Application Schemas
- Automatically Created Accounts

TYPES OF PRIVILEGES
ABOUT ROLES
PREDEFINED ROLES
VIEWING ROLES IN ENTERPRISE MANAGER DATABASE EXPRESS
CREATING ROLES IN ENTERPRISE MANAGER DATABASE EXPRESS
DROPPING A ROLE
ADMIN AND GRANT OPTIONS
SYSDBA / SYSOPER DETAILS
USER ACCOUNT ADMINISTRATION
CONSIDERATIONS REGARDING PASSWORD CASE SENSITIVITY
PROFILES AND PASSWORD POLICIES

OTHER SECURITY FEATURES

- Auditing
- Fine Grained Auditing
- The Virtual Private Database
- Oracle Label Security
- Oracle Database Vault
- Oracle Data Redaction

LAB 7: ORACLE SECURITY
LAB 7 SOLUTIONS: ORACLE SECURITY

CHAPTER 8 – SCHEMA OBJECTS

SCHEMA OBJECTS

- Object Naming
- Fully Qualified Naming
- Aliases
- Object Control
- Table Management
- Column Attributes
- Available Datatypes
- Large Object Enhancements
- Column Constraints
- Partitioning
- Table Storage Attributes
- Table Compression
- Accessing Table Information
- Creating A Table
- Adding Columns
- Dropping Columns
- Adding Constraints
- Disabling Constraints

LOADING DATA

- Field Delimited Data
- Comma Delimited Data
- SQL Developer Import
- SQL Developer Export

ABOUT INDEXES

- Index Creation

VIEWS

- Permission Control Within Views

STORED PROCEDURES
OTHER OBJECTS

- Materialized Views
- Synonyms
- Sequences
- Database Links

LAB 8: SCHEMA OBJECTS
LAB 8 SOLUTIONS: SCHEMA OBJECTS

CHAPTER 9 – BACKUP AND RECOVERY
OVERVIEW / KEY CONCEPTS
USERS FOR BACKUP
THE FAST RECOVERY AREA
THE RMAN REPOSITORY
DATABASE CONFIGURATION
RMAN CONFIGURATION
BLOCK CHANGE TRACKING
ORACLE SECURE BACKUPS
ORACLE SUGGESTED BACKUP STRATEGY
SCHEDULING BACKUPS
BACKUP VALIDATION AND OTHER RMAN MAINTENANCE
RESTORE VALIDATION
THE REPORT COMMAND
THE LIST COMMAND
ORACLE ADVISED RECOVERY
USER-DIRECTED RECOVERY
FLASHBACK TABLE
FLASHBACK TO BEFORE DROP
FLASHBACK DATABASE
MANUAL RESTORE AND RECOVER
THE RECOVERY CATALOG
BACKUP MANAGEMENT
MONITORING FRA SPACE USAGE
ORACLE ADVISED RECOVERY
LAB 9: BACKUP AND RECOVERY
LAB 9 SOLUTIONS: BACKUP AND RECOVERY

CHAPTER 10 – ORACLE ADVISORS
PROACTIVE MONITORING

- The Automatic Database Diagnostic Monitor

MONITORING THE DATABASE WITH EMDE
USING THE PERFORMANCE HUB

- The Summary Tab
- The RAC Tab
- The Activity Tab

- The Workload Tab
- The Monitored SQL Tab
- The ADDM Tab
- The Current ADDM Findings Tab
- The Database Time Tab
- The Resources Tab
- The System Statistics Tab
- Workload Repository Reports
- Modifying Automatic Snapshot Settings

USING OTHER ADVISORS

- SQL Tuning Advisor Details
- The Automatic SQL Tuning Advisor
- SQL Access Advisor
- Running Memory Advisors

REAL APPLICATION TESTING

- Database Replay
- SQL Performance Analyzer (SPA)

LAB 10: ORACLE ADVISORS
LAB 10 SOLUTIONS: ORACLE ADVISORS

CHAPTER 11 – PROBLEM RESOLUTION
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THE RESOLUTION PROCESS
LAB 11: PROBLEM RESOLUTION
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CHAPTER 12 – SOFTWARE MANAGEMENT
PATCH MANAGEMENT
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THE ASM INSTANCE
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CREATING AND DROPPING DISK GROUPS
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CHAPTER 14 – HARDENING THE DATABASE
ELIMINATING SINGLE POINTS OF FAILURE
HARDENING DATA FILES
HARDENING THE CONTROL FILES
HARDENING THE REDO LOGS

- Adding Redo Log Groups

HARDENING THE ARCHIVED REDO LOGS
HARDENING THE PERIPHERAL FILES
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LAB 14 SOLUTIONS: HARDENING THE DATABASE

CHAPTER 15 – OS BACKUP & RECOVERY
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CLOSED RESTORE IN NOARCHIVELOG MODE
OPEN BACKUPS IN ARCHIVELOG MODE
RESTORING IN ARCHIVELOG MODE
RECOVERY IN ARCHIVELOG MODE
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RUNNING SCRIPTS IN RMAN
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LAB 16 SOLUTIONS: ADVANCED RECOVERY MANAGER

CHAPTER 17 – DATA PUMP
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- Command Line Syntax
- Using Interactive Mode
- Reattaching
- Data Pump Import Options
- EXPDP Examples
- IMPDP Examples

ENTERPRISE MANAGER DATABASE EXPRESS AND DATA PUMP
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CHAPTER 18 – ADVANCED SECURITY

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- Implementation Tasks
- Our Example Scenario
- The Policy Package
- The Dynamic Predicate Package
- Creating The Context And The Trigger
- Using DBMS_RLS
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CHAPTER 19 – SHARED SERVER

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DBMS_LOGMNR.START_LOGMNR
DBMS_LOGMNR. END_LOGMNR
DBMS_LOGMNR.MINE_VALUE
DBMS_LOGMNR.COLUMN_PRESENT
DBMS_LOGMNR_D
DBMS_LOGMNR_D.BUILD
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