

Db2 Concepts and SQL for Mainframe LUW

Course Summary

Description

This course provides an introduction to Db2 concepts, as well as SQL. Students will learn the basics of writing queries and advanced topics of joining multiple tables. Participants will learn how to create Db2 tables, indexes and views. Students will learn the best practices for updating data in Db2 databases, as well as security. An introduction to stored procedures includes a discussion of cursor and non-cursor processing.

Objectives

After taking this course, students will be able to:

- Understand the concept of relational databases and the Db2 environment
- Understand basic and advanced SQL coding syntax
- Utilize coding conventions and syntax in SQL statements used to develop Db2 applications
- Understand Db2 physical structure including indexes
- Learn how to code SQL statements that manipulate and define Db2 tables

Topics

- Db2 Concepts and Terminology
- Basic and Advanced SQL Topics
- Implementing Security
- Db2 Physical Storage
- Creation of Tables, Indexes, and Views
- Cursor and Non-Cursor Processing
- Stored Procedures

Audience

This course is designed for application programmers and programmer/analysts who will be using SQL to create and retrieve data from Db2 databases. This course can be taught on either Db2 LUW or Mainframe platforms.

Prerequisites

Before taking this course, students should have general knowledge of data processing concepts and some programming experience helpful.

Duration

Three days

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Course Outline

- I. One Db2 Overview**
 - A. What is Db2?
 - B. What is the History Behind Db2?
 - C. What are Db2's Objectives?
 - D. What is a Relational DBMS?
 - E. What are Db2's Features?
 - F. SQL
 - G. Unit of Recovery
 - H. Commit / Rollback
 - I. Db2 Terminology
 - J. Physical Hierarchy of Db2 Objects
 - K. Naming Conventions
 - L. Object Naming Conventions
 - M. Databases
 - N. Db2 and Disk Space
 - O. Page Management
 - P. Tablespace
 - Q. Base Tables
 - R. View Table
 - S. Synonym
 - T. Indexes
 - U. Stored Procedures and Functions
 - V. Db2 Alphanumeric Data Types
 - W. Db2 Numeric Data Types
 - X. Data and Time Data Types
 - Y. Display Formats
 - Z. Identity Column Attribute
 - AA. DISTINCT Data Type
 - BB. Db2 Catalogs
- II. Basic Data Manipulation**
 - A. Structured Query Language (SQL)
 - B. Table Names
 - C. Basic SELECT Statement
 - D. WHERE Clause
 - E. INEQUALITIES
 - F. Specific Column Selection
 - G. Case Expression
 - H. Derived Columns
 - I. Date and Time Usage
 - J. Common Special Registers
 - K. User Request #1
 - L. ORDER BY Clause - The Results
Table Sort
 - M. Ordering Derived Columns
 - N. DISTINCT Operand
- O. Expanding on the WHERE Clause**
- P. Multiple Conditions**
- Q. BETWEEN Clause**
- R. IN Clause**
- S. LIKE Clause**
- T. User Request #2**
- U. Negative logic**
- V. NULLS**
- W. Types of Built In Functions**
- X. Aggregate Functions**
- Y. User Request # 3**
- Z. Scalar Functions**
 - 1. Date or Time
 - 2. Hour, Minute, Second, Year,
Month, Day
 - 3. Days
 - 4. Decimal
 - 5. Digits
 - 6. Coalesce
 - 7. UCASE and LCASE
 - 8. Substr
 - 9. Concatenation
- AA. GROUP BY Clause**
- BB. HAVING Clause**
- CC. User Request # 4**
- III. Advanced Data Manipulation**
 - A. Join
 - B. User Request # 5
 - C. Subquery
 - D. Single Value Subquery
 - E. Multi-valued Subqueries
 - F. User request # 6
 - G. Correlated Subqueries
 - H. Union
 - I. Union All
 - J. Rules for Union
 - K. Performance Considerations
 - L. User Request #7
- IV. Update Data Manipulation**
 - A. Insert
 - B. Update
 - C. Delete

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Course Outline (cont'd)

V. Data Definition Language

- A. Structured Query Language (SQL)
- B. DDL - Create Table Statement
- C. Identity Column
- D. Check Constraints
- E. DDL - Alter Table Statement
- F. DDL - Not NULL with Default
- G. DDL - Deleting Db2 Objects
- H. DDL - Index
- I. DDL - Unique Versus Non-Unique
- J. DDL - Cluster Versus Non-Cluster
- K. DDL - Cluster Index
- L. DDL - Index Create
- M. DDL - Views

VI. Db2 Stored Procedures

- A. Coding Considerations
- B. Coding Considerations – Non Cursor
- C. Coding Considerations - Cursor
- D. Cursor Exercise
- E. Creating Stored Procedures
- F. Optional Exercise

VII. Data Control Language

- A. Structured Query Language (SQL)
- B. DCL - Security
- C. DCL - Resources and Users
- D. DCL - Privileges
- E. DCL - Implicit Versus Explicit
- F. DCL - Grant/Revoke
- G. DCL - Grant
- H. DCL - Revoke

VIII. Appendix A

- A. Contents of STAFF
- B. Contents of ORG
- C. Contents of APPLICANT