

JAVA FUNDAMENTALS

The course introduces the fundamentals of Java with particular emphasis on basic OO concepts, and writing efficient and maintainable code.

Audience

This is an introductory course for novice developers who have little or no previous programming experience.

Prerequisites

Ideally, delegates should have some previous programming experience and knowledge of basic IT concepts.

Duration

Four days. The course uses desk quizzes and hands-on practical exercises to enable the delegate to gain experience in developing Java applications.

Course objectives

On completion of this course the delegate will be able to:

- create applications and applets
- use Object-Oriented Programming techniques
- program for the GUI environment
- write code to handle files
- have a realistic understanding of the terms Inheritance, Encapsulation and Polymorphism

Course contents

Introduction to Java Programming

What is Java?; Applications and applets; Development Environments; JDK; The Java Virtual Machine (JVM); Producing, compiling and executing; Just-In-Time compilation; CLASSPATH.

Introduction to Object-Oriented Programming

What is OOP?; Objects and Classes; using Objects; Object references; Constructors; Access modifiers; Packages; Inheritance; Polymorphism; Encapsulation; OOD; the Java API.

Data types and Operators

Coding a program; Reserved words; Data types, variables and operators; Statements and expressions; Strings; StringBuffer; arrays; arguments to main(); garbage collection.

Flow Control

Decision-making; program flow control; loops.

Classes and Methods

More on objects; passing arguments; Polymorphism and Abstract classes; constructors and initialization; accessors and mutators; the *this* keyword; interfaces; method signatures; casting and instanceof; static and final modifiers; overriding and overloading.

Object Oriented Development

The toString method; recursion; hashCode and equals methods; singletons; anonymous inner classes; cloning.

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Course contents continued

Exceptions

How exception handling works;
class hierarchy; Call stacks; class
wrappers; try...catch; try...finally;
throw and throws; writing and
using exception handlers;
assertions.

Introducing the Graphical User Interface

The AWT; Swing; Frames; Layout
Managers; using Components,
Containers and Panels.

Events and Event Handling

Responding to an event;
Listeners; GUI event; Interfaces;
Adapters.

File Handling

The File class; Input and output
streams; Readers and writers;
Standard input and Standard
output; File streams;
BufferedReader class; Object
Serialization; Exceptions.