DB2 9 Database Administration Workshop for Linux, UNIX, and Windows

Information

Length:	4.0 Days
__Ref:	CL2X2G-X
Delivery method:	Classroom
Price:	AUD

Overview

This course is designed to teach you how to perform database administration tasks using DB2 9. These tasks include creating DB2 instances, creating and populating databases, and using logical design to support concurrency and recovery requirements. New features, such as range partitioning, data row compression, and pure XML (native XML storage) will be introduced. Hands-on exercises provide an option of using either a Linux, or Windows operating system.

Course Materials

The course materials address DB2 9.7 for Linux, UNIX, and Windows.

Hands-On Labs

Ten labs are included to address DB2 9.7 for Linux, UNIX, and Windows. Note that there is no AIX environment and AIX labs are not supported.

Public

This intermediate course is for System administrators, database administrators, and technical personnel involved in planning, implementing, and maintaining DB2 databases.

This course is appropriate for students using DB2 in a z/Linux environment.

Prerequisits

You should be able to:

- Use basic OS functions such as utilities, file permissions, hierarchical file system, commands, and editor
- State the functions of the Structured Query Language (SQL), and be able to construct DDL, DML, and authorization statements
- Discuss basic relational database concepts and objects such as tables, indexes, views, and joins

These skills can be developed by taking:

Basic OS functions:

- Windows Operating System Training
- Linux Operating System Training
- AIX Operating System Training
- **or** have equivalent administration experience
- SQL and relational database basics
- *DB2 SQL Workshop (CE121)*
- **or** have equivalent knowledge of SQL basics

Objective

- Administer a DB2 database system using commands and GUI tools
- Manage System Managed Storage (SMS) and Database Managed Storage (DMS) databases and apply data placement principles
- Implement a given logical database design using DB2 to support integrity and concurrency requirements
- List and describe the components of DB2
- Define a DB2 recovery strategy and perform the tasks necessary to support the strategy
- Use autonomic features of DB2
- Implement DB2 security

Topics

Overview of DB2 9 on Linux, UNIX and Windows

- Contrast the DB2 Family of products
- Identify the DB2 Products
- Describe the functions of DB2 components
- Explore installation and parameters

Command Line Processor (CLP) and GUI usage

- Use the Command Line Processor
- Explore the GUI environment
- Describe the DAS role with GUI tools

The DB2 environment

- Specify the key features of an Instance
- Create and drop an Instance

- Use db2start and db2stop
- Distinguish between types of configuration
- Describe and modify the Database Manager Configuration

Creating databases and data placement

- Review specifics of creating a database
- Explore the System Catalog tables and views
- Compare DMS versus SMS table spaces
- Describe how to setup and manage a DB2 database with Automatic Storage enabled
- Differentiate between table spaces, containers, extents, and pages
- Define table spaces
- Use the get snapshot for tablespaces command to display table space statistics
- Explore Database configuration parameters

Creating database objects

- List DB2 object hierarchy and physical directories and files
- Create the following objects: Schema, Table, View, Alias, Index
- Explore the use of table partitioning
- Review the use of Temporary Tables
- Explore the use and implementation of Check Constraints, Referential Integrity and Triggers
- Exploring the need for and the use of Large Objects
- Recognize XML and its native store as critical infrastructure for emerging technologies

Moving data

- Discuss the INSERT statement and recognize its limitations
- Explain the differences between IMPORT and LOAD
- Explain the EXPORT, IMPORT, and LOAD syntax
- Create and use Exception Tables and Dump-Files
- Distinguish and resolve Table States: Load Pending and Set Integrity Pending
- Use the SET INTEGRITY command
- Discuss the db2move and db2look commands

Backup and recovery

- Describe the major principles and methods for backup and recovery
- State the three types of recovery used by DB2
- Explain the importance of logging for backup and recovery
- Describe how data logging takes place, including circular logging and archival logging
- Use the BACKUP, RESTORE, and ROLLFORWARD commands

- Perform a table space backup and recovery
- Restore a database to the end of logs or to a point-in-time
- Discuss the configuration parameters and the recovery history file and use these to handle various backup and recovery scenarios

Locking and concurrency

- Explain why locking is needed
- List objects that can be locked
- Describe and discuss the various lock modes and their compatibility
- Explain four different levels of data protection
- Set isolation level and lock time out for current activity
- Explain lock conversion and escalation
- Describe the situation that causes deadlocks

Problem determination

- Collect information for problem analysis and resolution
- Use error logs for basic problem analysis
- Describe four types of monitors: Snapshot Monitor, Event Monitor, Activity Monitor, and Health Monitor
- Describe the function of EXPLAIN and use this facility to assist basic analysis
- Use a series of basic commands to better work with connections and sessions
- Retrieve statistics and other information from a running DB2 instance
- Use RUNSTATS, REORGCHK, and REORG to resolve application performance problems

Security

- Use DB2 access control mechanisms to implement security within the database
- Use group IDs to create a control hierarchy
- Describe Label Based Access Control (LBAC)
- Describe privileges within a database
- Describe privileges required for binding and executing a package
- Describe the difference between explicit privileges and implicit privileges
- Describe the different DB2 authorization levels

Agenda
Day 1

- Welcome
- Unit 1 - Overview of DB2 on Linux, UNIX and Windows
- Lab 1 (Starting your lab environment)

- Unit 2 - Command Line Processor (CLP) and GUI usage
- Lab 2 (DB2 CLP usage)
- Unit 3 - The DB2 environment
- Lab 3 (Create an instance and explore the environment)

Day 2

- Unit 4 - Creating databases and data placement
- Lab 4 (Creating databases and data placement)
- Unit 5 - Creating database objects
- Lab 5 (Create objects)
- Unit 6 - Moving data
- Lab 6 (Moving data)

Day 3

- Unit 7 - Backup and recovery
- Lab 7 (Backup and recovery)
- Unit 8 - Locking and concurrency
- Lab 8 (Investigating DB2 locking)

Day 4

- Unit 9 - Problem determination
- Lab 9 (Problem determination)
- Unit 10 - Security
- Lab 10 (Security)