DB2/400, SQL, and Application Programming

INFORMATION SERVICES INTERNATIONAL
A SENCO COMPANY

Duration: 5 days **Course Number:** ISI-DB2-20

Description

This hands-on workshop teaches students the concepts, skills, and techniques required to write COBOL programs that use SQL to access DB2 data in an OS/400 environment. The concepts of DB2 are presented and discussed, and the Structured Query Language (SQL) is presented as the means to access DB2 data (and to create and secure DB2 components). DB2 programming/ embedding SQL in a COBOL application program is presented and discussed in detail. A shell program is modified to SELECT a single row, FETCH multiple rows, INSERT, UPDATE, and DELETE row(s), use referential integrity, and use column functions and grouping. Upon successful completion of this class, students will be able to:

- Explain AS/400 concepts, terminology and components.
- Explain DB2 concepts, terminology and components.
- Discuss the Primary Key (PK), Unique Key (UK) and Foreign Key (FK) concepts.
- Select rows of data from DB2 tables.
- Use AS/400 Command Editor to run SQL statements.
- Use the WHERE clause to select specific rows of a DB2 table.
- Build queries using the ORDER BY, GROUP BY, HAVING clauses.
- Use the CASE expressions and several scalar / column functions.
- Access multiple tables - JOIN, UNION, sub-queries, and nested table expressions.
- Create Tables, Indexes, and Views.
- Modify table data using the INSERT, UPDATE, and DELETE statements.
- Describe the security provided by the GRANT and REVOKE.
- Discuss the design considerations of referential integrity.
- Perform DCLGENs to build table definitions and I/O areas.
- Modify a shell program to select a single row, multiple rows, and change rows.
- Discuss the importance of the SQLCODE and how to test for it.
- Discuss overall DB2 performance considerations.
- Run EXPLAIN to analyze the performance of SQL statements.

Several guided, hands-on, practice sessions give each attendee an opportunity to use SQL to access data.

Audience

Application programmers that need use SQL to develop COBOL programs to access DB2 data in an AS/400 environment.

Prerequisites

- Basic knowledge of the OS/400 operating system.
- Six months of COBOL programming experience is recommended.

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Course Agenda

Day 1

AS/400 Overview – Architecture, Run SQL, Prepare/Run a COBOL program

Introduction to DB2 - Concepts, and Terminology

Structured Query Language (SQL)

- The SELECT Statement
- Hands-on Lab: SELECT
- DB2 Interactive
- SQL Functions
- Hands-on Lab: SELECT / Special Features
- The ORDER BY, GROUP BY, and HAVING Clauses
- Hands-on Lab: ORDER BY, GROUP BY, and HAVING

Day 2

Structured Query Language (continued)

- Joins, Subselects, and Unions
- Hands-on Lab: Joins, Subselects, and Unions
- Data Definition Language
- The INSERT, UPDATE, DELETE Statements
- Hands-on Lab: Creating DB2 Components and INSERT, UPDATE, and DELETE
- Other SQL Topics

Day 3

DB2 Application Programming

- Overview
- Data and Procedure Division Changes
- Hands-on Lab: Selecting a Single Row in a Program
- Selecting Multiple Rows- The Cursor
- Hands-on Lab: Selecting More Than One Row

Course Agenda (continued)

Day 4

DB2 Application Programming (continued)

- Concurrency Control - Locking
- INSERT, UPDATE, DELETE Considerations
- Hands-on Lab: Updating and Referential Integrity

Day 5

DB2 Application Programming (Continued)

- Hands-on Lab: Updating and Referential Integrity

Additional Topics

- Other Programming Considerations
- DB2 Performance Introduction
- Hands-on Lab: Analyze SQL statements

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