

Programming in Java for COBOL Programmers (5 Days)

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Programming in Java for COBOL Programmers (CTI 265)

Java is an object-oriented programming language specifically created for developing applications that will run on a LAN or the Internet. Students will learn to write standalone and LAN-based Java applications and applets, using command-line tools and a simple editor.

Prerequisites: *Prior programming experience with any procedural or object-oriented language. Experience with SQL or other GUI IDEs is helpful.*

Minimum software requirements: *Microsoft Windows NT 4.0 or Windows 2000 or later. Sun's JDK release 1.3 or later. Microsoft Access, MySQL or equivalent relational database. Java-compatible browser.*

Minimum hardware requirements: *Pentium at 500 MHz, 256 Mb RAM; 500 Mb free hard disk space before installation. Classroom machines do not need to be networked. Internet access.*

Microsoft PowerPoint on instructor's workstation for presentation purposes.

Module 1a: Introduction and Overview

- Benefits and Features of Java
- The Java Virtual Machine
- Java's Core Packages
- The Java Developer's Kit
- Applets vs. Applications
- Object References
- Variables and Arrays
- Methods: Java's Functions
- Control Flow

Module 1b: Comparing and Mapping COBOL Concepts to Java Language

Constructs

- COBOL Name Construction vs. Java Name Construction
- COBOL Program Structure vs. Java Program Structure
- COBOL Identification Division to Java Package Headers / Comments
- COBOL Environment Division to Java Package / Import Statements
- COBOL Data Division to Java Variable Declarations
- COBOL Procedure Division to Java Class Declaration
- COBOL Paragraphs to Java Methods
- COBOL Statements to Java Statements
- COBOL Formatting (PIC) to Java Formatting (ToString())

Module 2: Object-Oriented Programming (OOP) in Java

- Abstraction
- Inheritance
- Interfaces
- Encapsulation
- Scope Modifiers
- Polymorphism
- Method Overloading

Module 3: Java Core Packages

- What are Packages
- Lifecycle of a Java Object
- Memory Management and Garbage Collection
- The lang Package
- The util Package
- The net Package
- The awt Package
- The io Package
- The applet Package
- Applets and HTML
- Events in the Lifetime of an Applet

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Module 4: Java AWT and JFC

- How the AWT Works
- JFC Lightweight Framework
- Components and Containers
- Layout Managers
- Delegation Event Model
- Pluggable Look and Feel

Module 5: File I/O

- Files and Streams
- Standard Input and Output
- DataInput and DataOutput
- Random Access Files
- Networking I/O

Module 6: Object Serialization

- Object Streams
- The Serializable Interface
- Protecting Data from Serialization
- Versioning

**Module 7: Threads and Exception
Handling**

- Multithreading
- Creating Threads
- The Error and Exception Hierarchy
- Throwing Exceptions
- Handling Runtime Exceptions
- The ThreadDeath Error

Module 8: Networking Java Applications

- Using Java to Network Applications
- Applets vs. Standalone Programs
- The URL Class
- Sockets and ServerSockets
- Implementing a TCP/IP Server
- Protocol and Content Handlers

Module 9: Database Connectivity

- JDBC and How it Works
- Database Access Methods
- The DriverManager Class
- Database Connection URL
- Drivers and JDBC Architecture
- Connection and Statement Interfaces
- ResultSets and Data Manipulation

Module 10: Review and Summary