

### Java Introduction / Intermediate – 5 days



#### Course Objectives

As well as teaching the fundamentals of the language a variety of exercises also introduce good programming practice. By the end of the Java training course, delegates will be able to write their own Java programs and work with existing code.

#### Prerequisites

This is a programmer based course intended for students who have experience and knowledge of object-oriented programming. This course is intended for programmers who are involved in Web publishing and Web GUI development but who have little or no prior exposure to Java.

Knowledge of a high level object-oriented programming language (preferably C or C++) together with advanced-level HTML and JavaScript knowledge, in addition familiarity with HTTP, TCP/IP, and other data protocols.

#### Exercises

This course is instructor led, involving the utilisation of examples and exercises in a workshop environment.

#### The Fundamentals

- Why use Java
- How does Java Work? - structure
- Comparing local and distributed Java applications and associated security features
- Writing, compiling and running a simple Java applications
- Using documentation for the J2SE class libraries

#### Object Orientated Programming

- Define:
  - Classes
  - Objects
  - Attributes
  - Methods
- Using Constructor methods to initialise objects
- Using Package and import statements to access J2SE class libraries
- Imports

#### Java Constructs

- Identifies
- Comments
- Primitive Types
- Variables
- Operators Assignment
- If Statements
- Loops
- Booleans
- Arrays
- Abstract Methods
- Inner Classes

#### Java Inheritance

- Encapsulation
- Polymorphism
- Inheritance
- Overloading
- Wrapper Classes

### Exceptions

- What are Exceptions?
- Defining Exceptions and building code to handle runtime exceptions
- Explaining the Exception class hierarchy and categories of Exceptions
- Declaring methods that may throw Exceptions
- Using the throw keyword forward an Exception
- Building a user-defined Exception class

### Java Applications

- Build a simple Command-Line Application
- Read and Write to files
- File Streams
- Introduction to GUI Applications
- Introduction to AWT and Swing
- Containers
- Layout Manager
- Frame and Panel Containers
- User Interface Events
- Adapter Classes

### Introduction to Java Applets

- What is a Java Applet?
- Introduction to 3 tier architecture
- Introduction to TCP/IP Networking
- Web Server Basics
- <Applet> tags
- Applet methods
- Basic Applet configuration
- Build a simple Applet
- Applets and Swing
- URL's

### Threads - Introduction

- What is a Thread?
- Creating Threads to enable concurrent execution of multiple tasks
- Declaring Synchronised Code to prevent simultaneous access to a method by more than one thread
- Thread issues
- Wait()
- Notify()
- Moving Threads between states using the wait and notify methods
- Using a shared object to communicate between Threads

### Streams

- What is a Stream?
- Java.io package
- Node Streams
- Processing Streams
- Readers
- Writers
- Creating Streams
- Serialisation Interface