Software Skills Training, Inc.

Contact Us
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Relational Database Design Concepts

Duration: 3 days *(Face-to-Face & Remote-Live)*, or 21 Hours *(On-Demand)*

Price: $1695 *(Face-to-Face & Remote-Live)*, or $895 *(On-Demand)*

Discounts: We offer multiple discount options. Click here for more information.

Delivery Options: Attend face-to-face in the classroom, remote-live or via on-demand training.

Description

This relational database design class develops relational database design skills and techniques. Practical methodologies such as E-R diagrams and normalization forms are emphasized. Attention is placed on designing for data integrity and efficiency at the same time. During hands on lab sessions students are required to design multiple database models from business requirements and specifications. Through hands on experience using SQL programming code to create, populate and manage relational tables, students will experience the necessity of proper design methods and gain an in depth understanding of the link between design, creation, and utilization. The impact of alternative designs on maintainability and database performance is emphasized.

Prerequisites

General computer knowledge. Familiarity with relational database concepts is helpful but not required.

Course Overview

Developing Relational Databases

- Overview of Relational Database Concepts
- Relational Databases and Relational Database Management Systems
- Database Development Methodology Overview
  - Conceptual, Logical and Physical

Building a Logical Data Model

- Identifying Entities and Attributes
- Relationships Between Entities (One-to-One, One-to-Many, Many-to-Many)
- Creating Entity-Relationship Diagrams
- Normalization as a Design Technique
- Progressive Steps to Normalization (First, Second, and Third Normal Form)

Data Models

Transforming to Physical Design

- Migrating Entities to Tables
- Selecting Primary Keys
- Defining Columns
- Enforcing Relationships with Foreign Keys
- Enforcing Business Rules with Constraints

Constructing the Database Using DDL

- `CREATE DATABASE`
- Creating Objects with `CREATE`
  - Creating Tables, Indexes, Stored Procedures, Triggers and Views
- Modifying Objects with `ALTER`
  - Adding Columns to a Table
  - Modifying Parameters to a Stored Procedure
  - Adding Constraints to a Column
  - Modifying the Timing of a Trigger
  - Changing the Body of Stored Procedures and Views
- Removing Objects with `DROP`
  - Dropping Tables, Indexes, Constraints and Views

Manipulating Table Data Using SQL's Data Manipulation Language (DML)

- Inserting Data into Tables
- Updating Existing Data
- Deleting Records
- Truncating Tables
- Implementing Data Integrity with Transactions
  - Beginning Explicit Transactions
  - Committing Transactions
  - Rolling Back Transactions
  - Defining Save Points

Writing Basic SQL Queries

- Displaying Table Structures
- Retrieving Column Data From a Table or View
- Selecting Unique Values
- Obtaining a Row Count
- Filtering Rows Using the `WHERE` Clause
- Sorting Results Using `ORDER BY`
- Joining Multiple Tables
- Using Column and Table Aliases

Manipulating Query Results

- Using Row Functions
  - Character
  - Numeric
  - Date and Time
  - Data Conversion (`CAST` and `CONVERT`)
- Using the `CASE` Function
- Handling Null Values

Working with Table Expressions

- Overview of Table Expressions
- Working with Views
- Using Derived Tables
- Common Table Expressions

Advanced Query Techniques

- Inner Joins
- Outer Joins (Left, Right, Full)
- Performing Self-Joins
- Subqueries
  - Simple
  - Correlated
- Using the `EXISTS` Operator
- Tips for Developing Complex SQL Queries
- Using Aggregate Functions
  - `AVG`
  - `COUNT`
  - `SUM`
  - `MIN`

- Table-Valued Functions
  - MAX
- Performing Set Operations
  - UNION
  - INTERSECT
  - EXCEPT/MINUS
- Aggregating Results Using GROUP BY
- Restricting Groups with the HAVING Clause
- Creating Temporary Tables

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