Introduction to Java Programming for Non-Object Oriented Developers

- **Course Number:** IntJava-NOO
- **Length:** 5 Day(s)

Certification Exam

There are no exams associated with this course.

Course Overview

This course uses a combination of instructor lectures, computer demonstrations and interactive hands-on lab simulations to illustrate the major parts of the course. Topics discussed include: Languages & Tools; Classes, Types and Objects; Class Data & Security; Learning the Java Environment; Illustrating Class Definitions; Java Arrays; Decision Logic & Looping; and many more.

Prerequisites

Basic knowledge of programming and Java programming language is required.

Audience

This course is intended for software developers using Java programming language.

Course Outline

- Level 1
- Languages & Tools
- Defining Object Orientation
- Object-Oriented vs Procedural
- Procedural Programming
- Object Oriented Programming
- Where’s the Code
- OO Technologies
- Comparing OO Languages
- ToolKits and Frameworks
- OO Distributed Development
- OO Components
- Enterprise Concepts
- OO Methodologies
- Commercial OO Methodologies
- OO Modeling
- OO Evolution
- Procedural Language Problems
- Object Orientation over Procedural
- Object Oriented Advantages
- Object Oriented Disadvantages
- OO Concepts
- OO Fundamentals
- Defining Objects
- Object Illustration
- Object Characteristics
- OO Object Samples
- Object Building Blocks
- Concept of Templates
- What are Instances
- OO Application Composition
- Object Lifecycle
- Classes, Types and Objects
- OO Methods and Variables
- Defining OO Methods
- Defining OO Variables
- OO Methods
- Messaging Example
- Object Architecture
- Java Class Example
- Use of private
- Class Definition
- Variable Scope
- Identifiers vs Values
- OO Static Typing
- Core Concepts
- Major OO Aspects
- Defining Encapsulation
- Encapsulation Summary
- Defining Inheritance
- Illustrating Inheritance
- What is a Superclass
- Defining Subclass
- SubClass Inheritance
- Polymorphism
- Illustrating Polymorphism
- Review
- Level 2
- Methods
- Method Overloading
- Method Overriding
- Constructors
- Building New Objects
- Defining Constructors
- Sample Constructor
- Constructor Chaining
- Class Data & Security
- Class Versions
- Access Control Modifiers
- Class Access Options
- Inheritance Hierarchies
- What is Class Inheritance
- Derived Class Objects
- Illustrating Inheritance
- Inheritance Specification
- Using Derivation
- Utilize Inheritance
• Defining Polymorphism
• What are Interfaces
• Level 3
• Learning the Java Environment
• What is the Java Language?
• Java Language Background
• Java Language Benefits
• Types of Java Programs
• Defining a Java Applet
• Defining a Java Application
• Defining a Java Servlet
• Java Runtime Environment
• Java Development Environment
• Biggest Benefit: Portability
• Portability Benefits
• The Java Language
• Java Libraries
• Java API Hierarchy
• Object-Oriented vs. Procedural
• Language Attributes
• History of OO Programming
• Java and OO Concepts
• OO Concept: Abstraction
• OO Concept: Encapsulation
• OO Concept: Polymorphism
• OO Concept: Inheritance
• What are Objects?
• OO Programming in Java
• Object Architecture
• Objects and Classes
• Viewing a Class Definition
• Creating Java Class Definition
• Data Hiding in Java
• Inheritance: Class & Subclasses
• OO Program Structure
• New Objects: Constructors
• Java Platform Separation
• J2EE Architecture
• Illustrating J2EE
• J2SE Platform
• J2EE Packaging
• Demo - Eclipse SDK 3.1
• Chapter 3 Review
• Level 4
• Eclipse IDE
• Understanding Eclipse
• Eclipse Architecture
• Java Development
• Eclipse Window
• Workbench Window
• Workbench Wizards
• Role of Eclipse Projects
• Project Creation
• Eclipse Folder Structure
• Java Project Folder
• Demo - Exploring Eclipse
• Importing Projects
• Demo - How to Import Projects
• Eclipse Perspective
• Utilizing Perspectives
• Selecting Perspectives
• Java Perspective
• Java Browsing Perspective
• Debug Perspective
• Demo - Perspectives
• Common Views: Navigator & Editor
• Eclipse Prefs & Java Code Formatting
• Workbench Preferences
• Managing File Editors
• Workbench Preferences: File Editors
• Demo - Eclipse Preference Settings
• Illustrating Java Editor
• Search Operations
• Java IDE
• Eclipse Java Decomposition
• Incremental Compilation
• Illustrating Debugger Role
• Demo - Eclipse Debugger
• Workbench Exports
• Lab - Working with Eclipse
• Chapter 4 Review
• Level 5
• Defining & Declaring Variables
• Java Variables
• Java Primitive Data Types
• Java Integer Data Types
• Integer Internal Representation
• Declaring Integer Variables
• Assignment Statement
• Demo - Integer Variable Types
• Arithmetic Calculations: Binary Operator
• Arithmetic Calculations: Unary Operator
• Integer Division with Remainders
• Increment and Decrement
• Implicit Type Conversion
• Explicit Casting
• Floating Point Data Types
• Floating Point Variables
• Floating Point Calculations
• Using the Modulus Operand
• Explicit Casting: Floating Point
• Storing Characters in Java
• Character Arithmetic
• Boolean Variables
• String Variables
• Lab - Defining Variables
• Chapter 5 Review
• Level 6
• Decision Logic & Looping
• Java Comparison Operators
• Comparison Operators and Booleans
• Simple if Statement
• Use of Statement Blocks
• True/False using else
• Sample else Conditional
• Completed Java Program
• Statement by Statement Examination
• Nested if Statements
• Demo - Java Conditional
• Boolean Operators
• Using Conditional AND
• Conditional OR Operand
• Demo - Conditional AND
• Using the NOT Operand
• Booleans in Combinations
• Using Conditional Operators
• Example of Ternary Operators
• The continue Statement
• Use of switch Expression
• Using switch Option
• Switch Without break Statements
• Stacking case Statements
• Demo - Switch Case Statement
• Using the for Loop in Java
• Example of the for Loop
• Sample of a for Loop
• Demo -for Loop
• Using the while Loop in Java
• Example of the while Loop
• Sample of a while Loop
• Using the dowhile Loop
• Example of the dowhile Loop
• Sample of a dowhile Loop
• Nesting Iterative Loops
• Use of the continue Statement
• Example of the continue Statement
• Using Labels with continue
• Use of the break Statement
• Example of the break Statement
• Demo - Iterative Processing
• Lab - Conditionals
• Chapter 6 Review
• Level 7
• Illustrating Class Definitions
• Illustrating a Class
• Class Variables
- Instance vs Class Variables
- Methods and Class Definitions
- Class Definition
- Defining Methods
- Parameter Lists
- Method Calls in Static Methods
- How Arguments are Passed
- Accessing Methods & Variables
- Class Method Definitions
- Instance Method Definitions
- Initialize Instance Variables
- Use of Initialization Blocks
- Defining a Constructor
- Create Objects with Constructor
- Declaring Variables vs Objects
- Demo - Employee Class Definition
- Demo - Employee Constructor
- Using Constructors
- Passing Objects to Methods
- Demo - Passing Java Objects
- Constructors & Method Overloading
- Multiple Vehicle Constructors
- Using Multiple Constructors
- Constructor to Constructor Calls
- Understanding Java Packages
- Compiling using Packages
- Using Java Extensions
- Creating .jar Files
- Using Package Classes
- Class Access Options
- Class Access within Package
- Access from Different Packages
- Demo - Using Import Statement
- Lab - Class Definition
- Chapter 7 Review
- Level 8
- Java Arrays
- What is an Array?
- Declaring an Array
- Accessing Array Elements
- Using an Array
- Demo - Defining & Initializing an Array
- MultiDimensional Arrays
- Sample MultiDimensional Array
- Lab - Java Arrays
- Chapter 8 Review
- Level 9
- Defining Inheritance
- Defining Derivation
- Using Derivation in Java
- What is Class Inheritance
- Inherited Methods
- Sample Connection
- Username/Password
- Defining a Statement
- Demo - Statement Object
- Prepared SQL Statement
- Exploring ResultSet Object
- Accessing ResultSet Object
- Demo - ResultSet Object
- Processing ResultSet Table
- JDBC Data Type Conversions
- Demo - ResultSet Processing
- Lab - JDBC Access
- Chapter 12 Review
- Level 13
- Thread Management
- What is a Thread
- Thread Utilization in Java
- Illustrating Threads
- Java Thread Illustration
- Thread Illustration View
- Thread Lifecycle
- Thread Creation
- Demo - Thread Execution
- Thread Controls
- Thread Control Methods
- Demo - Thread Interruption
- Define Thread Subclass
- Sample of Thread Subclass
- Thread Characteristics
- Daemon and User Threads
- Creating Thread Objects
- Implementing the run method
- Stopping a Thread
- Additional Thread Methods
- Demo - Runnable Interface
- MultiTasking vs MultiThreading
- Sample Non-Threaded Example
- Sample Thread Example
- Thread Synchronization
- Synchronize Example
- Thread Scheduling
- Illustrating Synchronized
- Defining Deadlocks
- Lab - Threads
- Chapter 13 Review
- Level 14
- Files and Streams
- What is a Stream?
- Stream Input/Output Operations
- Defining a File
- Testing File Objects
- Sample Using File
• Demo - File Object Creation
• Accessing File Objects
• Demo - File Handling
• Modifying File Objects
• Using Directory Methods
• Using Attribute Methods
• Using Creation Methods
• Using Deletion Methods
• Demo - File Directory
• Subclasses of OutputStream
• Defining OutputStream Methods
• Using FileOutputStream Class
• Using the FileOutputStream
• ByteArrayOutputStream
• Demo - Data Output Stream
• Using DataOutputStream Class
• Buffered Output Stream
• Create Buffered Output Stream
• Demo - Buffered Output
• Lab - File Management
• Chapter 14 Review
• Course Closure