

TT2200: JDBC for Application Developers (2 days)



JDBC for Application Developers is a two-day, hands-on workshop that explores JDBC application development using a combination of lecture and labs. At completion you will be able to write JDBC applications that access a database, retrieve and manipulate data of intermediate to advanced level complexity. Students who attend this course will leave the course armed with the required skills to develop solid Java applications using JDBC to interact with relational databases.

► Course Objectives: What You'll Learn

Students who attend **JDBC for Application Developers** will leave this course armed with the required skills to develop solid database oriented applications written in Java, using sound coding techniques and best coding practices.

Working within in a dynamic, hands-on learning environment, guided by our expert team, attendees will learn to:

- Understand not only the fundamentals of JDBC (including JDBC 3.0), but also its importance, uses, strengths and weaknesses
- Understand the JDBC architecture and required components
- Be able to implement and manage normal and abnormal interactions with databases using JDBC
- Perform CRUD operations using prepared statements and stored procedures within the context of transactions
- Process results using scrollable result sets and row sets
- Acquire meta-data from remote databases
- Understand and defend resources against various types of security threats

Throughout the five-day course, students will be led through a series of progressively advanced topics, where each topic consists of lecture, group discussion, comprehensive hands-on lab exercises, and lab review.

If your team requires more advanced Java materials or custom topics, this course may be easily adjusted to accommodate. We offer many additional advanced Java classes which may be blended with this course for a track that best suits your development objectives.

► Audience & Pre-requisites: Who Should Attend

This is an **intermediate-level** Java programming course, designed for experienced developers who wish to get up and running with JDBC immediately.

Attending students should have a basic level of Java programming ability, as well as a basic understanding of DBMS principles. Familiarity with the SQL programming will also be helpful.

COURSE SNAPSHOT

Duration: 2 days
Skill Level: Introductory
Focus: Java Applications
Audience: Java Developers
Hands-On: Extensive Hands-On Programming Labs; Expert lecture combined with open discussions and high-Level demonstrations
Language / Tools: Delivered with most IDEs (RAD, Eclipse, etc); Derby, SQL database options and more
Delivery Format: Available for onsite private classroom presentation, or live online / virtual presentation
Customizable: Yes

► Related Courses – Suggested Learning Path

Take Before: Students should have skills equivalent to or should have taken either

- **TT2100 Java Programming Fundamentals for OO Developers**
- **TT2120-5 Java 5 Programming Fundamentals for Non OO Developers**
- **TT5140 Java 5 Programming Essentials for Server-Side OO Developers** which combines basic Java and essential J2EE (Servlets/JSPs) content.

Take Instead: We offer other courses that provide different levels of knowledge or focus:

- Developers who want a more comprehensive coverage of Java, including JDBC and GUI may consider: **TT2100 Java Programming Fundamentals for OO Developers**
- Programmers who need Java essentials, who may be preparing for J2EE & JDBC web development work might want to consider **TT5140 Java Programming Essentials for Server-Side OO Developers**

Take After: We offer a variety of introductory through advanced development, project management, engineering, architecture and design courses.

- Essential Java or basic J2EE training
- Java Security topics
- Agile or test-driven development topics
- Service-Oriented Analysis and Design
- Web Services – Intro through Advanced
- AJAX, XML or other Web Development topics

- Java EE topics: EJB3.0; Spring; Hibernate; Design Patterns & more.

Please contact us for recommended next steps tailored to your longer term education, project or development objectives.

► **Experiential Learning: Hands-On Labs**

This class is “technology-centric”, designed to train attendees in essential Java development skills, coupling the most current, effective techniques with the soundest coding practices.

As a basic programming class, this course provides **many basic and challenges labs** for students to work through during the class.

This workshop is about **50% hands-on lab and 50% lecture**. Throughout the course students will be led through a series of progressively advanced topics, where each topic consists of lecture, group discussion, comprehensive hands-on lab exercises, and lab review. Multiple detailed lab exercises are laced throughout the course, designed to reinforce fundamental skills and concepts learned in the lessons.

At the end of each lesson, developers will be tested with a set of review questions to ensure that he/she has fully understands that topic

Workshop Topics Covered

Session JDBC Fundamentals

Lesson Introducing JDBC

- What is JDBC?
- JDBC 1.0; JDBC 3.0
- New Features in JDBC 3.0
- Java and JDBC
- The JDBC API
- JDBC Application Architecture
- Two - Tier Model
- Three Tier Deployment
- N - Tier Deployment
- JDBC Design Goals
- JDBC Over ODBC

Lesson JDBC Drivers

- Driver Types
- Implementation & Communication Protocols
- Advantage of Driver Types
- Applets and Database Connectivity
- Obtaining a Driver
- When Things Go Wrong

Lesson Database Concepts

- What is a Relational Database?
- Schemas
- Examples of SQL Data Definition Language
- Cautions on DDL
- Indexes and Primary Keys
- Foreign Keys
- Views
- SQL Data Types
- Java Mapping to SQL Data Types
- Manipulating Data – DML
- Qualifying DML
- Wildcards in String Comparisons

- Wildcard Examples
- Functions
- Stored Procedures
- Transactions and Integrity
- SQL and Standards

Session Getting Started with JDBC

Lesson Making Simple Database Connections

- Connecting to a Database
- The Connection URL String
- Loading the Driver
- Using ODBC
- Getting a Connection
- The Connection Object
- Connecting to the Database

Lesson Handling SQL Exceptions and Warnings

- SQL and Exceptions
- SQLException
- Processing Multiple Exceptions
- SQLWarning
- The Importance of finally

Lesson Retrieving Data from the Database

- Creating a New Query
- Executing a New Query
- The Result Set
- Processing Result Set Data
- A Complete Example
- SQL to Java Mappings
- Who Can Read What

Lesson Updating Data in the Database

- Update DML; Insert DML; Delete DML

- Using the executeUpdate Method
- Examples
- Nulls
- Update Example

Lesson Using Prepared Statements

- Prepared Statements
- Binding Values to Prepared Statements
- Using a Prepared Statement
- Prepared Statements for Update
- The Advantage of Prepared Statements

Session Intermediate JDBC

Lesson Transactions

- Transactions
- Controlling Transactions
- Isolation Levels
- Transaction Example

Lesson Batch Updates

- Batches; Using Batches
- Batch Update Example

Lesson Scrollable ResultSets

- Scrollable ResultSets
- Result Set Types
- Concurrency
- Navigation Methods
- Examples
- Updating Result Sets
- Updating a Row; Inserting Rows; Deleting Rows
- Refreshing Data

Lesson Rowsets

- Using a Row Set
- Row Set Methods
- Populating a Row Set Externally
- Populating a Row Set using Execute
- Persisting Row Set Changes to Database
- Transmitting RowSets
- Typical Architecture

Lesson Stored Procedures

- Stored Procedures Defined
- Stored Procedure Languages
- Java Stored Procedures
- Using Stored Procedures
- Callable Statement Syntax
- Stored Procedure Parameters
- Executing Calls
- A Complete Example
- The execute() Method

- Advantages of Stored Procedures
- Java Stored Procedures

Session Advanced JDBC

Lesson Database Metadata

- MetaData
- DatabaseMetaData
- Finding All the Tables and Columns
- Result Set Metadata
- ResultSetMetaData
- Using ResultSetMetadata

Lesson Server-side JDBC

- A Brief Introduction to JNDI
- Using JNDI to Find Data Sources
- DataSources
- Creating a Data Source
- Pooled Connections
- Transactional Data Sources

- Getting a Transactional Connection

LABS: There are multiple hands-on lab exercises and challenges laced throughout this course. Please ask us for lab details.

Need more details? Please note that a more detailed outline of the course table of contents, lists of lab exercises and project descriptions is available. Please contact us at Training@triveratech.com for info.

Need courseware? This course is fully customizable, and also available for license with complete support for qualified organizations. Please contact Courseware@triveratech.com for details.

► **Delivery Environment & LoadNGo™ Classroom Set Up**

Although this training is skills-centric, this course can be delivered using a variety of IDE combinations, including but not limited to: Eclipse, MyEclipse, RAD, or other IDEs. Database options include: Derby, Cloudscape, MySQL and others.

Our lab guides are complete with software-specific instructions, screen shots and detailed tutorials for using the software you select. In most cases we can easily port our classes to run in the environment of your choosing.

For course deliveries or virtual presentation using open-source tools, we'll provide our unique **LoadNGo Instant Classroom Kit**, which enables students to run the entire course off of a DVD that hosts the entire course set up software, labs, and other pertinent useful educational resources, whitepapers and more. You only need to provide the hardware and appropriate O/S, and we'll do the rest. No installation needed. **Great for secure environments.** Minimum set up burden for your team or firm, with maximum results for your students.

No matter which set up option or software your firm requires, we're pleased to provide a detailed set up guide for all private or on-site courses, and as much assistance as you require to prepare your students or classroom for the course. Our support personnel and instructors can be contacted for any advice you may require to prepare your classroom and/or students for attendance.

► **Student Materials: What You'll Receive**

Our robust course materials include much more than a simple slideshow presentation handout. Trivera Technologies Student materials include a comprehensive hard-copy course manual, complete with detailed course notes, code samples, diagrams and current reference materials, all directly related to the course at hand, indexed for ease of use. Step-by-step lab instructions and project descriptions are clearly illustrated and commented for maximum learning and ease of use.

In addition to everything students need for the course, the *LoadNGo Instant Classroom Kit* described above also includes of workshop labs and solutions; non-restricted workshop software, APIs, documentation, technical education papers, and specifications pertinent to the training course.

Our course kits are designed to serve as an excellent and useful reference set, long after we leave your classroom.

► **Optional Pre / Post-Testing & Skills Assessment**

We work with you to ensure that your resources are well spent. Through our basic pre-testing, we ensure your team is up to the challenges that this course offers.

We will work with you to come up with the best solution to ensure your needs are met, whether we customize the material, or devise a different educational path to prepare for this course.

► Why Work With Trivera Technologies?

- **Our courses are focused - no "fluff" included.** We offer more than a “laundry list” approach to teaching. All lessons have clear objectives, are fundamental to learning core defensive programming practices, and are reinforced by hands-on code labs and solid practical examples. Each lesson has performance driven objectives that ensure students will learn technologies and skills core to fundamental Java and OO programming – nothing more, nothing less. Students will learn the importance of developing well-designed applications.
- **Our materials are comprehensive, and current.** Each lesson has performance driven objectives that ensure students will learn technologies and hands-on skills core to Java development – nothing more, nothing less. Progressive labs are designed in such a way that students get a firm grasp on fundamental skills while they work toward building a complete solution. All lessons have clear objectives, are fundamental to learning core programming practices, and are reinforced by hands-on code labs and solid practical examples.
- **Our materials are robust.** Our comprehensive manuals include not only a hard copy of the course presentation, but also detailed reference notes, pertinent diagrams and charts, current lists of suggested online resources and articles, and often technical tutorials or white papers geared to the topics at hand. Hands-on courses also include our unique materials for each student, complete with course set up, software, and a multitude of learning resources that complement the course.
- **We provide a solid foundation.** Students will learn how to code, use (and reuse!) essential Java development skills and concepts properly, using best coding practices, grounding them for advanced curriculum, and will be prepared for designing and implementing solutions.
- **We foster "Learning by Doing".** Progressive labs are designed in such a way that students get a firm grasp on fundamental skills while they work toward defending a complete application. All labs are take-home, and all solution code is presented in an easy to use self-study format for future use and review.
- **True content ownership gives us flexibility & quality above the rest.** These course materials are wholly-owned by our company and fully customizable, at little or no cost, to help you best meet your learning objectives. We have many dedicated experts available worldwide to instruct your team, and can provide services around the globe, either locally or virtually. We work closely with you to produce the most effective events and materials for your team, within your desired timeframe and budget.
- **We have to adhere to higher standards.** As a courseware provider, our content and hands-on lab materials are licensed internationally by dozens of firms, and are therefore subject to very stringent quality requirements. Not only will your organization benefit from our own technical team’s technical expertise, but also the feedback of hundreds of students and trainers using these materials, worldwide, on a regular basis. This unique fact guarantees that our materials are not only robust and interesting, but also technically correct, current and of the highest quality and usability.
- **We bring years of practical, current experience into the classroom and content.** Our instructors and course authors are also skilled mentors, Java, J2EE, .Net, SOA, and web services developers, architects and security-oriented professionals. We believe that learning, using and maintaining solid software execution and delivery methods are as important as gaining sharp coding skills. Best Practices for software development and execution, beyond technical coding skills, are enforced throughout all of our courses and discussions. Our team brings this extensive experience into every classroom and engagement.
- **We're skills-centric.** Although our team has extensive experience using a variety of tools and solutions, our core content is “technology-centric”. Our aim is to teach you the best skills and solutions out there – not to sell you software from any particular vendor.
- **We're Java & J2EE authors and industry speakers.** Our team was selected to write the online *J2EE, EJB, EJB CMP-CMR and Web Services Tutorial Series for IBM developerWorks®* (www.ibm.com) These are the same instructors who train our classes and author the courseware. Most of our trainers/consultants have also authored additional articles on web services, EJB< Struts, J2EE and advanced Java topics, and are recognized speakers and presenters on the industry technical seminar circuit. Our team is comprised on several successful published authors. Members of our team have written or contributed to: *Eclipse Kick Start, Mastering Eclipse; Professional Jakarta Struts; Using Java Tools for Extreme Programming; Mastering Resin; Mastering TomCat and others.*
- **Our services are guaranteed.** Whether you’re a stakeholder organizing your firm’s educational services, a student in our live or virtual classroom or a trainer using our materials to educate your own client or team – **Our core mission is to make YOU a success in the classroom.**

► For Additional Information

Need dedicated training? All courses can be brought onsite or produced virtually for a **private presentation**, customized to suit your unique requirements or goals. Please contact Training@triveratech.com for course details, Public Schedule dates and locations, and Special Discount Offers.



Trivera Technologies is a 100%
 Female-Owned Small Business Concern
 GSA Schedule #GS-35F-0188T
 Please contact us for details & pricing.

Need courseware? Let us take the risk out of your classroom delivery! Please contact Courseware@triveratech.com for details.

For more information about our training, mentoring or courseware licensing options, or to see our complete list of course offerings and services, please visit us at www.triveratech.com, email Training@triveratech.com or call 609.953.1515.