

Quickstart for Experienced Relational DBAs Db2 11.1

Overview of Db2 11

- Describe the system platforms supported by the Db2 Family of products
- Compare the features available with different Db2 product editions
- Select the appropriate Db2 client software to support application client or server systems
- Choose a method to install your Db2 product edition and plan migrations of existing Db2 servers to the latest release
- Compare cloud-based Db2 options to a locally installed Db2 server

Db2 Command Line Processor (CLP) and GUI tools

- Utilize the Db2 Command Line Processor to run Db2 commands, SQL statements and command scripts
- Invoke the CLPPlus command line processor to connect databases and to define, edit, and run statements, scripts, and commands
- List some of the ways IBM Data Server Manager can be used to support Db2 database administration and SQL execution with Db2 servers

The Db2 database manager instance

- Specify the key features of an instance
- Create and drop a Db2 instance
- Use db2start and db2stop commands to manage a Db2 instance
- Display and set Db2 registry variables
- Describe and modify the database manager configuration

Creating databases and data placement

- Plan the initial storage allocations for a database including catalog tables and log files
- Create a new database using Db2 native encryption
- Explore the System Catalog tables and views
- Check and update Database configuration parameter settings
- Compare DMS and Automatic Storage management for table space
- Differentiate between table spaces, containers, extents, and pages

- Create and alter table spaces
- Use Db2 commands and SQL statements to display current table space statistics and status information

Creating database objects

- Create schemas, tables, views, aliases, and indices
- Review the use of temporary tables,
- Explore the use and implementation of check constraints, referential integrity and triggers
- Use BLU Acceleration, column-organized tables to improve analytics query performance
- Explain the difference between system-period temporal tables and Application-period temporal tables
- List the types of compression available for tables and indexes
- Use the db2look utility to export database structures for future use

Moving data

- Discuss using the INSERT SQL statement to populate tables
- Explain the differences between IMPORT and LOAD processing
- Explain the EXPORT, IMPORT, and LOAD command options
- Create and use Exception Tables and Dump-Files
- Check table status using LOAD QUERY
- Describe the ANALYZE phase of LOAD command processing used for loading BLU Acceleration, column-organized tables.
- Check the Load Pending and Set Integrity Pending status for a table
- Use the SET INTEGRITY command
- Discuss the db2move and db2look commands
- Use the ADMIN_MOVE_TABLE procedure to move a table to different table spaces
- List some of the features of the Ingest utility for continuous data ingest

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, ROLLFORWARD and RECOVER 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
- Create an encrypted backup image to improve data security

Database maintenance, monitoring and problem determination

- Plan the use of RUNSTATS, REORGCHK and REORG utilities for maintaining database efficiency
- Configure the Db2 instance to set the location for diagnostic data and message severity levels for basic problem analysis
- Describe the methods that can be used for monitoring database and application activity including db2pd commands, Event Monitors and using SQL statements to access statistics
- Describe the function of EXPLAIN and use this facility to assist basic analysis
- Use the db2advis command to analyze a workload for potential performance improvements
- Use the db2fodc command to collect diagnostic data for a system hang

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
- Create a LOCKING EVENT monitor to collect lock related diagnostics
- Set database configuration options to control locking event capture

Security

- Use Db2 access control mechanisms to implement security within the database
- Explain the tasks performed by the SYSADM user, the SECADM user and a DBADM user
- Compare the use of database roles to user groups for security
- Describe privileges required for binding and executing an application package
- Describe the difference between explicit privileges and implicit privileges
- List the methods for implementing encryption for database connections
- List the advantages of creating a Trusted Context for a three-tier application system

Database rebuild support

- Review the considerations of using standard Db2 database recovery options
- Explain the capabilities of the REBUILD option for the RESTORE command
- List the types of information included in each Db2 backup image and describe how it is used to support rebuilding a database
- Plan for supporting database and disaster recovery scenarios using Db2 database and table space backups using the RESTORE command with a REBUILD option
- Utilize LIST UTILITIES SHOW DETAIL to monitor progress of a RESTORE utility during database rebuilding

Db2 Database and tablespace relocation

- Explain the facility of the Db2 RESTORE command to recover table spaces to different containers
- Use the SET TABLESPACE CONTAINERS command to define new containers during a redirected restore
- Utilize the SET STOGROUP PATHS command to change the storage paths for automatic storage tablespaces in storage groups
- Plan the use of redirected restore as part of a disaster recovery
- Describe two methods that can be used to convert a DMS table space to utilize Automatic Storage
- Use the GENERATE SCRIPT option of RESTORE to set up a command script for a redirected restore operation

- Copy schemas from one database to another using the TRANSPORT option of the RESTORE utility
- Use db2relocatedb when moving or copying Db2 databases with non-Db2 utilities

Using Explain tools

- Use the IBM Data Server Manager Explain tool to review access plans
- Examine access plan detailed information using the db2exfmt reports
- Create a set of Explain tables used by Visual Explain tools and db2exfmt
- Set the Explain mode special register to capture the Explain data for analysis of dynamic SQL statements
- Use the db2expln report to analyze access plans for dynamic or static SQL statements
- Utilize the Activities Event monitor to create Explain reports that include estimated and actual row counts

Using Indexes for performance

- Describe the Indexing options that can be used to improve performance:
- Index Only Access
- Clustered Index
- Reverse Scans
- Include Columns
- Index Freespace
- Describe the Block Indexing capability for MDC tables
- Monitor index usage using the MON_GET_INDEX function and db2pd commands
- Explain how multiple indexes can be combined using Index ORing and Dynamic Bitmap Index ANDing
- Use the Design Advisor to predict performance gains from adding new indexes or using MDC tables

Advanced monitoring

- Describe the infrastructure used to support monitoring
- Configure a database to collect the activity, request and object metrics returned by the Monitoring Table functions

- Investigate current application activity that might indicate performance problems using SQL statements
- Use the Db2-provided views and functions in SQL to evaluate efficient use of database memory for locks, sorting and database buffer pools
- Check database health indicators, like log space available and table space utilization using CLP queries using Monitor functions and views