



Maven & Gradle



Zetlan Technologies

e-Learning Course

Help Desk: +91 8680961847

www.zetlantech.com

Gradle

Module 1: Introduction to Gradle

- What is Gradle?
- Why use Gradle? (Comparison with Maven & Ant)
- Gradle Architecture & Concepts
- Installing Gradle (Windows, macOS, Linux)
- Setting up Gradle in a Project
- Running your first Gradle build

Module 2: Understanding Gradle Basics

- Gradle Build Lifecycle
- Gradle Tasks & Execution Model
- Gradle Build Scripts (build.gradle)
- Gradle Wrapper (gradlew)
- Working with different file formats: Groovy vs. Kotlin DSL
- Dependency Management Basics

Module 3: Gradle Projects & Dependencies

- Understanding Gradle Project Structure
- Managing Dependencies (Local & Remote)
- Dependency Configs (implementation, api, testImplementation)
- Repositories: Maven Central, JCenter, Custom Repositories
- Dependency Caching & Resolution Strategies

Module 4: Gradle Tasks & Customization

- Defining Custom Tasks
- Task Dependencies & Ordering
- Incremental Builds & Task Caching
- Gradle Properties & Project Extensions
- Gradle Logging & Debugging

Module 5: Multi-Module Projects

- Understanding Multi-Module (Multi-Project) Builds
- Defining Subprojects & Parent Projects
- Configuring Dependencies Across Modules
- Sharing Configurations Across Modules

Module 6: Build Script Management

- Using External Scripts (apply from)
- Using Plugins for Better Management
- Understanding buildSrc & Convention Plugins
- BuildScript Block & Plugin Management

Module 7: Gradle Plugins

- Introduction to Gradle Plugins
- Applying Built-in Plugins (Java, Kotlin, Application)
- Writing & Using Custom Plugins
- Using Third-Party Plugins (Spring Boot, Android, etc.)

Module 8: Advanced Dependency Management

- Dependency Resolution & Conflict Resolution
- Version Catalogs & BOM (Bill of Materials)
- Composite Builds & Included Builds
- Dependency Locking & Verification

Module 9: Testing & Code Quality

- Running Unit Tests with JUnit/TestNG
- Using test & check Tasks
- Code Coverage with JaCoCo
- Static Code Analysis with Checkstyle, PMD, SpotBugs

Module 10: Performance Optimization & Best Practices

- Optimizing Build Performance
- Using the Gradle Build Scan
- Parallel & Incremental Builds
- Best Practices for Gradle Scripts

Module 11: Continuous Integration (CI) & Automation

- Integrating Gradle with Jenkins, GitHub Actions, GitLab CI
- Using Gradle in Docker Containers
- Automating Deployments with Gradle

Module 12: Gradle for Android Development (Optional)

- Setting up Gradle for Android Studio
- Understanding gradle.properties & local.properties
- Configuring Product Flavors & Build Types
- Managing Dependencies in Android Projects

Module 13: Real-World Project & Hands-On Labs

- Building a Complete Java/Kotlin Application with Gradle
 - Debugging & Troubleshooting Gradle Builds
 - Real-World Use Cases & Best Practices
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