

## **Introduction to Java 9/10 Programming for Developers New to OO Programming (such as C, Mainframe, 4GL) (TT2120-J9/10)**

**Modality: Virtual Classroom**

**Duration: 5 Days**

### **About this course:**

This training course of Java 9 and OO Programming Essentials is a hands-on, five days course designed for engineers who have practically zero earlier information on object-oriented programming dialects, (for example, those working on (C, 4GL, COBOL, and so forth.) Throughout the course, understudies gain proficiency with the prescribed procedures for writing object-oriented projects in Java 9, using sound advancement methods, new improved highlights for better execution, and new capacities for addressing quick application advancement. Exclusive accentuation is put on object-oriented ideas and best practices.

Note: Learners with earlier Object-Oriented introduction and foundation, (for example, C++, C#, Smalltalk, and so forth.) ought to consider the Programming of TT2100-J9 Java 9 for Object-Oriented (OO) Experienced Developers as another option.

The normal compensation of a Java Developer is \$90,992 every year.

### **Course Objective:**

- Comprehend about OO programming and what the benefits of OO are in this current time
- Work with classes, objects, and OO usage
- Work with the Java 9 particular framework (Project Jigsaw)
- Take benefit of the Java tooling that is accessible with the programming condition being utilized in the class.
- Comprehend the basics of the Java language, and its significance uses, weakness, and strength.
- Comprehend the essential ideas of OO, for example, polymorphism, inheritance, encapsulation, and abstraction.
- Comprehend the rudiments of the Java language and how it identifies with OO programming and the Object Model
- Comprehend and use generics, collections, autoboxing, and enumerations
- The Modular framework (Project Jigsaw)
- Figure out how to utilize Java exception handling highlights
- Comprehend and use inheritance, classes, and polymorphism
- Procedure a lot of information using the Stream API and Lambda expressions.
- Utilize the JDBC API for access to the database.
- Private techniques in interfaces

### **Audience:**

This course is an introductory-level programming course of Java, intended for experienced engineers who wish to find a good pace with Java, or who need to reinforce sound Java coding practices.

## **Prerequisite:**

Participants ought to have earlier handy programming involvement with another language.

## **Course Outline:**

### **Module 1: Java: A First Look**

#### **Lesson: The Java Platform**

- Java Platforms
- Lifecycle of a Java Program
- Responsibilities of JVM
- Documentation and Code Reuse

#### **Lesson: Using the JDK**

- Setting Up Environment
- Locating Class Files
- Compiling Package Classes
- Source and Class Files
- Java Applications

#### **Lesson: The Eclipse Paradigm**

- Workbench and Workspace
- Views
- Editors
- Perspectives
- Projects

### **Module 2: Getting Started with Java**

#### **Lesson: Writing a Simple Class**

- Classes in Java
- Class Modifiers and Types
- Class Instance Variables
- Primitives vs. Object References
- Creating Objects

#### **Lesson: Adding Methods to the Class**

- Passing Parameters into Methods
- Returning a Value from a Method
- Overloaded Methods
- Constructors
- Optimizing Constructor Usage

## **Module 3: OO Concepts**

### **Lesson: Object-Oriented Programming**

- Real-World Objects
- Classes and Objects
- Object Behavior
- Methods and Messages

### **Lesson: Inheritance, Abstraction, and Polymorphism**

- Encapsulation
- Inheritance
- Method Overriding
- Polymorphism

## **Module 4: Essential Java Programming**

### **Lesson: Language Statements**

- Operators
- Comparison and Logical Operators
- Looping
- Continue and Break Statements
- The switch Statement
- The for-each() Loop

### **Lesson: Using Strings**

- Strings
- String Methods
- String Equality
- StringBuffer
- StringBuilder

### **Lesson: Specializing in a Subclass**

- Extending a Class
- Casting
- The Object Class

- Default Constructor
- Implicit Constructor Chaining

### **Lesson: Fields and Variables**

- Instance vs. Local Variables: Usage Differences
- Data Types
- Default Values
- Block Scoping Rules
- Final and Static Fields
- Static Methods

### **Lesson: Using Arrays**

- Arrays
- Accessing the Array
- Multidimensional Arrays
- Copying Arrays
- Variable Arguments

### **Lesson: Java Packages and Visibility**

- Class Location of Packages
- The Package Keyword
- Importing Classes
- Executing Programs
- Java Naming Conventions

## **Module 5: Object Oriented Development**

### **Lesson: Inheritance and Polymorphism**

- Polymorphism: The Subclasses
- Upcasting vs. Downcasting
- Calling Superclass Methods from Subclass
- The final Keyword

### **Lesson: Interfaces and Abstract Classes**

- Separating Capability from Implementation
- Abstract Classes
- Implementing an Interface
- Abstract Classes vs. Interfaces

## **Module 6: Exception Handling**

## **Lesson: Introduction to exception handling**

- Exception Architecture
- Throwing Exceptions
- Checked vs. Unchecked Exceptions

## **Lesson: Exceptions**

- Creating Your Own Exceptions
- Handling Multiple Exceptions
- Automatic Closure of Resources

## **Module 7: Java Developer's Toolbox**

### **Lesson: Utility Classes**

- Wrapper Classes
- Autoboxing/Unboxing
- Working with Dates
- Enumeration Syntax
- Using Static Imports

### **Lesson: Java Date/Time**

- The Date and Calendar classes
- Introduce the new Date/Time API
- LocalDate, LocalDateTime, etc.
- Formatting Dates
- Working with time zones
- Manipulate date/time values

### **Lesson: Formatting Strings**

- StringJoiner
- String.format
- System.out.printf
- The Formatter class
- Using the formatting syntax

## **Module 8: Advanced Java Programming**

### **Lesson: Introduction to Generics**

- Generics and Subtyping
- Bounded Wildcards
- Generic Methods

## **Lesson: Lambda Expressions and Functional Interfaces**

- Functional vs OO Programming
- Lambda Expression Syntax
- Functional Interfaces
- Type Inference
- Method references

## **Module 9: Working with Collections**

### **Lesson: The Collection API**

- Characterizing Collections
- Collection Interface Hierarchy
- The Set, List and Queue Interfaces
- Map Interfaces

### **Lesson: Using Collections**

- Collection Sorting
- Comparators
- Using the Right Collection
- Lambda expressions in Collections

## **Module 10: Stream API**

### **Lesson: Streams**

- Processing Collections of data
- Filtering and sorting collection data
- Find elements in Stream
- Numeric Streams
- Sources for using Streams

### **Lesson: Collectors**

- Creating Collections from a Stream
- Group elements in the Stream
- Multi-level grouping of elements
- Partitioning Streams

## **Module 11: The Java Module system (Jigsaw)**

### **Lesson: Introduction to the Module System**

- Introduce Project Jigsaw
- Classpath and Encapsulation
- The JDK internal APIs
- Java 9 Platform modules
- Defining application modules
- Define module dependencies
- Implicit dependencies
- Implied Readability
- Exporting packages

## **Module 12: Accessing Resources**

### **Lesson: Java Data Access JDBC API**

- Connecting to the Database
- Statement and PreparedStatement
- ResultSet
- Executing Inserts, Updates, and Deletes
- Controlling Transactions and Concurrency

### **Lesson: Introduction to Annotations (optional)**

- Annotations Overview
- Working with Java Annotations