

OpenRewrite: Static Analysis & Java Best Practices

1. Why OpenRewrite for Static Analysis?

- Automated refactoring + static analysis in one tool.
 - Framework-aware rules for Java, Spring, Gradle, Maven.
 - Consistent standards across large codebases.
 - Detects & fixes issues early (Shift-Left Quality).
 - Helps in compliance, modernization, and security.
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2. Advantages of OpenRewrite

- **Automation:** Saves time by auto-fixing common issues.
 - **Scalability:** Works across large monorepos.
 - **Customizable:** Write org-specific recipes.
 - **Integration:** Compatible with Maven/Gradle/CI-CD.
 - **Migration-Friendly:** Java 11→17, Spring Boot 2→3.
 - **Deterministic:** Ensures repeatable, unbiased results.
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3. Java Best Practices Recipes

Code Quality

- RemoveUnusedImports
- CleanupUnusedVariables
- AddMissingBraces
- NormalizeLineBreaks

Error Handling

- UseTryWithResources
- CatchSpecificExceptions
- RemoveEmptyCatch

Best Practices & Sonar Compliance

- FinalizeClassesThatAreNeverExtended
- ReplaceSystemOutWithLogger
- UseDiamondOperator
- SimplifyBooleanExpression

Java Modernization

- UseTextBlocks
- UseSwitchExpressions
- UseVarForLocalVariables
- MigrateJavaxToJakarta

4. Example: Running a Recipe

Maven Plugin Config:

```
<plugin>
  <groupId>org.openrewrite.maven</groupId>
  <artifactId>rewrite-maven-plugin</artifactId>
  <version>5.43.0</version>
  <configuration>
    <activeRecipes>
      <recipe>org.openrewrite.java.RemoveUnusedImports</recipe>
      <recipe>org.openrewrite.java.logging.slf4j.Slf4jBestPractices</recipe>
    </activeRecipes>
  </configuration>
</plugin>
```

Run Command:

```
mvn rewrite:run
```

5. OpenRewrite in Workflow

- **Developer Machines** → Quick pre-commit checks.
- **CI/CD Pipelines** → Enforce org-wide standards.
- **Migration Projects** → Automated modernization.
- **Compliance Audits** → Enforce rules & standards.

Before & After Example

Before:

```
if (x > 0)
    doSomething();
```

After (with AddMissingBraces):

```
if (x > 0) {
    doSomething();
}
```

Key Message

👉 Adopt Once, Scale Everywhere – Ensure **quality, modernization, and compliance** across all Java projects with OpenRewrite.