olsen
software ltd

☎ +44 7989 401397

✉ info@olsensoft.com

Java Programming for C++ Developers　　　　　(4 days)

Course overview

This course helps C++ developers get up to speed quickly with the Java programming language and the Java Standard Edition (SE) 7 development platform. The course focuses on the differences between the C++ and Java languages, and also explains how the C++ STL library maps to the Java SDK.

What you'll learn

- Understanding core differences between Java and C++

- Defining and using classes

- Using arrays, collections, and generics

- Implementing inheritance and polymorphism

- Working with exceptions

- Multithreading

- Using common Java APIs and techniques

Prerequisites

- At least 6 months programming experience, ideally in C++

Course details

- **Getting Started with Java:** Compiling and running Java applications; The role of the JVM; JAR files; Understanding Ant and Maven; Where to get more information about Java in online communities; Common open-source libraries

- **Core Language Differences between C++ and Java:** Everything is a class; Primitive types vs. reference types; Packages

- **Miscellaneous Language Bits n Pieces:** Differences in variable declarations and operators; Loops and decision-making differences; Useful Java classes; Strings; Wrapper classes

- **Defining and Using Classes:** Classes in Java; Differences in how to declare data members and member functions; Differences in initialization and construction; Parameter passing modes in Java

- **Arrays:** Declaring and using arrays; A world without pointers; Traversing arrays; Using the Arrays class; Multi-dimensional arrays

- **Inheritance:** Differences in inheritance between C++ and Java; Polymorphism; Abstract classes and methods; Final classes and methods; The Object class; The lack of multiple inheritance

- **Interfaces:** Overview of interfaces, compared with pure virtual classes in C++; Defining and implementing interfaces; Using interfaces in client code; Multiple inheritance of interfaces

- **Collections and Generics:** Overview of collections and generics; Using Java collection classes vs. C++ STL classes; Defining generic classes and generic methods vs. C++ template classes

- **Exceptions and Assertions:** Overview of exception handling; Throwing and catching exceptions; Standard exception classes; Defining new exception classes; Working with assertions

- **Going Further with the Java Language:** Autoboxing and unboxing; Varargs; Type-safe enumerations; Static imports

- **Inner Classes:** Overview of inner classes; Regular inner classes; Method-local inner classes; Anonymous inner classes; Static nested classes

- **Multithreading:** Creating multiple threads; Synchronizing threads; Synchronization classes; Concurrency API

- **Additional Multithreading Issues:** Using concurrent collections; Using synchronizers and locks; Thread pooling techniques; Using the executor framework; Using pooling effectively

- **Common Java APIs:** Reading and writing files; Accessing databases using JDBC; Calling Web Service

- **Reflection:** Dynamic retrieval of information using reflection vs. RTTI in C++; Creating instances of extensibility objects; Class fields, methods and constructors

- **Sockets:** Introduction to sockets; Implementing a socket server; Implementing a socket client; Overview of NIO

- **Tuning Garbage Collection:** Essential concepts; Understanding object lifetimes; Generational collectors; Heap organization; Garbage collection options; Garbage collection monitoring and tuning