Relational Database Design Concepts

Duration: 3 days

Price: $1795

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

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

Students Will Learn

- Design normalized table structures for relational databases
- Create databases and tables
- Using primary and foreign keys
- building a logical data model
- Implementing the data model with DDL
- Creating, modifying and dropping database objects
- Writing SQL Queries
- Using inner and outer joins
- Manipulating query results

Course 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.

Course Prerequisites

General computer knowledge.

Course Overview

Developing Relational Databases  Building a Logical Data Model
Overview of Relational Database Concepts
- Relational Databases and Relational Database Management Systems
- Database Development Methodology Overview
  - Conceptual, Logical and Physical 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

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

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

AVG
COUNT
SUM
MIN
MAX

Performing Set Operations
UNION
INTERSECT
EXCEPT/MINUS

Aggregating Results Using GROUP BY
Restricting Groups with the HAVING Clause
Creating Temporary Tables