Course Outline

Embedded SQL Coding for Application Developers

Course Summary

Description

Db2 for z/OS Embedded SQL Programming is a 2 day course targeting the needs of programmers and developers writing applications that access data stored in the Db2 environment.
The presentation is an integrated mixture of lecture and workshop activities that introduce and reinforce the basic techniques and approaches to relational database technology as implemented in Db2. Topics covered include structure and manipulation of Db2 data, operational considerations in both on-line and batch environments; integrity; embedded programming techniques and preparation.
Material comprising the course is consistent with Db2 for z/OS. The workshop activities follow the classroom material and are designed for both topic reinforcement and practice. Programming topics are supported by workshops in both the on-line and batch environment, this includes precompiling, compiling, linking, and the various options of the Db2 BIND. This class may be taken in conjunction with the 3-day Db2 for z/OS Fundamentals and SQL Coding or the 3-day Advanced Embedded Programming course.

Objectives

At the end of this course, students will be able to:

- Describe the overall purpose of, and the approaches to manipulating data in a database management system
- List the features of Db2 for z/OS
- Describe the major objects used by Db2 for data manipulation
- Translate and code business problems in Structured Query Language
- Embed SQL in COBOL programs
- Prepare COBOL programs containing embedded SQL statements for execution in the z/OS batch environment
- Process multi-row tables with Db2 cursors
- State the internal approaches utilized by Db2 for accessing data

Topics

- Introduction to the Db2 for z/OS Development Environment
- Introduction to Embedded SQL
- Program Preparation
- Cursors
- Multi-Row Processing

Audience

Programmers, application developers and computer analysts who are exposed to, or are required to perform the activities associated with application development and implementation in a Db2 environment.

Prerequisites

Basic programming skills in the COBOL environment and familiarity with the z/OS environment and TSO/ISPF. A basic understanding of SQL

Duration

Two days

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I. Introduction to the Db2 for z/OS Development Environment
- A. The Db2 Environment on z/OS
- B. Db2 Support Structure
- C. Databases and Schemas
- D. Tablespaces
- E. Indexes
- F. The Db2 Catalog
- G. Structured Query Language

II. Introduction to Embedded SQL
- A. Program Preparation Overview
- B. SQL Program Development Steps
- C. Retrieving Data with SELECT...INTO
- D. Indicators in UPDATE and INSERT
- E. The SQL Communications Area
- F. SQLCODE and SQLSTATE
- G. Error Handling

III. Program Preparation
- A. Program Preparation Steps
- B. DCLGEN
- C. Program Preparation with Precompiler
- D. Program Preparation with Coprocessor
- E. The TSO Terminal Monitor Program
- F. The DSN RUN Subcommand
- G. TSO Batch Attachment
- H. Program Execution
- I. Multi-Threaded Attach
- J. BIND
- K. Debugging
- L. Generated Code
- M. Catalog Tables for Packages and PLANs

IV. Cursors
- A. Cursor Processing Overview
- B. DECLARE Cursor
- C. OPEN Cursor
- D. FETCH
- E. CLOSE Cursor
- F. A Complete Example
- G. Positioned UPDATE and DELETE
- H. Updating with a Read-Only Cursor
- I. Logical Unit of Work Overview
  1. COMMIT
  2. ROLLBACK and SAVEPOINT
  3. Two-Phase Commit Protocol

V. Multi-Row Processing
- A. ROWSET Processing Overview
- B. Multi-Row Fetch
- C. Updating and Deleting
- D. Multi-Row Insert
- E. GET DIAGNOSTICS
- F. Statement Diagnostic information
- G. Condition Diagnostic information