Intensive and hands-on, the course emphasizes becoming productive quickly as a Java™ application developer. This course quickly covers the Java language syntax and then moves into the object-oriented features of the language. Students will then use several of the provided API packages, such as I/O streams, collections, Swing GUI programming, and accessing a database with JDBC. This course is current to Java 7 and uses the Eclipse IDE.

**Audience:** Programmers moving to object-oriented programming using Java.

**Prerequisites:** Professional programming experience in C, C++ or C#® is required. Knowledge of Object-Oriented concepts is required.

**Number of Days:** 5 days

1. **Course Introduction**
   - Course Objectives
   - Course Overview
   - Using the Workbook
   - Suggested References

2. **Getting Started with Java**
   - What is Java?
   - How to Get Java
   - A First Java Program
   - Compiling and Interpreting Applications
   - The JSDK Directory Structure

3. **Eclipse**
   - Introduction to Eclipse
   - Installing Eclipse
   - Running Eclipse for the First Time
   - Editors, Views, and Perspectives
   - Setting up a Project
   - Creating a New Java Application
   - Running a Java Application
   - Debugging a Java Application
   - Importing Existing Java Code into Eclipse

4. **Language Fundamentals**
   - A Java Program
   - If Statements
   - Switch Statements
   - Loop Statements
   - Syntax Details
   - Primitive Datatypes
   - Variables
   - Expressions in Java

5. **Objects and Classes**
   - Defining a Class
   - Creating an Object
   - Instance Data and Class Data
   - Methods
   - Constructors
   - Access Modifiers
   - Encapsulation

6. **Using Java Objects**
   - Printing to the Console
   - printf Format Strings
   - StringBuilder and StringBuffer
   - Methods and Messages
   - toString
   - Parameter Passing
   - Comparing and Identifying Objects
   - Destroying Objects
   - The Primitive-Type Wrapper Classes
   - Enumerated Types

7. **Inheritance in Java**
   - Inheritance
   - Inheritance in Java
   - Casting
   - Method Overriding
   - Polymorphism
   - super
   - The Object Class

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8. **Advanced Inheritance and Generics**
   - Abstract Classes
   - Interfaces
   - Using Interfaces
   - Collections
   - Generics
   - Comparable

9. **Packages**
   - Packages
   - The import Statement
   - Static Imports
   - CLASSPATH and Import
   - Defining Packages
   - Package Scope

10. **Exception Handling**
    - Exceptions Overview
    - Catching Exceptions
    - The finally Block
    - Exception Methods
    - Declaring Exceptions
    - Defining and Throwing Exceptions
    - Errors and RuntimeExceptions

11. **Input/Output Streams**
    - Overview of Streams
    - Bytes vs. Characters
    - Converting Byte Streams to Character Streams
    - File Object
    - Binary Input and Output
    - PrintWriter Class
    - Reading and Writing Objects
    - Closing Streams

12. **Core Collection Classes**
    - The Collections Framework
    - The Set Interface
    - Set Implementation Classes
    - The List Interface
    - List Implementation Classes
    - The Queue Interface
    - Queue Implementation Classes
    - The Map Interface
    - Map Implementation Classes

13. **Collection Sorting and Tuning**
    - Sorting with Comparable
    - Sorting with Comparator
    - Sorting Lists and Arrays
    - Collections Utility Methods
    - Tuning ArrayList
    - Tuning HashMap and HashSet

14. **Inner Classes**
    - Inner Classes
    - Member Classes
    - Local Classes
    - Anonymous Classes
    - Instance Initializers
    - Static Nested Classes

15. **Introduction to Swing**
    - AWT and Swing
    - Displaying a Window
    - GUI Programming in Java
    - Handling Events
    - Arranging Components
    - A Scrollable Component
    - Configuring Components
    - Menus
    - Using the JFileChooser

16. **Swing Events and Layout Managers**
    - The Java Event Delegation Model
    - Action Events
    - List Selection Events
    - Mouse Events
    - Layout Managers
    - BorderLayout
    - FlowLayout
    - GridLayout
    -BoxLayout
    -Box
    -JTabbedPane

17. **Introduction to JDBC**
    - The JDBC Connectivity Model
    - Database Programming
    - Connecting to the Database
    - Creating a SQL Query
    - Getting the Results
    - Updating Database Data
    - Finishing Up

18. **JDBC SQL Programming**
    - Error Checking and the SQLException Class
    - The SQLWarning Class
    - JDBC Types
    - Executing SQL Queries
    - ResultSetMetaData
    - Executing SQL Updates
Using a PreparedStatement
Parameterized Statements
Stored Procedures
Transaction Management

19. **Appendix A – Introduction to Threads**
Non-Threaded Applications
Threaded Applications
Creating Threads
Thread States
Runnable Threads
Coordinating Threads
Interrupting Threads
Runnable Interface
ThreadGroups

20. **Appendix B – Thread Synchronization and Concurrency**
Race Conditions
Synchronized Methods
Deadlocks
Synchronized Blocks
Synchronized Collections
Thread-Aware Collections
Thread Communication — wait()
Thread Communication — notify()
Executor
Callable

21. **Appendix C – Advanced JDBC**
JDBC SQL Escape Syntax
The execute() Method
Batch Updates
Updateable Result Sets
Large Objects
Working with Savepoints
RowSets
CachedRowSet
DataSources

22. **Appendix D – Eclipse Shortcuts**
Shortcut Key Sequences
More Shortcut Key Sequences