Java 7 Programming Essentials for C# or C++ Developers

Course Summary

Description

Java7 Programming Essentials for C# or C++ Developers is a highly customizable three-day, comprehensive hands-on workshop geared for developers who have prior working knowledge of C# or C++. This course leverages the syntactical similarities between Java, C#, and C++. Throughout the course students learn the best practices for writing complex programs in Java, using sound development techniques, new improved features for better performance, and new capabilities for addressing complex application development

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

- Understand and effectively use collections, generics, autoboxing, and enumerations
- Use the JDBC API for database access
- Perform CRUD operations using prepared statements and stored procedures within the context of transactions
- Take advantage of the Java tooling that is available in Eclipse
- Learn code optimization techniques relating to object management, exceptions, threads, and serialization
- Examine and work with Java language features that can impact performance
- Understand optimizing data structures in Java
- Choose the correct Collection for the task
- Leverage the built in Collections algorithms to enhance your code performance and security

Topics

- Java: A First Look
- Working With Eclipse
- Java™ Developer's Toolbox
- Advanced Topics

Audience

This is an introductory- level Java course, designed for experienced developers who wish to get up and running with Java, or who need to reinforce sound Java coding practices, immediately. Attendees should have a working knowledge of developing software applications with OO languages such as C++ or C#.

Prerequisites

Students should have practical skills equivalent to the skills in this course:

- TTE9700 Introduction to C++ *OR*
- C# .Net Programming Fundamentals

Duration

Three days

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... to Your Success!"

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Course Outline

I. Java: A First Look
- A. The Java™ Platform
  1. Java Platforms
  2. Lifecycle of a Java Program
  3. Responsibilities of JVM
  4. Documentation and Code Reuse
  5. Setting Up Environment
  6. Locating Class Files
  7. Compiling Package Classes
  8. Source and Class Files
- B. Java Syntax Overview
  1. Defining a Class
  2. Class Modifiers
  3. Primitives vs. Object References
  4. Creating Objects
  5. Overloaded Methods
  6. Constructors
  7. Optimizing Constructor Usage
  8. Strings, StringBuffer, and StringBuilder

II. Working With Eclipse
- A. Eclipse Paradigm: Editors, Views, and Perspectives
  1. The Eclipse Paradigm: Editors, Views, and Perspectives
  2. Projects in Eclipse
  3. Workspaces in Eclipse
- B. Java Code and Debugging Tooling
  1. The Java Development Tooling (JDT)
  2. Java Perspectives and Projects
  3. Source Code Tools
  4. The Debug Perspective
  5. Running in Debug Mode

III. Java™ Developer's Toolbox
- A. Java™ Packages and Visibility
  1. Class Location of Packages
  2. The Package Keyword
  3. Importing Classes
  4. Executing Programs
  5. Java Naming Conventions
- B. Inheritance and Polymorphism
  1. Polymorphism: The Subclasses
  2. Upcasting vs. Downcasting
  3. Calling Superclass Methods From Subclass
  4. The final Keyword
- C. Interfaces and Abstract Classes
  1. Separating Capability from Implementation
  2. Abstract Classes
  3. Implementing an Interface
  4. Abstract Classes vs. Interfaces
- D. Exceptions
  1. Exception Architecture
  2. Java 7 - Handling Multiple Exceptions
  3. Java 7 – Automatic Closure of Resources
  4. Creating Your Own Exceptions
  5. Throwing Exceptions
  6. Checked vs. Unchecked Exceptions
- E. Collections
  1. Characterizing Collections
  2. Collection Interface Hierarchy
  3. Generics and Collections
  4. Java 7 – The Diamond Operator
  5. Iterators
  6. The Set Interface
  7. The List Interface
  8. Queue Interface
  9. Deque Interface
  10. Map Interfaces
  11. Using the Right Collection
  12. Collections and Multithreading
- F. Generics
  1. Generics and Subtyping
  2. Bounded Wildcards
  3. Generic Methods
  4. Legacy Calls To Generics
  5. When Generics Should Be Used
- G. Autoboxing, Enhanced for Loop and Varargs
  1. Autoboxing/Unboxing
  2. The for-each() Loop
  3. For-each Loop Restrictions
  4. Variable Arguments
- H. JDBC ™
  1. Connecting to the Database
  2. Statement and PreparedStatement
  3. ResultSet
  4. Executing Inserts, Updates, and Deletes
  5. Controlling Transactions and Concurrency

IV. Advanced Topics
- A. Comparing Java to C#
  1. Similar or the Same: Object Support
  2. Similar or Same: Capabilities and Approaches
  3. Different: Roughly Equivalent Keywords
  4. Different: C# Keywords Without Direct Equivalents
  5. Different: Java Keywords without C# Equivalents
  6. Hints in Moving from C# to Java

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Course Outline (cont'd)

B. Effective Java
   1. Creating and Destroying Objects
   2. Factory Methods
   3. Impact of Finalizers
   4. Classes and Interfaces
   5. Immutability
   6. Composition vs. Inheritance
   7. Exceptions
   8. Threading Constructs to Avoid

C. Data Structures
   1. Efficient Strings and Arrays
   2. Efficient Use of Collections
   3. Choosing a Collection
   4. Tuning Collection Constructors