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Introduction to OO Programming in Java (4 days)

Course overview

Object oriented programming offers many benefits when it comes to creating modular, reusable, and logical software solutions. This course provides an introduction to object oriented concepts through the prism of the Java programming language. We investigate important OO principles such as abstraction, encapsulation, inheritance and polymorphism, and see how to apply these principles in Java.

What you'll learn

- What is OO all about
- OO concepts: abstraction, encapsulation, inheritance, and polymorphism
- Introduction to the Java language and platform
- Writing and compiling Java code
- Mapping OO concepts to Java language constructs

Prerequisites

- Experience in programming or shell scripting

Course details

- **Setting the Scene:** What is OO; What are the Benefits of OO; What are the Key Principles of OO
- **Introduction to Java Programming:** Setting the Scene; Installing and Using Java SE; Using an IDE; A Closer Look at Java Syntax; Getting Started with Java Operators
- **Operators and Flow Control:** A Closer Look at Operators; Conditional Statements; Loops
- **Writing and Calling Methods:** Essential Concepts; Defining and Calling Methods; Parameters and Return Values; Useful Java Classes
- **Defining and Using Classes:** Essential Concepts; Defining and Using Packages; Defining a Class; Creating and Using Objects
- **Initialization:** Overview of Initialization; Using the static Keyword; Factories
- **Arrays and Collections:** Declaring and Using Arrays; Traversing Arrays; Using the Arrays Class; Multi-Dimensional Arrays; Overview of Collections; Using Collections
- **Inheritance:** Overview of Inheritance; Defining Subclasses and Superclasses; Polymorphism; Additional Inheritance Techniques; Overview of Interfaces; Defining and Implementing Interfaces; Using Interfaces Effectively
- **Additional Language Features:** Exceptions; Generics; Varargs; Type-Safe Enumerations
- **Using Java APIs:** Working with Files; Text Files; Binary Files; Overview of Java Database Access; JDBC Statements and Results