

## **SQL Overview**

Outlining SQL as the cornerstone of database activity

Applying the ANSI/ISO standards

Describing the fundamental building blocks: tables, columns, primary keys and foreign keys

## **Building the Database Schema**

Creating tables and columns

Building tables with CREATE TABLE

Modifying table structure with ALTER TABLE

Adding columns to an existing table

Removing tables with DROP TABLE

## **Protecting data integrity with constraints**

Guaranteeing uniqueness with primary key constraints

Enforcing integrity with foreign key constraints

Imposing business rules with check constraints

Enabling and disabling constraints

Removing constraints with ALTER TABLE

### **Improving performance with indexes**

Expediting data retrieval with indexes

Recommending guidelines for index creation

### **Manipulating Data**

Modifying table contents

Adding table rows with INSERT

Changing row content with UPDATE

Removing rows with DELETE

### **Applying transactions**

Atomic Consistent Isolated Durable (ACID) rules

Controlling transactions with COMMIT and ROLLBACK

## **Writing Single Table Queries**

Retrieving data with SELECT

Restricting rows with the WHERE filter

Sorting the result with ORDER BY

Handling NULL values in expressions

Avoiding NULL value pitfalls in filter conditions

## **Querying Multiple Tables**

Applying the ANSI/ISO standard join syntax

Matching related rows with INNER JOIN

Including nonmatched rows with OUTER JOIN

Creating a Cartesian product with CROSS JOIN

## **Combining results with set operators**

Stacking results with UNION

Identifying matching rows with INTERSECT

Utilizing EXCEPT to find nonmatching rows

## **Employing Functions in Data Retrieval**

Processing data with row functions

Conditional formatting with the CASE expression

Utilizing the CASE expression to simulate IF tests

Dealing with NULL values

## **Performing analysis with aggregate functions**

Summarizing data using SUM, AVG and COUNT

Finding the highest/lowest values with MAX and MIN

Defining the summary level with GROUP BY

Applying filter conditions with HAVING

## **Constructing Nested Queries**

Applying subqueries in filter conditions

Correlated vs. noncorrelated subqueries

Testing the existence of rows

### **Including subqueries in expressions**

Placing subqueries in the column list

Creating complex expressions containing subqueries

Handling subqueries that return no rows

### **Developing In-Line and Stored Views**

Breaking down complex problems

Selecting data from a query result set

Subqueries in the FROM clause

Creating views in a database

Building reusable code

Updateable vs. non-updateable views