



JAVA TRAINING

Advanced Java Programming

Master advanced Java concepts to develop complex, scalable applications and solve real-world programming challenges.

DURATION

2 hours

LEVEL

Intermediate

FORMAT

Instructor-Led

- Globally Recognized Certification

- Expert-Led Hands-On Training

- Flexible Scheduling

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COURSE OVERVIEW

Unlock the next level of Java mastery with our Advanced Java Programming course. Designed for developers who have a solid foundation in core Java, this intensive program delves into complex concepts and best practices required to build robust, scalable, and high-performance enterprise applications. You'll move beyond the basics, exploring advanced topics essential for tackling real-world challenges in modern software development. This course goes beyond fundamental syntax, focusing on practical application of advanced APIs and architectural principles. You will master critical areas such as multithreading and concurrency, advanced I/O and networking, functional programming paradigms with Java 8+, and sophisticated design patterns that are pivotal in constructing resilient and efficient systems. By honing these advanced skills, you'll be capable of writing cleaner, more efficient, and maintainable code, essential for large-scale projects. The professional benefits of this course are immense. Graduates will be equipped to take on more complex development roles, contribute significantly to critical system architecture, and drive innovation within their teams. This certification not only enhances your problem-solving capabilities but also positions you as a highly valuable asset in the competitive IT industry, opening doors to leadership and specialized roles in Java development.

Duration	2 hours
Level	Intermediate
Vendor	Java

COURSE CURRICULUM

01 Module 1: Advanced OOP, Reflection & Design Patterns

- Advanced Class Design (Inner, Anonymous, Nested Classes)
- Java Reflection API and its use cases
- Annotations: Built-in, Custom, and Processing
- Common Design Patterns (Singleton, Factory, Builder, Observer, Strategy)
- SOLID Principles in Java application design

02 Module 2: Concurrency and Multithreading

- Thread Lifecycle and Synchronization mechanisms (synchronized, volatile)
- java.util.concurrent Package (Executors, Futures, Callables)
- Locks and Atomic Variables for fine-grained control
- Thread Pools and concurrency utilities
- Handling Deadlocks, Livelocks, and Race Conditions

03 Module 3: Advanced Java I/O and Networking

- NIO.2 (New I/O) API for file system operations
- Asynchronous I/O with NIO.2
- Object Serialization and Deserialization
- Socket Programming (TCP and UDP client/server applications)
- HTTP Client API (Java 11+) for modern web interaction

04 Module 4: Functional Programming with Java 8+

- Lambda Expressions and Functional Interfaces
- Stream API for efficient collection processing
- Method References and Constructor References
- Optional Class for null-safe operations
- Parallel Streams for performance optimization

05 Module 5: Database Connectivity and Persistence Basics

- Advanced JDBC API features (Batch Updates, Transactions, Connection Pooling)
- Introduction to JPA and Object-Relational Mapping (ORM) concepts
- Basic Hibernate usage for entity mapping and CRUD operations
- Working with Data Sources and connection management

06 Module 6: Building Robust Applications & Ecosystem Tools

- Advanced Exception Handling Strategies and Custom Exceptions
- Logging best practices with Log4j2 and SLF4J
- Unit Testing with JUnit 5 for robust code
- Introduction to Modular Programming (Java Platform Module System - Jigsaw)
- Build Automation with Maven/Gradle fundamentals

CAREER PATHWAYS

Graduates of this program are prepared for the following roles:

- > **Senior Java Backend Engineer**
- > **Enterprise Java Application Architect**
- > **Lead Full-Stack Java Developer (Backend Focus)**

FREQUENTLY ASKED QUESTIONS

Q: What specific architectural patterns or complex system designs will I be equipped to tackle after completing this Advanced Java Programming course?

This course is meticulously designed to equip you with the expertise to architect and develop highly scalable, concurrent, and fault-tolerant enterprise applications. You will learn to implement robust solutions for intricate concurrency control, integrate advanced I/O and networking capabilities, apply modern functional programming paradigms, and leverage powerful design patterns to create maintainable and extensible codebases. This prepares you for critical roles in developing microservices, large-scale backend systems, and distributed computing environments.

Q: Is a foundational understanding of modern Java features, such as Streams, Lambdas, and the Optional class, a mandatory prerequisite for enrolling in this advanced course?

Yes, participants are expected to possess a solid grasp of core Java concepts, including advanced object-oriented programming principles, effective exception handling, and proficiency with Java Collections. While this course will delve deeper into the nuances and advanced applications of Java 8+ features like Lambdas, Streams, and Optional, a basic working familiarity with these concepts is highly recommended. This ensures you can fully engage with the advanced topics and derive maximum benefit from the hands-on exercises.

Q: Beyond core language features, will this course introduce me to popular advanced Java frameworks or ecosystem tools relevant for modern enterprise development practices?

While the primary objective of this Advanced Java Programming course is to deepen your understanding of the core Java language and its powerful advanced APIs, we integrate exposure to crucial ecosystem components. You will gain practical experience with advanced JDBC for sophisticated database interaction, an introduction to JPA/Hibernate for effective object-relational mapping, and essential build tools like Maven/Gradle. This foundational knowledge is strategically

provided to significantly ease your transition into mastering full-fledged enterprise frameworks such as Spring or Jakarta EE in subsequent specialized training.

ABOUT COMPUTER PRIDE



East Africa's Premier IT Training Center

With over 15 years of excellence, Computer Pride delivers globally recognized certification programs from leading technology vendors. Located on Kenyatta Avenue in Nairobi's CBD, our state-of-the-art facilities and expert instructors have empowered thousands of professionals across East Africa.

15+

Years of Excellence

10,000+

Professionals Trained

50+

Vendor Certifications

READY TO ENROL?

Take the next step in your technology career.

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