

Programming in Java and JSP (5 Days)

Custom Training Institute

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Programming in Java and JSP (CTI 234)

Java is an object-oriented programming language specifically created for developing applications that will run on a LAN or the Internet. Java Server Pages (JSP) bring the power and flexibility of Java to Web pages, incorporating dynamism, database access and server-side customization. Students will learn to write standalone and LAN-based Java applications, Java applets, Java servlets and Java Server Pages using command-line tools, a simple editor and (optionally) a graphically-oriented integrated development environment (IDE).

Prerequisites: Prior programming experience with any procedural or object-oriented language. Experience with SQL 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 or equivalent relational database. Java-compatible browser. Java-compatible Web server, such as Apache and Jakarta Tomcat (free download).

Minimum hardware requirements: Pentium at 1 GHz, 512 Mb RAM; 1 Gb 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 1: 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
Exercise

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

Abstraction
Inheritance
Interfaces
Encapsulation
Scope Modifiers
Polymorphism
Method Overloading
Exercise

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
Exercise

Module 4: File I/O

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

Module 5: Object Serialization

Object Streams
The Serializable Interface
Protecting Data from Serialization
Versioning
Exercise

Module 6: Threads and Exception Handling

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

Programming in Java and JSP – (CTI 234) - continued

Module 7: 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
Exercise

Module 8: Database Connectivity

JDBC and How it Works
Database Access Methods
The DriverManager Class
DatabaseConnection URL
Drivers and JDBC Architecture
Connection and Statement Interfaces
ResultSet and Data Manipulation
Exercise

Module 9: Server-Side Programming Using

Java Server Pages

Uses of Server-Side Scripting
Communicating with the Client
Server Objects
Maintaining State
JSP Lifecycle and Events
Exercise

Module 10: JSP Scripting Elements

Invoking JSP Pages
JSP Expressions
JSP Scriptlets
JSP Declarations
Predefined Variables
Exercise

Module 11: Servlets

Uses of Servlets
Relationship Between Servlets and JSPs
Servlet API
Communicating with the Client
Session Tracking
Servlet Lifecycle and Events
Exercise

Module 12: Integrating Servlets and JSP

Using the MVC Architecture

Working with a RequestDispatcher
Requests, Servlets, and Resources
JSP Output in Servlets
Exercise

Module 13: Review and Summary