



Java Programming 1 / Java Developer

Duration: 5 Days **Course Code: JAVA1** **Delivery Method: Virtual Learning**

Overview:

Java is everywhere and is as popular as ever. This hands-on course, delivered using Java 11, endeavours to provide the fundamental skills you need to become a Java Developer. We'll have you build a series of realistic apps focusing on object-oriented principles from the start. Note that this is not a beginners course. You are expected to be familiar with programming concepts and have a little coding experience. If not you should consider our Learn to Code with Java course instead. Exercises and examples are used throughout the course to give practical hands-on experience with the techniques covered.

Virtual Learning

This interactive training can be taken from any location, your office or home and is delivered by a trainer. This training does not have any delegates in the class with the instructor, since all delegates are virtually connected. Virtual delegates do not travel to this course, Global Knowledge will send you all the information needed before the start of the course and you can test the logins.

Target Audience:

The Java Developer course is aimed at anyone with a little coding experience seeking to become a Java Developer, and existing developers seeking to migrate to Java.

Objectives:

- This course aims to provide the delegate with the skills needed to build object-oriented apps using Java that exploit all of the fundamental elements of the language.
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Prerequisites:

Delegates attending this course should be able to define general programming concepts including compilation and execution, variables, arrays, sequence, selection and iteration, navigate the filesystem (on the command line ideally), edit and save text files and browse the web. This knowledge can be obtained by attendance on the pre-requisite Introduction to Programming course.

Follow-on-Courses:

- Java Programming 2 / Java Advanced Developer (JAVA2)
 - Unit Testing using Junit (JUNIT)
 - Java Web Services (JWS)
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Content:

Java Programming 1 / Java Developer Training Course Course Contents - DAY 1

Course Introduction

- Administration and Course Materials
- Course Structure and Agenda
- Delegate and Trainer Introductions

Session 1: PLATFORM,APP STRUCTURE,; BASIC IO

- The Java language
- The Java platform
- App structure incl. modules,packages,and classes (brief)
- The main method
- Reading from stdin and writing to stdout
- Reading from and writing to a text file
- Compilation and execution

Session 2: CLASSES ; OBJECTS

- What is an object
- What is a class
- Object-oriented apps
- Classes
- Fields
- Constructors
- Methods
- Objects
- Instantiation
- Getting and setting fields
- Calling methods

Session 3: VARIABLES ; STANDARD DATA TYPES

- Instance fields
- Default values
- Local variables incl. parameters
- Primitives
- Literals
- Default types
- Casting
- References
- Arrays (brief)
- Strings (brief)
- Primitive wrappers
- Constants
- Type inference
- Varargs
- Naming conventions Java Programming 1 / Java Developer Training Course Course Contents - DAY 2

Session 4: DECISIONS ; LOOPS

- Relational and conditional operators
- If statements
- Switch statements
- The ternary operator

Session 5: ESSENTIAL COLLECTIONS

- What is an array
- List vs. array
- Map vs. list
- Generic classes (brief)
- Arrays
- Declaration and initialisation
- Setting and getting elements
- Sizing
- Iterating
- Multi-dimensional arrays
- Command line arguments
- The ArrayList and HashMap classes
- Imports
- Adding elements incl. autoboxing
- Membership testing
- Accessing elements
- Changing elements
- Removing elements
- Sizing
- Iterating

Session 6: STATIC MEMBERS ; ENUMS

- What does it mean to be static
- Static fields
- Static methods
- Static context
- Static imports
- Enums

Session 7: NUMBERS ; MATHS

- Strings to numbers
- Arithmetic and unary operators
- The Math class
- The BigDecimal class
- Number formatting Java Programming 1 / Java Developer Training Course Course Contents - DAY 3

Session 8: STRINGS ; REGEX

- What is a String
- Immutable objects
- The String Pool
- Strings
- Creation
- Escape characters
- Concatenation
- Format Strings
- Length
- Transformative methods
- Search methods
- Comparative methods
- Java 11 methods
- StringBuilder
- Pattern matching
- Regular expressions
- The Pattern and Matcher classes

Session 9: EXCEPTION HANDLING

Session 11: COMPOSITION ; AGGREGATION

- What is composition
- What is aggregation
- Composite associations
- Aggregate associations
- Constructor injection (mandatory)
- Setter injection (optional)
- The problem with getter methods (refs. vs. copies)

Session 12: INHERITANCE,ABSTRACTION,; POLYMORPHISM

- What is inheritance
- The purpose of inheritance
- Extending a superclass
- Shadowing
- Overriding
- Subclass constructors
- The super keyword
- Inheritance polymorphism
- Upcasting and downcasting
- The instanceof operator
- Final classes and methods
- The Object class incl. toString,hashCode,and equals (brief)
- What is abstraction
- The purpose of abstraction
- Abstract classes and methods
- Extending an abstract class
- Interfaces
- Implementing one or more interfaces
- Extending and implementing
- Interface polymorphism
- Interface default,static,and private methods Java Programming 1 / Java Developer Training Course Course Contents - DAY 5

Session 13: MODERN FILE IO

- What is a stream
- The different types of stream
- The Path class
- Reading all bytes/lines from a file
- Writing all bytes/lines to a file
- Reading from a file using a buffered stream
- Writing to a file using a buffered stream
- Parsing a file using a Scanner

Session 14: MODULES

- What is a module
- Module descriptor
- Module requires and exports
- Compiling a module
- Using jdeps to determine a module's dependencies
- Compiling a module that requires other modules

- While loops
- For loops (both kind)
- Branching statements (break,continue,return)

- What is an exception
- Checked vs. unchecked exceptions
- Exceptions and the call stack
- Try,catch,and finally
- Handling multiple exception types
- Try with resources
- Throwing exceptions
- Custom exceptions (brief)

Session 10: ENCAPSULATION

- What is encapsulation
 - Access modifiers
 - Private fields and public methods
 - Getters and setters
 - Constructors (for controlling instantiation)
 - The this keyword Java
- Programming 1 / Java Developer Training
Course Course Contents - DAY 4

- Executing a module
- Using jlink to build a custom JRE

Session 15: BASIC JDBC

- What is JDBC
- Loading the driver
- Establishing a connection
- AutoCommit
- Transaction management
- Creating a statement
- PreparedStatement
- CallableStatement
- Batch updates
- Executing a query/update
- Processing a ResultSet
- Type
- Concurrency
- Holdability
- Closing resources

Further Information:

For More information, or to book your course, please call us on Head Office 01189 123456 / Northern Office 0113 242 5931

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