

DB2 Overview

Course Summary

Description

This two-day course is designed to provide students with a high-level overview of DB2 z/OS. You will learn about terminology, database concepts, basic SQL, as well as an introduction to application programming concepts. This course covers up through version 11.

Objectives

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

- Understand the concept of relational databases and the DB2 environment
- Illustrate the application analysis and design process for DB2 tables
- Identify the DB2 design and performance considerations during the design process
- Implement the normalization process used with relational databases
- Understand implementation of referential integrity
- 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
- Describe the process necessary to embed SQL statements in COBOL, PL/1, ALC or C programs and prepare them for execution in a DB2 environment
- Learn how to code SQL statements that manipulate and define DB2 tables

Topics

- DB2 Concepts and Terminology
- The Application Design Process
- DB2 Table Design
- Basic and Advanced SQL Topics
- Application Programming Considerations
- DB2 Physical Storage
- Referential Integrity Overview
- Program Preparation

Audience

This course is ideal for application programmers and programmer/analysts who will be using SQL statements in a high level programming language (COBOL or C or ALC) to manipulate DB2 tables in a CICS, TSO or IMS/TM environment. This course would also be beneficial to analysts and database administrators who support application teams.

Prerequisites

Prior to taking this course, students should have the following skills:

- Knowledge of one the programming languages listed
- Experience with TSO/ISPF
- Knowledge of file structures such as VSAM, IMS, or QSAM

Duration

Two days

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Course Outline

- I. DB2 Concepts and Facilities**
 - 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. DB2 TMP Interfaces
 - G. Operational Environment
 - H. SQL
 - I. Program Preparation Process
 - J. Unit of Recovery
 - K. Commit / Rollback
 - L. DB2 Terminology
 - M. Physical Hierarchy of DB2 Objects
 - N. Naming Conventions
 - O. Object Naming Conventions
 - P. Databases
 - Q. DB2 and VSAM
 - R. DB2 Catalogs
 - II. Basic Data Manipulation**
 - A. Structured Query Language (SQL)
 - B. Basic SELECT Statement
 - C. Table Names
 - D. WHERE Clause
 - E. Derived Columns
 - F. Date and Time Usage
 - G. Special Registers
 - H. Expanding on the WHERE Clause
 - I. Aggregate Functions
 - J. Scalar Functions
 - K. Scalar Function - Date or Time
 - L. Scalar Function - Days
 - M. Scalar Function - Substr
 - N. Scalar Function - Concatenation
 - III. Advanced Data Manipulation**
 - A. Join
 - B. Subquery
 - C. Union
 - IV. Update Data Manipulation**
 - A. INSERT
 - B. UPDATE
 - C. DELETE
 - D. DB2 Valid SQL Return Codes for Updating
 - V. Application Program Considerations**
 - A. DB2 Program Components
 - B. DB2 Additions to a Program Structure
 - C. Delimiters
 - D. Program Storage - Host Variables**
 - E. Program Storage - DCLGEN**
 - F. DCLGEN Utility**
 - G. Expanded Include Member - COBOL**
 - H. Expanded Include Member - Assembler**
 - I. SQLCA - SQL Communication Area**
 - J. SQLCA Field Definitions**
 - K. SQLWarning Definition**
 - L. Error Handling**
 - M. Unit of Work in an Application Program**
 - N. Commit**
 - O. Overview of Cursor and Non-Cursor Processing**
 - P. Non-Cursor Processing**
 - Q. DB2 to Host Language Data Type Conversion Chart**
 - 1. Non-Cursor Exercise
 - R. Cursor Processing Overview**
 - S. Declaring a Standard Cursor**
 - T. Declaring a Static, Dynamic or Rowset Scrollable Cursor**
 - U. OPEN Cursor**
 - V. FETCH Standard Cursor**
 - W. FETCH Scrollable Cursor**
 - X. FETCH Rowset Cursor**
 - Y. Cursor Update or Delete**
 - Z. CLOSE Cursor**
 - AA. Set Level Update in an Application Program**
 - BB. Example COBOL Program**
 - CC. Example Assembler Program**
 - 1. Cursor Exercise
- VI. Program Preparation Process**
 - A. Overall Procedure
 - B. Precompile
 - C. DB2 to Host Language Translations
 - D. Bind Procedure
 - E. Bind Panel
 - F. Rebind and Free
 - G. Validate Option
 - H. Timestamp
 - I. Program Isolation
 - J. Lock Table
 - K. Lock Duration
- VII. Data Definition Language**
 - A. Structured Query Language (SQL)
 - B. DDL - Referential Integrity
 - C. DDL - CREATE TABLE Statement
 - D. DDL - Views