

JAVA SE 6 Training Programming

Intensive and hands-on, the course emphasizes becoming productive quickly as a Java™ application developer. This course quickly covers the Java 5.0 and 6.0 new features, 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, threads, and accessing a database with JDBC. The course ends with a chapter on performance tuning with hints and best practices for writing efficient applications. Appendices on sockets, regular expressions and J2EE are also available for further study.

Prerequisites: Nice to have any programming background.

Number of Days: 40 hours

Java™ Programming

1. Getting Started with J2SE

What is Java?

How to Get Java

A First Java Program

Compiling and Interpreting Applications

The JDK Directory Structure

2. Language Fundamentals

A Java Program

If Statements

Switch Statements

Loop Statements

Syntax Details

Primitive Datatypes

Variables

Expressions in Java

Strings

Arrays

Enhanced for Loop

3. Objects and Classes

Defining a Class

Creating an Object

Instance Data and Class Data

Methods

Constructors

Access Modifiers

Encapsulation

4. 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

Using the Primitive-Type

Wrapper Classes

Autoboxing

5. Inheritance in Java

Inheritance

Inheritance in Java

Casting

Method Overriding

Polymorphism

super

The Object Class

6. Advanced Inheritance and Language Constructs

Enumerated Types - Pre-Java 5.0

Enumerated Types Today

More Enumerated Types

Abstract Classes

Interfaces

Using Interfaces

Comparable

Collections

Generics

7. Packages

Packages

The import Statement

Static

Imports

CLASSPATH and Import

Defining Packages

Package Scope

8. Exception Handling

Exceptions Overview

Catching Exceptions

The finally Block

Exception Methods

Declaring Exceptions

Defining and

Throwing Exceptions

Errors and RuntimeExceptions

Assertions

9. 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

10. Collection Sorting and Tuning
Using Java 5.0 Features with Collections
Sorting with Comparable Sorting with Comparator
Sorting Lists and Arrays
Collections Utility Methods
Tuning ArrayList
Tuning HashMap and HashSet

11. Inner Classes
Inner Classes
Member Classes
Local Classes
Anonymous Classes and Instance Initializer
Static Nested Classes

12. 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

13. 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

14. Introduction to Threads
Non-Threaded Applications
Threaded Applications
Creating Threads
Thread States
Runnable
Threads Coordinating
Threads Interrupting
Threads Runnable Interface
ThreadGroups

15. Thread Synchronization
and Concurrency Race Conditions
Synchronized Methods
Deadlocks
Synchronized Blocks
Thread Communication — wait()
Thread Communication — notify()
Java 5.0 Concurrency Improvements
Thread-Aware Collections
Executor
Callable

16. Java Performance Tuning
Is Java Slow?
Don't Optimize Until You Profile
HotSpot Virtual Machine
Garbage Collection Concepts
Garbage Collection Generations
Garbage Collection in Java 5.0
Object Creation
String, StringBuffer, and StringBuilder
Synchronized Inline methods
Tuning Collections

20. Appendix A - Networking with Sockets
Clients and Servers
Ports, Addresses, and Protocols
The Socket Class
Communication Using I/O
Servers
The ServerSocket Class
Concurrent Servers
The URL Class
The URLConnection

Class 21. Appendix B –
Regular Expressions
Pattern Matching and Regular
Expressions
Regular Expressions in Java
Regular Expression Syntax
Special Characters
Quantifiers
Assertions
The Pattern Class
The Matcher Class
Capturing Groups

22. Appendix C - J2EE Overview
Introduction to J2EE
J2SE Building Blocks
Servlets, JSPs, and Web Applications
Web Services
Enterprise JavaBeans
Additional J2EE APIs
J2EE Clients
The J2EE Platform
Different J2EE Application Servers