

## JDBC Programming Version 5.0

### Course Summary

#### Description

This covers the fundamentals of database programming in Java using JDBC (Java Database connectivity) in an incremental fashion, to get the programmer up to speed quickly and then to layer a deeper understanding of JDBC upon that foundation. This course has been designed to work with any of these relational database management systems:

- Apache Derby, version 10.1
- MySQL, version 4.1
- PostgreSQL 8.0
- Oracle, version 9i or 10g

#### Objectives

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

- Briefly review relational database fundamentals with an awareness of the differences between SQL99 and SQL implementations by database vendors.
- Connect to a database using JDBC and perform a simple query.
- Update relational data using JDBC to execute updates, inserts and deletes.
- Use prepared statements to produce reusable database queries and optimize execution time.
- Use callable statements to access database procedures.
- Use scrollable and updatable results sets for more robust solutions.
- Use commit, rollback, and savepoint to build transactional systems.
- Use batch processing for efficient handling of large datasets.
- Understand the use of RowSets and the improved techniques and portability that they bring to JDBC.

#### Topics

- Database and SQL Fundamentals
- JDBC Fundamentals
- Advanced JDBC
- Introduction to Row Sets

#### Prerequisites

Experience in Java Programming is essential. The student must be comfortable with object-oriented Java, interfaces and abstract classes. Understanding of basic SQL usage or other work with relational databases will be helpful, but is not required.

#### Duration

One day

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### Course Outline

#### I. Database and SQL Fundamentals

- A. Relational Databases and SQL
- B. SQL Versions and Code Portability
- C. Database, Schema, Tables, Columns and Rows
- D. DDL -- Creating and Managing Database Objects
- E. DML -- Retrieving and Managing Data
- F. Sequences
- G. Stored Procedures
- H. Result Sets and Cursors
- I. Using SQL Terminals

#### II. JDBC Fundamentals

- A. What is the JDBC API?
- B. JDBC Drivers
- C. Making a Connection
- D. Creating and Executing a Statement
- E. Retrieving Values from a ResultSet
- F. SQL and Java Datatypes
- G. SQL NULL Versus Java null
- H. Creating and Updating Tables
- I. Handling SQL Exceptions and Proper Cleanup
- J. Handling SQLWarning

#### III. Advanced JDBC

- A. SQL Escape Syntax
- B. Using Prepared Statements
- C. Using Callable Statements
- D. Scrollable Result Sets
- E. Updatable Result Sets
- F. Transactions
- G. Commits, Rollbacks, and Savepoints
- H. Batch Processing
- I. Alternatives to JDBC

#### IV. Introduction to Row Sets

- A. Row Sets in GUI and J2EE programming
- B. Advantages of RowSets
- C. RowSet Specializations
- D. Using CachedRowSets