

CIW Enterprise Developer and CIW Web Developer Series: Java Programming Fundamentals (November 2002)

The *Java Programming Fundamentals* course teaches you how to write Java applications and applets. You will learn the Java language mechanics found in other programming languages, such as variables, iterations, control statements, methods and arrays. You will also discuss object-oriented theory as it relates to Java. You will create Graphical User Interfaces (GUIs) for both applications and applets, emphasizing components, layouts, and graphics. The course concludes with an in-depth study and implementation of the SDK 1.2 event delegation model, an essential element in further Java studies. You will also complete a course-long project to create an operational client/server messaging system.

Topics

Java Runtime Environment

- The Java Virtual Machine
- The Java 2 Software Development Kit
- Java Comments

Data Types, Variables and Operators

- Data Types
- Declaring Variables
- Variable Scope
- Casting
- Operators
- Automatic Casting

Control Statements

- Code Blocks
- Conditional Statements
- Iterative Statements (Loops)
- Assertions

Methods

- Java Methods
- Return Statements
- Calling a Method
- Parameters
- Pass by Value
- Overloading

Arrays

- What Is an Array?
- Initializing an Array
- Objects
- Using an Array
- Passing an Array to a Method
- Garbage Collection
- Command Line Parameters
- Hashing

Classes and Objects

- Object-Oriented Programming
- What Is an Object?
- Instance and Class Members
- Abstraction
- Object References

Inheritance

- What Is Inheritance?
- Overriding Methods
- Overridden Methods and Variables

Constructors

- What Is a Constructor?
- Using Constructors
- The Keyword this
- Constructor Process
- Constructors and Callbacks
- String and StringBuffer
- Wrapper Classes

Interfaces and Abstract Classes

- What Is an Interface?
- Polymorphism
- What Is an Abstract Class?

Packages and Access Modifiers

- Introduction to Packages and Access Modifiers
- Packages
- Access Modifiers
- Java 2 Application Programming Interface
- Encapsulation

Swing Components

- What Is the AWT?
- What Is Swing?
- Basic Swing Components
- Swing Containers
- JavaBeans

Layout Managers

- What Is a Layout Manager?
- FlowLayout
- GridLayout
- BorderLayout
- BoxLayout
- Combining Layouts
- Graphics in Java
- Graphics Class
- Color Class
- Font Class

The Event Delegation Model

- What Is an Event?
- JDK 1.0 Event Handling
- SDK 1.2 Event Handling

Inner Classes

- What Is an Inner Class?
- Inner Classes for Event Handling

Java Applets

- Programming Applets
- Applets and Web Browsers
- Converting an Application into an Applet
- Converting an Applet into an Application

Exceptions

- What Is an Exception?
- Handling Exceptions
- Creating User-Defined Exceptions
- Exception Handling Tips
- Exceptions and Inheritance

Creating Threads and Thread Methods

- What Are Threads?
- How Operating Systems Handle Multitasking
- Types of Threads in Java
- Creating Threads
- Thread Methods

Thread Synchronization

- What Is Thread Synchronization?
- Thread Racing
- Synchronized and the Object Monitor
- Thread Race Condition
- Sophisticated Thread Synchronization
- Stopping, Suspending and Resuming Threads
- Deadlocks

Streams and Serialization

- What Is a Stream?
- InputStream, OutputStream, Reader and Writer
- Files
- Stream Classes of java.io.*
- Serialization

Networking in Java

- What Is Networking?
- Connecting Computers Across the Internet
- Networking Classes of java.net.*
- The Java Client/Server Model
- Building the EchoServer
- Multithreading Your Client/Server Example

Target Audience

Database developers, Internet application developers, database architects, middleware programmers, database administrators, Java developers, and client/server developers.

Job Responsibilities

Develop n-tier database and legacy connectivity solutions for Web applications using Java, Java APIs, Java Database Connectivity solutions, middleware tools, and distributed object models such as CORBA/ORB and IIOP.

Prerequisites

Students must have a basic knowledge of programming fundamentals before taking this course.

Duration

30 hours