

## TT2220 Implementing User Interfaces in Java (Java Foundation Classes) (3 days)

**Duration:** 3 days

**Skill Level:** Intermediate

**Focus:** Java 6 GUI Applications

**Audience:** Programmers with basic Java 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) 7.5, Oracle JDeveloper, Eclipse Galileo/Helios, MyEclipse and more. Course is also offered for Java 5.

**Delivery Format:** Available for onsite private classroom presentation

**Customizable:** Yes

*Implementing User Interfaces in Java (Java Foundation Classes)* is a three-day, comprehensive hands-on workshop geared for experienced Java developers who need to design and develop advanced Graphical User Interfaces in Java using both major and minor Swing components. Throughout the course students learn the best practices for writing great GUI applications in Java, using sound development techniques, new improved features for better performance, and new capabilities for addressing rapid application development. The course can be targeted for Java 5 or Java 6.

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

Throughout this three-day workshop students will build a robust GUI project: a **Stock Portfolio Manager** application.

All lab exercises are driven by the objectives of learning and using all of these components in the development a practical project. Creating this application will utilize all of the major Swing GUI components (List, Table, etc.) and a majority of the minor components (Toolbar, Scroll Panes, etc.).

This project will also utilize:

- Table-based data entry and viewing
- Pie Chart view of allocation (with provided pie chart component)
- Dialog for single record data entry
- Multiple Document Interface/Virtual Desktop

### ► Audience & Pre-requisites: Who Should Attend

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

### ► Experiential Learning: Hands-On Labs

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

As a basic programming class, this course provides **over 30 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.

### ► Related Courses – Suggested Learning Path

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

- Attending students should have skills equal to those instructed in or should have attended **TT2100 Java Programming Fundamentals for OO Developers**
- Developer's without any prior OO experience may wish to take **TT2120 Java Programming Fundamentals for non-OO (C, Mainframe, COBOL, 4GL) Developers**
- Programmers who may be preparing for J2EE web development work might want to consider **TT5140 Java Programming Essentials for Server-Side OO Developers**

Please note all development courses may also be offered in other programming languages or environments, as well as tailored to best suit your needs. Please contact us for details.

**Take After:** We offer a variety of introductory through advanced development, project management, engineering, architecture and design courses. Students may want to consider the following topics as a follow-on to this course.

- Essential or advanced Java or J2EE development topics
- Web 2.0, AJAX, XML or other Web Development topics
- Agile or test-driven development topics
- Service-Oriented Analysis and Design
- Web Services – Intro through Advanced
- Java EE topics: EJB3.0; Spring; Hibernate; Design Patterns & more.

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**Workshop Topics Covered**

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**Session: Basic Java™ Foundation Classes**

**Lesson: JFC Architecture**

- What is the JFC?
- JFC Building Blocks
- Swing Design Goals
- Swing Naming Conventions
- Swing Class Hierarchy

**Lesson: Basic Containers and Components**

- Creating a JFrame Top-Level Container
- Manipulating a JFrame
- Read-Only Text Component: JLabel
- Displaying HTML Text in JLabel
- Containers vs. Components
- Adding Components to JFrame
- JButton Component: JButton
- Basic Button Behavior: Abstract Button
- CheckBox, Radio and Toggle Buttons
- Text Entry Field: JTextField
- Focus: Order and Movement
- Lab: Basic Form

**Lesson: Layout Management**

- Need for Layout Managers: Font Size
- Need for Layout Managers: PlaFs
- Need for Layout Managers: User Resize
- LayoutManager: Sizing Rules
- Setting Up the LayoutManager
- Border Layout
- Adding Components with Constraints
- FlowLayout
- GridLayout
- Units: Dimensions, Point and Bounds
- BorderLayout
- BorderLayout Alignment
- Box Component: Convenience
- GridBagLayout
- GridBagConstraints: Placement
- GridBagConstraints: Area Filling
- GridBagConstraints: Weight
- Top- and Intermediate-Level Containers
- Combining Containers and Layouts
- Combining Containers: The Code

- Lab: Laying Out the Simple Form

**Lesson: Event Handling and Threading**

- Event Handling: Event Definition
- Event Sources and Destinations
- Event Listeners
- Event Objects: Event Information
- Anonymous Inner Classes
- More Action Event Sources
- Swing is Not Multi-Thread Safe
- Making it Safe to Modify Components
- Creating Timed Events
- Lab: Event Handling in the Form

**Lesson: Menus, Actions and Toolbars**

- Swing Menus
- Menu Containers
- Separators and Submenus
- Menu Decorations
- Popup Menus
- Centralizing ActionListeners
- Actions: Encapsulating Listeners
- Toolbars
- Lab: Adding Data Storage to the Form
- Lab: Moving to Actions
- Lab: Controlling Client Behavior

**Session: Model-Based Components**

**Lesson: List Box: JList**

- The JList List Box
- JList and Selection Management
- Selection Range: Lead and Anchor
- Determining Selected Items
- Selecting Items
- Scrolling JList with JScrollPane
- Notification of List Selection Changes
- JList and the Data Model
- Using Abstract and DefaultListModel
- Column Adder using JList and Models
- The ListDataListener Implementation
- The JButton ActionListeners
- Exercise 7 - Using JList as a Record Selector

**Lesson: Drop-down Combo Box: JComboBox**

- The Drop-Down List: JComboBox

- JComboBox: Events and Listeners
- Current Selection and Editing
- Lab: Using JComboBox as a Record Selector

**Lesson: Table/Grid: JTable**

- The JTable Grid Component
- JTable Parts and Models
- Default TableModel and Customization
- AbstractTableModel Implementation
- Custom Table Cell Renderers
- Table Cell Renderer Implementation
- Sharing Models
- Configuring the Visual Properties
- Linked Data Models
- Linked Data Models: Wrapping
- JTabbedPane Tabbed Container
- Linked Data Models: Listening
- Lab: Adding a JTable View of the Data

**Lesson: Hierarchical Tree: JTree**

- JTree: Hierarchical Display
- Creating a Tree from Static Data
- JTree Selection Model
- Tree Data Model Event and Listener
- Dynamic Trees
- JTree and JTable Shared Model
- Shared Table Model
- JSplitPane Resizable Split Counter
- Custom Tree Node Rendering
- Custom Tree Node Cell Rendering
- JTree Properties and Features
- Lab: A Word from the JTree

**Session: Dialogs and the Desktop**

**Lesson: Dialogs**

- JOptionPane: The JDialog Factory
- JOptionPane Standard Types
- JOptionPane: Message Dialog
- JOptionPane: Confirmation Dialog
- JOptionPane: Input Dialog
- JOptionPane: Option Dialog
- Lab: Adding Message Dialogs

**Lesson: Choosers and Viewers**

- Choosers
- JFileChooser: Open or Save File

- JFileChooser: Custom Command
- JFileChooser: Filtering Files
- JColorChooser
- JEditorPane as an HTML Viewer
- Hyperlink Listener for JEditorPanel
- Lab: Color Choosing and Web Page Viewing

**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](mailto: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](mailto:Courseware@triveratech.com) for details.

#### Lesson: Virtual Desktop Interfaces

- JDesktopPane: The Desktop
- JInternalFrame: Desktop Frames
- JInternalFrame Event Handling
- JLayeredPane: Layers Upon Layers
- Desktop Layers and Internal Frames.

#### ► 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 Helios/Galileo, MyEclipse, IBM® WebSphere Rational Application Developer (RAD7.5), Oracle JDeveloper or other IDEs. This course may also 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 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](http://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.*

### ► 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](mailto:Training@triveratech.com) for course details, Public Schedule dates and locations, and Special Discount Offers. **Need courseware?** Let us take the risk out of your classroom delivery! All materials are also available for corporate license with complete instructor support and free corporate branding. We guarantee our pricing and service. Samples of our course materials, as well as live client references for all of our services are available upon request. Please contact [Courseware@triveratech.com](mailto:Courseware@triveratech.com) for details.



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