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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 .NET Framework 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; JVM options; JAR files vs. .NET assemblies; 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: Primitive types in Java vs. struct types in C#; Packages vs namespaces; Miscellaneous language differences;

- 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 vs. C#

- Arrays: Declaring and using arrays; Traversing arrays; Using the Arrays class; Multi-dimensional arrays

- Inheritance and Interfaces: Things you can do in C# that you can't do in Java; Things you can do in Java that you can't do in C#; Miscellaneous language differences

- Collections and Generics: Overview of collections and generics; Using Java collection classes vs. .NET collection classes; Defining generic classes and generic methods vs. C# generics; Java generic specifiers

- 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 vs. C# delegates; 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; Creating instances of extensibility objects; Class fields, methods and constructors

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