

TT3110-J6: Java 6 Performance Tuning (4 days)

Duration: 2 days

Skill Level: Intermediate and beyond

Focus: Java 6 Applications

Audience: Programmers with prior practical Java development experience

Hands-On: Extensive Hands-On Programming Labs; Expert lecture combined with open discussions and high-level demonstrations

Language / Tools: Java 6 delivered with most IDEs: IBM Rational Application Developer (RAD 7 / RAD 7.5); Oracle JDeveloper, Eclipse / Ganymede, Eclipse WTP, MyEclipse and more. Also offered for Java 5 (TT3110-J5).

Delivery Format: Available for onsite private classroom presentation, or live online / virtual presentation

Customizable: Yes

Java Performance Tuning is a two-day, lab-intensive course geared for experienced software developers who are looking to expand their knowledge and skills in the Java world. This course is highly customizable and draws from the extensive knowledge and content base to tune the course itself to the student needs.

► **Course Objectives: What You'll Learn**



Students who attend **Java 6 Performance Tuning** will leave this course armed with the required skills to improve their Java applications using sound coding techniques and best practices.

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

- List possible metrics for measuring software performance
- Explain the effect of OO design on software performance
- List and describe types of benchmarks and the criteria that should be considered when constructing a benchmark plan
- Explore the most useful targets for profiling, and the most common tools/techniques for profiling
- Describe two strategies for improving performance as a result of profiling data
- List and explain the five most common problem areas for good performance with Java
- Use the JDK to collect runtime profiling data
- Successfully read the profiling data generated by the JDK to detect performance bottlenecks
- Instrument your own code to collect method execution time data
- Learn code optimization techniques relating to object management, exceptions, threads, and serialization
- Understand the JVM Architecture from the perspective of performance
- Examine and work with Java language features that can impact performance
- Understand how XML is processed using Java
- Best practices for improving XML processing performance
- Best practices for improving web services performance
- Impact of security and application defenses on performance
- Tradeoff between defense and performance

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.

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 a **intermediate and beyond- level** Java course, designed for experienced Java developers who wish to get up and running with advanced skills immediately. This is a hands-on programming class.

► **Related Courses – Suggested Learning Path**

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

- **TT2100 Core Java Programming Fundamentals**

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

- Advanced Java training
- Basic to advanced J2EE or JavaEE / JEE training: EJB3.0; Spring; Hibernate; Design Patterns & more.
- 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

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.

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: Writing High Performance Applications

- Performance: Process and Issues
- Architecture of the JVM
- Memory Management Issues
- CPU Performance Issues
- Threading Issues
- Profiling and Benchmarking
- Determining What to Profile
- Determining What to Tune
- Profiling Tools
- Tactical vs. Strategic Optimization
- Code Optimization Techniques
- Design Optimization Techniques
- Impact of Exceptions
- Impact of Reflection
- Using Profilers
- Applying Code Optimization
- Applying Design Optimization

Session: Effective Java

- Creating and Destroying Objects
- Factory Methods
- Impact of Finalizers
- Methods Common to Most Objects

- Classes and Interfaces
- Immutability
- Composition vs. Inheritance
- Exceptions
- Managing Exceptions Efficiently
- Threads
- Impact of Synchronization
- Threading Constructs to Avoid
- Serialization
- Impact of readObject()

Special Topics: XML and Security

- Working with XML in Java
- Best practices for improving XML processing performance
- How Performance is Affected by XML Structure and Use
- Best practices for improving web services performance
- Impact of security and application defenses on performance
- Tradeoff between defense and performance

Special Topics: J2EE Tuning (optional)

- The Performance Tuning Guide
- Basic Tuning Principles and Concepts
- Establishing Performance Bounds
- Server Tuning Options

***LABS:** There are over many 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: Tools to Use**

Although this training is skills-centric, this course can be delivered using a variety of software combinations, including but not limited to: Eclipse / Ganymede, MyEclipse, IBM® WebSphere Rational Application Developer (RAD), Oracle JDeveloper or other IDEs.

This course may be run using Java 5 or Java 6. Please inquire for details and options.

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

► **Easy Set Up! LoadNGo™ Instant Classroom Kit**

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. 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.

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 and tutorials 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 course pre-testing and/or post-course

assessments, we ensure your team is up to the challenges that this course offers. Our goal is to structure 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.

► Bridging the Gap: Collaborative Mentoring Services

Our team of technical experts is also available for various project assistance services to help your team apply their newly-learned classroom skills to their real-world project in a meaningful, practical way, right after the training ends.

Our custom **collaborative mentoring programs** integrate with or extend your team's classroom training experience, to help bring these skills into existing (or inherited) legacy projects, into new projects, or to simply keep your students sharp them in between projects. Our programs can be highly involved and closely integrated with your project timelines or group development efforts, or can be less involved, serving simply as an overarching educational framework or 'spot check' to keep your group skills moving forward in between projects or waiting for projects to begin.

Please contact us for details about this exciting custom service.

► 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 advanced 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 essential 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, Agile 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.



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Please contact us for details & pricing.

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