Maven & Gradle

Zetlan Technologies

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e-Learning Course

COURSE MODULES

MAVEN

Module 1: Introduction to Maven
- *What is Maven?*
- *Why Use Maven?*
- *Features of Maven*
- *Understanding Build Tools (Ant vs. Maven vs. Gradle)*
- *Installing and Configuring Maven*
- *Setting Up Maven on Windows, macOS, and Linux*
- *Understanding the Maven Repository Structure*

Module 2: Maven Project Structure
- *Creating a Maven Project*
- *Understanding the pom.xml (Project Object Model)*
- *The Standard Directory Layout in Maven*
- *Managing Dependencies with Maven*
- *Transitive Dependencies*

Module 3: Maven Build Lifecycle & Phases
- *Understanding Build Lifecycle*
- *Key Phases: Validate, Compile, Test, Package, Verify, Install, Deploy*
- *Running Maven Goals & Commands*

Module 4: Maven Plugins & Goals

- What Are Maven Plugins?
- Commonly Used Plugins (compiler, surefire, clean, package, deploy)
- Customizing Build with Plugins

Module 5: Dependency Management in Maven

- Understanding Maven Repositories (Local, Central, Remote)
- Dependency Scopes (compile, provided, runtime, test, system)
- Handling Conflicts in Dependencies
- Excluding & Managing Transitive Dependencies

Module 6: Multi-Module Projects in Maven

- Understanding Multi-Module Projects
- Parent POM & Child Modules
- Aggregator vs. Inherited POM
- Building and Managing Multi-Module Projects

Module 7: Maven Profiles & Customization

- What Are Maven Profiles?
- Creating Custom Build Profiles
- Activating Profiles Based on Environment
- Using Profiles for CI/CD

Module 8: Maven Integration with CI/CD

- Integrating Maven with Jenkins
- Using Maven in GitHub Actions
- Automating Builds and Deployments

Module 9: Maven with Java & Spring Boot

- Setting Up a Spring Boot Project with Maven
- Managing Spring Boot Dependencies
- Building & Packaging Spring Boot Applications

Module 10: Best Practices & Troubleshooting

- Optimizing Maven Builds
- Debugging Build Issues
- Handling Versioning and Release Management
- Understanding Maven Wrapper (mvnw)