



Course Name: Java Developer Professional Training Program

Course Overview

The Java Developer Professional Training Program is a comprehensive course designed to equip learners with the skills required to develop robust, scalable, and maintainable applications using Java. This course covers both core Java fundamentals and advanced concepts, including Object-Oriented Programming (OOP), data structures, algorithms, frameworks like Spring and Hibernate, and microservices. Whether you're aspiring to build desktop applications, web services, or enterprise-grade applications, this program will provide hands-on experience and real-world projects to prepare you for Java development roles.

Course Type:

Entry-Level to Advanced.

Course Objectives:

- Master the fundamentals of Java programming and Object-Oriented Programming (OOP).
- Learn to develop applications using popular frameworks like Spring and Hibernate.
- Gain expertise in data structures, algorithms, and multi-threading.
- Build and deploy scalable microservices and RESTful APIs.
- Understand Java tools like Maven, Jenkins, and Docker for efficient development and deployment.

What You'll Learn?

- Write efficient and modular Java code using OOP principles.
- Develop and deploy applications using Spring, Hibernate, and REST APIs.
- Work with advanced Java features like Lambda Expressions, Streams, and Generics.
- Handle database operations with JDBC and Hibernate ORM.
- Create scalable microservices and understand DevOps tools for Java development.

Duration:

Approximately 120 hours (theory and practical combined).

Requirements:

- A laptop or desktop with a minimum of 8GB RAM.
- Stable internet connection for online resources.

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Pre-requisite:

- Basic understanding of programming concepts is recommended but not mandatory.

Target Audience:

- Aspiring software developers.
- Computer science students looking to enhance their Java skills.
- Professionals transitioning into Java development.
- Developers wanting to master advanced Java and frameworks.

Curriculum

Module 1: Introduction to Java Programming

- Java Basics: Syntax, Data Types, Variables, and Operators.
- Control Flow Statements: If-else, loops, and switch-case.
- Understanding JVM, JDK, and JRE.
- Setting up the Java Development Environment.

Module 2: Object-Oriented Programming (OOP) with Java

- Classes and Objects.
- Inheritance and Polymorphism.
- Abstraction and Encapsulation.
- Interfaces and Abstract Classes.

Module 3: Core Java Features

- Collections Framework: List, Set, Map, and Queue.
- Generics in Java.
- Exception Handling: Checked and Unchecked Exceptions.
- Java I/O Streams: File Handling and Serialization.

Module 4: Advanced Java Concepts

- Multithreading and Concurrency.
- Lambda Expressions and Functional Programming.
- Streams and Parallel Streams.
- Annotations and Reflection API.

Module 5: Data Structures and Algorithms in Java

- Arrays, Linked Lists, Stacks, and Queues.
- Sorting and Searching Algorithms.
- Recursion and Dynamic Programming.

- Binary Trees, Graphs, and HashMaps.

Module 6: Working with Databases

- Introduction to JDBC.
- SQL Basics and Integration with Java.
- Hibernate ORM: Configuration, Mappings, and Queries.

Module 7: Web Development with Java

- Introduction to Web Technologies.
- Building RESTful APIs with Spring Boot.
- JSON and XML Parsing in Java.

Module 8: Frameworks and Tools

- Spring Framework: Dependency Injection and MVC.
- Maven for Build Automation.
- Testing with JUnit and Mockito.

Module 9: Microservices with Java

- Introduction to Microservices Architecture.
- Spring Boot for Microservices.
- RESTful APIs and Security.
- Communication between Microservices: REST, gRPC, and Kafka.

Module 10: DevOps Tools for Java Development

- Version Control with Git.
- Continuous Integration with Jenkins.
- Containerization with Docker.
- Deploying Java Applications on Cloud Platforms.

Module 11: Project Work

- Capstone Project: Develop and deploy a full-stack Java application using the learned concepts.